TWENTY-FIFTH ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION

OF ONTARIO

1893.

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

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
PRINTED BY WARWICK BROS. & RUTTER, 68 AND 70 FRONT STREET WEST,
1894.

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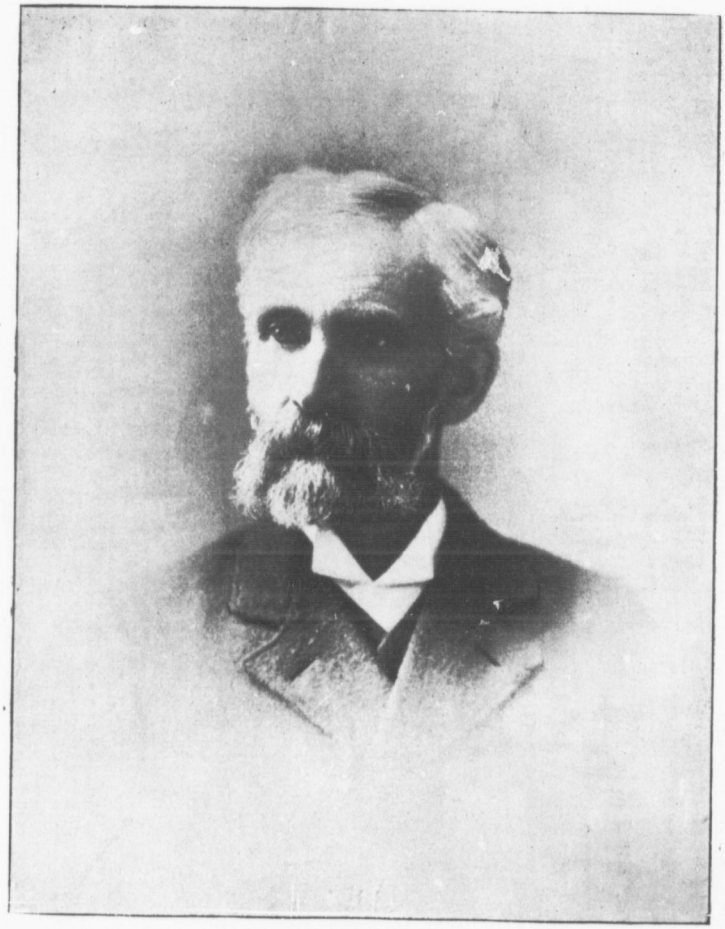

T. H. RACE, Esq., Mitchell,

President of the Fruit Growers' Association of Ontario, 1894.

ONTARIO'S VEGETABLE EXHIBIT AT THE WORLD'S FAIR, 1893.

ONTARIO'S FRUIT EXHIBIT AT THE WORLD'S FAIR, 1893.

ONTARIO'S FLORAL EXHIBIT AT THE WORLD'S FAIR, 1893.

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TWENTY-FIFTH ANNUAL REPORT

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FRUIT GROWERS' ASSOCIATION OF ONTARIO.

To the Honorable John Dryden, Minister of Agriculture:

SIR,—In presenting to you this, our Twenty-Fifth Annual Report, I have the honor of calling your attention to the practical information contained in the discussions, which must tend to encourage the industry of fruit growing in central Ontario, where many of our best apples, such as Duchess, Blenheim, Wealthy, Pewaukee and others, seem to attain their greatest perfection; also to the amendments made in the Pear Catalogue, which is intended as a guide for the use of judges at exhibitions.

Some references of general interest are also made to Canada's fruit exhibits at the World's Fair, Chicago, at which both the President and Secretary of this Association were honored with appointments, the one by the Province of Ontario, and the other by the Dominion of Canada.

I might further ask you to observe that, for the second time, we have enlarged the *Canadian Horticulturist*, until now it is a magazine of forty pages each monthly issue, and with a gradually increasing circulation.

I have the honor to be,

Sir,

Your obedient servant,

L. WOOLVERTON,
Secretary.

Grimsby, December, 1893.

OFFICERS FOR 1894.

PRESIDENT:

T. H. Race ..... Mitchell.

VICE-PRESIDENT:

Murray Pettit ..... Winona.

SECRETARY-TREASURER AND EDITOR:

Linus Woolverton, M.A. ..... Grimsby.

DIRECTORS:

Division No. 1 ..... W. S. Turner, Cornwall.
Division No. 2 ..... R. B. Whyte, Ottawa.
Division No. 3 ..... D. 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 ..... J. R. Howell, Brantford.
Division No. 10 ..... J. A. Morton, Wingham.
Division No. 11 ..... J. D. Stewart, Russeldale.
Division No. 12 ..... Alexander McNeill, Windsor.
Division No. 13 ..... G. C. Caston, Craighurst.

AUDITORS:

A. H. Pettit ..... Grimsby.
W. W. Hillborn ..... Leamington.

COMMITTEES:

New Fruits. Messrs. A. McD. Allan, D. W. Beadle and John Craig.
Revision of Assessment. Messrs. D. W. Beadle, W. E. Wellington and A. McD. Allan.
Experimental Work. Messrs. Alex. McNeill, John Craig and W. W. Hillborn.
Finance. Messrs. A. M. Smith, W. M. Orr and M. Pettit
Executive. The President, Vice-President and Secretary.

COMMITTEES REPORTING AT THE MEETING:

Fruit Exhibit. Prof. Craig, Messrs. E. B. Edwards and Geo. Cline.

Nomination. By the Chair—Messrs. Alex. McNeill and T. M. Grover. By the Association—Messrs. W. S. Turner, M. Pettit and D. W. Beadle.

Legislation. Messrs. A. H. Pettit, Alex. McNeill, D. W. Beadle, E. B. Edwards and W. Boulter.

N.B.—The President, Vice-President and Secretary are *ex officio* members of all committees.

REPRESENTATIVES:

Western Fair. Messrs. T. H. Race and W. W. Hillborn.
Central Fair. Messrs. R. B. Whyte and John Craig.
Industrial Fair. Messrs. W. E. Wellington and A. H. Pettit.
Central Farmers' Institute. Mr. Murray Pettit.

DELEGATES:

Experimental Union. Mr. W. M. Orr.
Western New York Horticultural Society. Mr. John Craig.
Michigan Horticultural Society. Mr. Alex McNeill.

The next Winter Meeting will be held in the Town of Orillia.

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 Director's 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 horticulturist, 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 Agricuctural 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, 1893.

The Annual Meeting of the Fruit Growers' Association of Ontario, opened at one o'clock on Tuesday, December 5th, in the Town Hall, Peterborough, the President, Mr. A. H. Pettit, in the chair.

THE PRESIDENT'S ADDRESS.

By A. H. Pettit, Grimsby.

Mr. Chairman,—Again I am called as your President to present the annual address on this the thirty-fourth annual session of this Association. This address should, perhaps, contain a recapitulation of the work of the past season, and, like a mile post on the highway, mark the progress we have made, and point out, if possible, the most practical route on which to continue our journey.

When we consider that this Association first entered on the work in which we are now engaged, with little practical experience to guide it, its champions but apprentices in the field with no works of science on that subject written by skilled horticulturists, in a land of almost unknown possibilities, having no financial resources, save self-sacrifice on their part to stimulate and foster this great industry, truly, sir, we may congratulate ourselves on the success that has attended its efforts.

Where do we find ourselves to-day? laboring in a field cleared of all those obstacles with the best practice of skilled horticulturists in every part of our land set before us, with orchards and vineyards like the mile posts of old to guide the student and encourage the laborer in his work; that great cable that stretches from shore to shore, across the mighty deep, flashing to us the requirements of their people, and very often, as it were, closing a deal that means thousands to the resources of our people; with the mighty power of steam and electricity, like the veins in the human body, coursing throughout the length and breadth of our land and into every nook and corner thereof, in order to draw all countries in closer commercial harmony and accord. Surely under such circumstances our work is plain and our responsibility great, if we fail to foster, guide and direct that ever-increasing stream of fruit products into the most profitable channel. Are there not fields to-day, like our boundless prairie, rich and fertile, that yield us no return, for the lack of cultivation? These should be reached, if not with fresh fruit, then in its manufactured state, and we might direct our attention in that line with advantage to the producer of fruit.

I might point out one of our products that has made most marvellous strides in that direction, through the instrumentality of Associations like this, coupled with the uniform good quality of the article itself. I refer to the cheese industry. Is the fruit industry less important to the welfare of our country, and should it not claim at our hands a larger share of attention in the direction of finding wider markets? The butter

industry to-day is being fostered by the Government, and will, no doubt, in time rival the cheese export, and why cannot we, the fruit producers of our country, claim some share in that policy, carried on by the Government of our country, towards opening up new markets and making known their good quality? While the Government is framing its policy in the interests of the people, and thus fully recognize the importance of the agricultural and horticultural interests in our land, might we not ask them to place, not one big specimen, as they are doing in cheese, but one reasonably large consignment in some of those markets that as yet have not been cultivated in order that the size, color and quality of fruit might win for us a wider market?

I referred, last year, to my work in connection with the Ontario Fruit Exhibit for the World's Fair, giving a short description of the initiatory work then completed; I desire now to briefly refer to the continuation of that work and the final result as described by the judges at the close of their labors.

On the 25th day of March last, I issued a circular to the Fruit Growers of Ontario through the channel of our Farmers' Institutes and Fruit Growers' Associations, urging them to take some united action in their separate localities, whereby their fruits might be fairly represented at the World's Fair, pointing out what seemed to me to be the most simple and at the same time most economical and effective plan I could suggest. In answer to this appeal I received a large number of very encouraging replies. I then had some two hundred cases made of convenient size for shipping fresh fruits in their best condition; these were forwarded to those points where action was being taken; they were filled with packing material and also a circular of instruction, how to pack and ship, together with forms of invoice, address cards, etc. These were returned again from time to time and served a very good purpose. I also pointed out in this circular that the quantity need not be so large, but the quality and regularity of shipments most important. I can now, as the representative of the fruit interests of Ontario on that occasion, tender my most hearty thanks to those who so nobly and patriotically, with the choicest fruits of their locality, assisted me to carry the horticultural banner of our province to such a successful issue, and that at perhaps the greatest exhibition of fruit the world has ever seen brought together.

I think, sir, it will be readily conceded that Ontario had the largest exhibit of fruit, scored the largest number of points, rated the highest as to quality, of any exhibit on the grounds; and in order to make room for our display several States generously contributed a portion of their space. Washington Territory allowed us some forty feet along the centre passage; South Dakota, twelve feet, and the North-west Territories some thirty feet, all of which was filled to repletion by the generous contributions of the fruit growers of Ontario.

I would like very much to give in detail a description of the various exhibits made, covering the whole of this North American continent, and showing wherein our country possesses superior advantages to many; this I shall try to do at a later period, as time will not permit me to do so now.

I wish now to call your attention to the wide range of varieties embraced not only in our fruits in solution, but in fresh fruits collected from nearly every part of our province, and to the prompt realization of the object we sought to attain, calling

forth very frequent and satisfactory remarks, such as this: "I am astonished at the wide range of fruits your country is capable of producing. It is a revelation to me." Was not this the great object we sought to attain? I am satisfied that thousands of visitors to that great exposition have received a wider knowledge of the resources, capabilities, and climatic influences of our country, that no other method could have so readily accomplished.

Another point I wish to make clear on this occasion. Some of the papers in this province gave a very confused statement of the awards secured by Ontario in the fruit department. I wish now to give a correct one, copied from the official report of the board of judges.

Provincial Awards were made to the Province of Ontario on:

1 Fruits in solution.
2 Apples of 1892.
3 Apples of 1893.
4 Pears and Quinces.
5 Stone fruits.
6 Cherries in variety.
7 Currants.
8 Display of native and foreign Gooseberries.
9 Continuous display of Blackberries.
10 Grapes.

In all ten Provincial Awards. Now these fruits, although entered for a Provincial Award, were also entered in the producer's name, in order that each individual might receive, and each locality as well, all the credit attaching to his or their contributions towards the provincial display, and for another reason which I wish to explain, in order that later on in the season I might claim for those districts that contributed so much towards the desired result, some recognition for their labors, and on that score we received the following District Awards:

Niagara District.....Grapes.
Burlington " .....Grapes.
Wentworth " .....Grapes.
Wentworth " .....Apples and Peaches.
Wentworth " .....Pears.
Burlington " .....Apples.
Burlington " .....Pears.
Niagara " .....Apples.
Niagara District.....Pears and Peaches.
Essex " .....Apples.
Belleville and Eastern District.....Apples.
Grey " .....Apples.
Huron " .....Apples.
Simcoe " .....Apples and Pears.

In all fourteen District Awards. Then on that score the judges felt there were also individuals who had contributed largely towards the display, and some recognition was due them in like manner, with the result that eleven Individual Awards were made as follows:

James Sheppard & Son.....Queenston.....Peaches.
W. R. Read.....Port Dalhousie ..... "
C. Atkins.....Stony Creek ..... "
W. Kottmeier.....St. Catharines..... "
Edward Tyhurst.....Leamington ..... "
Geo. W. Cline.....Winona .....Plums.
William Stewart.....Goderich ..... "
W. Warnock.....Goderich ..... "
Richard Trotter.....Owen Sound..... "
W. M. Orr.....Stony Creek ..... "
Murray Pettit.....Winona.....Grapes.

This record for Ontario will speak for itself not in this country alone, but in a far wider field. It was written by men who came from some of the finest fruit-growing States in the Union, and men possessing a wide knowledge of the science of Pomology; their labors were arduous, indeed, and Ontario added no small portion to their labors; and in the discharge of that duty I believe they were guided by but one true principle, to deal out fair and even handed justice to all, "let the chips fall where they may."

I cannot at this time, at the close of an eventful struggle for Ontario's supremacy in the horticultural field, but express my most unbounded satisfaction, with the hearty and unanimous manner in which my every effort in that direction has been supported, first to the Ontario Commissioner, Mr. Nicholas Awrey, for his wise and willing counsel at all times freely given to the Fruit Growers of Ontario, who so promptly and generously contributed to the desired object; to Chief J. M. Samuels, of the Horticultural Department, for his kindness and courtesy at all times; to the express companies and customs officials who used every effort to have our goods promptly delivered; to Mr. W. M. Orr, whose interesting efforts and happy manner rendered good service in the cause, and to Mr. James Brodie, who during the past two seasons has rendered valuable assistance in the work.

A WELCOME.

Mr. E. B. EDWARDS, of Peterborough, welcomed the Association. He said: We have done what we could to get the farmers here, and I expect to see them gathering in. I have much pleasure in introducing Mr. Anderson, the Warden of our County, who has come in to show the interest that he takes in the Association, and I will ask him to express a word of welcome to the Association.

MR. W. ANDERSON welcomed the Association, and hoped that their visit would be a benefit to the locality. For himself, he had come to listen and to learn, and he expected personally to profit by the discussions.

MR. D. W. DUMBLE, Police Magistrate, said: There is no part of the country that needs the presence of this Association more than the County of Peterborough. My enthusiastic friend, Mr. Edwards, says there are any amount of latent capabilities here. They have not been developed to the extent that I think is possible, and I incline to think that the reason has been that the varieties grown here have not been suited, and those that were suitable have been too widely scattered to make a marketable commodity. Our people, in order to make fruit growing profitable, want just such instructions as you are going to give; and I am sure your meeting will be successful in every way. We shall be glad to get all the information we can.

The PRESIDENT: We all appreciate the words of welcome extended to this Association. Last year, when we decided to come to Peterborough to hold this meeting, we felt that we were coming to one of the finest sections in the province of Ontario. We knew it was a wonderful cheese-producing, and to a certain extent fruit-producing section; and we expect by coming here to gain from you, gentlemen, and the farmers and fruit-growers of this section of the country, a great deal of information. We also expect, having present, as you will see around this room, representative fruit men from almost every part of our province, to be able possibly to give a little information. Of course if we are not receiving information and gaining every day we must be going back; therefore we expect to get information, and hope to be able to impart it. I do not know very much of the extent of the fruit interest in this section, but I have no doubt, from the appearance of the country, that there is room for a great advancement in that respect. In some branches of agriculture—in wheat growing, for instance—we seem to be producing almost more than the requirements of the people. Possibly we might increase our fruit production and decrease our wheat production with advantage to all concerned. We would be glad to see you all members of our Association; but whether members or not, we want you to take an active part in the discussion, and assist in advancing that great interest we are endeavoring to promote in every possible way. I may add that those becoming members receive the *Horticulturist* through the year, and also get the annual report as well as share in the distribution of plants and shrubs, and different kinds of new things coming in. Mr. James, Deputy Minister of Agriculture, is present, and he is preparing some statistics of fruits produced in our country. I will now call upon him to address you.

FRUIT STATISTICS.

Mr. JAMES, Deputy Minister of Agriculture, said: As most of you, I presume, are aware, the Department of Agriculture for the Province gathers every year statistics in connection with the production of the staple field crops, statistics in regard to our live stock and other information dealing with agriculture. It is not a matter of very great difficulty to obtain, for instance, the acreage of fall wheat in Ontario. We can get that from the farmers, and we can also get it directly from the assessors' returns. Having that to start with, all that we have to do is to send out our thousands of circulars to the farmers all over the province during the summer and at the end of the season, in order to obtain the yields per acre. In that way we are able to find out pretty closely how many bushels of wheat and other grains are produced in this Province. But that is only a part of the farm work of this country. Then we have been accustomed for the last ten years to gather statistics in regard to the cheese industry of Ontario. We have found, for instance, that we have been making enormous strides in that direction, until now our annual product is coming pretty well up to 100,000,000 pounds. There is another field that, as I said, has not been touched upon, viz., that of the orchard, garden and vineyard; but there are so many difficulties right at the outset that we are almost afraid to undertake it. Wheat is wheat; and no matter what the varieties may be, all go in together, are mixed in our elevators together, and are sold together. When we come to apples there are so many varieties, and the difference in bearing is so great, that the difficulties seem to be insurmountable. However, for two years, acting partly in concert with this Association, we have been endeavoring to gather statistics; and I think now we have the foundation laid to gather information that will be as reliable in regard to our fruits as the information that we have in regard to our grains. Some may say, perhaps, that the fruit growing of Ontario is not nearly as important as grain growing, or as the production of dairy articles A man has a little orchard; he has a few trees, a few vines; and probably very few out of the entire number of farmers send their produce to market. Now, let us see as to whether the fruit-growing industry of Ontario is of such little consequence as some are apt to believe. From our two years' work we have come to what we consider pretty reliable information in regard to the number of the various fruit trees—*i. e.* fruit of the larger sorts—that we have grown here in Ontario. In round figures they are about as follows—of course this does not take in the small orchards of towns and villages; our work so far deals only with farm lands and the large fruit growers, so that the number may have to be slightly increased although not to any great extent. Thus, for instance, in apples we find there are about 7,000,000 bearing apple-trees in Ontario; about 2,000,000 bearing grape vines; 700,000 plums; 500,000 each of cherries, pears and peaches. Now, if you will take the average crop for each of these, and put a moderate rate as the value of the product, you will find that the figures thus obtained will amount up to a considerable sum. Of course only a portion of the fruit goes to market; nevertheless it is the produce of the farms, orchards and gardens of this country, and though it may not find its way to market, it finds its way to the tables of this country, and the farmer himself perhaps consumes the larger portion of it. I have put the figures in that rounded-off form in order that we may carry them away. I presume there is no great necessity to go into minute details. We find that whereas some of the different fruits are confined to different localities, some of these, such as apple-growing, is found in all parts of the Province. The second point I want to refer to this, that, taking our figures of this year and comparing them with last, we find a slight increase in regard to all those fruits over last year, showing that the number of pear trees, peaches, plums, cherries and grape-vines—is slightly increasing year after year; and just as in the case of the cheese production of Ontario, we have not yet come to the limit of our production. I suppose the limit will be set by the demands of our home and foreign markets. The only two points, then, that I want to make here are these: First, that fruit growing has already assumed very large proportions here in Ontario—much larger proportions than we are at first disposed to think; and second, that there is a steady increase; there is also a gradual and quite a perceptible improvement in the nature of our fruit growing and in the quality of the fruit which is being produced. (Applause.)

Mr. D. W. DUMBLE (Peterborough): Just for information, and that we may have a more definite conception of that, I would ask: How do you get at the returns?

Mr. JAMES: I suppose that would necessitate in the first place explaining how the government obtains its figures in regard to many of those crops.

Mr. DUMBLE: This figure is so astounding to us that actually I am incredulous; and I want to know your basis.

Mr. JAMES: In the first place, we must find how many producing trees there are in Ontario. Take apples, for instance. There are two ways of getting at a thing of that kind. One is to go to every man over the entire Province and ask him how many apple trees he has on his farm. That is done in the taking of a census—done every ten years in the Province of Ontario. In getting these returns from year to year, however, we have assessors' returns as to the acreage of our orchard and garden. Unfortunately these returns are not definite enough for us to base our reports upon. Every spring the Department of Agriculture sends out—one time we sent out 110,000 or 115,000 cards—to the the farmers in the Province. Sometimes we get these names from voters' lists, and we keep checking them over so that we know that the lists are simply and solely farmers. Last year we got the names from the public school teachers. We got the address of every public school teacher in the Province. To that public school teacher we sent asking for the name of the farmers in his school section. These names came back. Then we knew we had at first hand the names of the farmers in each school section of the Province. Putting these together, they ran up into thousands and thousands. Then to these farmers we sent out blank forms asking them as to the number of acres in their farm, the number of acres in pasture, the number of acres in wheat, and so on; the amount of stock; value of their farm; value of their implements; and also in the last two years we have asked them the number of plum trees, pear trees, peach trees, grape vines, and so on and from these we have taken our returns. We have not the time or the staff to do that every year; but when we get the total acreage of a township, and returns from as large a proportion of that as possible, from that we have to make an estimate. We may be a little too high in some cases, a little too low in others; but these will offset one another, taking the Province as a whole, and from that we get our returns. At the end of the season we send a card asking for a return per tree of the various fruits; then it is a matter of calculation—of suming up. For instance, last year the hay crop was valued at $36,000,000. That is a crop that every one knows is large; but the point that I made was that fruit is so neglected by the ordinary farmer that he does not consider it of very much value, but when you come to put it together it amounts to a large sum.

Mr. EDWARDS: Then you consider these figures you have given us are fairly reliable?

Mr. JAMES: I think I have under-estimated rather than over-estimated.

The PRESIDENT: Gentlemen, this is an important subject, and we have a gentleman here who has been operating in that direction for two or three years. We will be glad to have any question. I may say that in addition to the regular programme of subjects we have questions. Any question that is called for we will be glad to bring it up; also if any gentleman wishes to put any question, the Secretary is always ready to receive it and have it brought forward at any time. We might take up the third question on the paper, and I would ask Mr. Smith to open the discussion on it.

THE MOST PROFITABLE APPLE.

Q. What one variety of summer, fall and winter apples has paid most profit in the commercial orchards of Ontario, during the past ten years?

Mr. A. M. SMITH (St. Catharines): I can only speak from the standard of the Niagara District, and in beginning I would say that no variety of apple has been very profitable there for the last three years. Our apple crop has been almost a failure.

Mr. JAMES: You say it has been "almost a failure." Now, we get that reply in our returns to questions—"apple crop a failure;" "almost a failure." What do the farmers mean when they say it is almost a failure? What do you mean when you say it is almost a failure? We find when we get their figures afterwards that there was quite a considerable crop.

Mr. SMITH: I mean that many of our farmers have to buy their own apples, and very few of them have any to sell. Some orchards are totally unproductive. A few have perhaps some varieties that are bearing well, and occasionally one in some sheltered or favored locality may be fairly productive. The one variety of summer apple that has been most profitable and productive has been probably the Duchess of Oldenburg. For fall, the Colvert, I think, perhaps, though it is grown to a very limited extent. The Blenheim Pippin has done fairly well also.

Mr. EDWARDS: Do you call that a fall variety?

Mr. SMITH: In our section.

Mr. CASTON (Craighurst): Isn't that a winter variety? I saw it in Oxford County last January and it was in splendid shape, and it would keep a couple of months longer.

Mr. SMITH: I suppose you would call the Snow apple a winter apple?

Mr. EDWARDS: It keeps till January; but the Blenheim is decidedly more of a winter apple than the Snow apple is with us.

Mr. SMITH: I don't think it will keep any longer.

Mr. EDWARDS: We keep them here till May.

The SECRETARY: Under what conditions?

Mr. EDWARDS: Ordinary conditions—in cellar. I count on having a dish of Blenheims every Sunday morning during winter up till May.

Mr. SMITH: I count on having grapes up till May, too.

Mr. EDWARDS: They are kept without any special care; their temperature kept fairly low, but without any special care to regulate it by means of a thermometer or anything of that sort—an ordinary cellar.

The SECRETARY: 35° to 40°?

Mr. EDWARDS: Yes.

Mr. SMITH: Probably the most productive and profitable winter apple in our section is the Baldwin, though that has failed for one or two years. This year the Rhode Island Greening has given better results than any other winter apple I know of.

The PRESIDENT: Now, Mr. Caston, we will call upon you next, for the north.

Mr. CASTON (Simcoe County): For an early apple I would agree with what Mr. Smith said about the Duchess of Oldenburg. Then for fall, either the Alexander or the St. Lawrence—I would say the latter. It is sometimes liable to scab, but is a splendid apple, and one that bears well. Then as to winter apples, I would say the Snow. I think you will find on our list prepared by a committee of this Association that it is a winter apple; and I think among the early winter apples the Snow has been the most saleable in our locality—in fact it has been one of the most valuable apples we have had. Some years it is pretty badly threatened with the scab, but it is always in good demand, and I don't know that there is any winter apple that pays better in our section than the Snow in the past ten years. Then the later winter apple would be a choice between the Spy and the Russet. The Spy is a long time coming into bearing in our section, but it brings the most money, and I think it would be difficult to choose between the Spy and the Russet which is most profitable. Of course in future the Pewaukee may prove to be most profitable.

Mr. BOULTER (Picton): Has the Snow ever been a success in exporting to Great Britain?

Mr. CASTON: There have not been a great many sent to the Old Country from our section; we ship more of the later varieties; but for the markets nearer us, round the north part of the Province, where they do not grow many apples, there is nothing sells better than the Snow. Everybody wants a few barrels of them any way.

Mr. EDWARDS (Peterborough): I think the Northern Spy is the apple which is most commonly grown here as a winter apple, and is found to be very successful in this locality, growing a good size and good color and quality. The Blenheim Orange I have found in my own experience a very good winter apple, and it would keep fairly well into the late part of the winter.

Mr. CASTON: Is it not a shy bearer?

Mr. EDWARDS: No; we find it a very fair bearer—fairly regular and fairly good crops. For fall apple the St. Lawrence goes very well in this neighborhood; and for the earlier season the Duchess, I think, is usually the best, and in this locality it grows very well and seems to have a very good flavor and is very finely colored. As fair as profit is concerned, I should put the Blenheim Orange, from my experience, above all as the most valuable.

The PRESIDENT: Now, you notice in the circulars just distributed, that the list is revised for the various districts. We would like to get your views as to which are the most valuable sorts for the various districts.

Mr. GILES (Peterborough): I find that the Pewaukee is a very good apple, but it has one very bad fault—it falls off the tree very much. I don't know whether the trouble is with my land, or what it is. If it would not fall off, it would take the place of the Northern Spy. The Spy holds first place, but I think the Pewaukee is just as good as it, barring that fault.

The PRESIDENT: Does it fall before it is ripe?

Mr. GILES: Yes.

Mr. BOULTER (Picton): I have read this list over and have been surprised at some of the varieties that have been classed as first-class and desirable to be cultivated. The mistake of most apple-growers to-day is in planting too many varieties. You must select according to climatic conditions. My friend young Mr. Dempsey told me yesterday that he had realized more money from his Snows this year, per tree, than any other apple that he produced. I have been favorably impressed this year with the Snow as a commercial apple; but hitherto they were so scabby that I had to throw away quite a few that I had bought for my factory. As to value of winter apple, my buyer this fall had more enquiries for Northern Spy and Baldwin than any other varieties grown in Prince Edward County; and they would bring more money per barrel. He had orders for Spies to go to Prince Edward Island. I don't know why the Spy has not been classed as one of our first-class shipping varieties. I have seen it printed that no gentleman would place the Northern Spy on his table as one of the first apples grown in Ontario. I think to the contrary. Properly cultivated where the sun can get at it, we can grow as fine Northern Spys as can be grown anywhere; and American friends who have been visiting me say they have never tasted any apple grown anywhere in the States that can come up to the flavor of the Northern Spy. The Duchess is a first-class apple. The Colvert I think very little of; it is a tasteless apple, though nice to handle. If we use Colverts we have to buy Jenettings to flavor them with.

The SECRETARY: What would you leave off from that list for No. 4 if you wished the Spy included, and we will have it changed?

Mr. BOULTER: The Ben. Davis is really a good apple; I believe it is as good an apple as we can grow, knowing what I do of the English market.

Mr. CASTON: Its principal market value is not its quality, but the good shape in which it gets there?

Mr. BOULTER: It is a beautiful, bright apple; and has good keeping qualities. Along in March the Ben Davis is very good. This is the first year that I have not had a good crop of them. The Pewaukee has not been widely cultivated in Prince Edward County yet. To-day I have no more healthy apple trees than the Spies and Baldwins and Golden Russets.

The PRESIDENT: What varieties do you prefer for canning?

Mr. BOULTER: For summer apples we want the Duchess of Oldenburg first. If we could not get any other we would take it the second time and the third time. We like the St. Lawrence, andwe like the Fall Jenetting, although it is a very rough, hard apple to peel. These are three good varieties that cannot possibly be beaten in the way of canning apples. Let me tell you, whatever taste an apple has, when it is peeled and put into the can, it will come out and taste just the same six months or six years after. Consequently if you put an apple that is tasteless, your canned fruit will have no taste. There is too much water in the Colvert and in the Snow. I have done my best to make a success of the Snow as a canning apple, and I cannot do it; it is too soft and watery. There is no apple that cans better than the Northern Spy.

Mr. J. McK. SMITH (Peterborough): What about the Ben Davis?

Mr. BOULTER: The Ben Davis is a good apple, but it takes about a year to get it ready.

Mr. MCNEIL (Windsor): One gentleman at the Windsor meeting attempted to say that the Ben Davis was the most profitable apple that he grew, and the Convention almost laughed him down. I sent him some enquiries in connection with this meeting, and he said, "By all means give the Ben Davis a good word; it is the best apple I have yet." Last January he sent me some Ben Davis apples. I tell you they are just as nice an apple as I want to eat—and I am very particular about apples, too. The Ben Davis is like a piece of cork, as you might say, in the fall and winter, but coming along in January I give them to the children, and they take them willingly when the better class of apples would be refused. Either your Ben Davis isn't ours, or else your taste is perverted. As for profit, I believe there is no apple grown that will give you as much. For a winter apple why not plant it more largely? It appears to me there is a feeling in the Association that we should not not plant it; and the feeling comes not from those who really have it but from those who are struggling after higher things in fruit. Now, let us have the higher things, but let us have a little money element in it. (Hear, hear.) I believe for the money element the Ben Davis is ahead of them all. I would not grow it exclusively; but let us give it a good show, and put it on its proper plane, and show when it should be used and when it should not be used—give it its proper place in January, February and March.

Mr. STINSON (Peterborough): I planted out 17 Ben Davis sixteen years ago. They started to bear six years after planting and have been bearing ever since. This last year I took 86 bushel off those trees, and took 80 bushels of good salable apples out of the lot. From my experience I would sooner grow the Ben Davis at 50 cents a bushel than any other apple at a dollar.

Mr. TURNER (Cornwall): I have eaten Ben Davis in July—my own growing.

Mr. CASTON: I saw a specimen that was kept for two years, and they were not rotten then—they were only shrivelled.

Mr. BOULTER: I would like to ask Mr. Dempsey if the Ben Davis is successful with him.

Mr. DEMPSEY (Trenton): The Ben Davis has proved to be one of the most profitable apples we have planted, and the Spys one of the most unprofitable. I would not advise planting the Spy on any consideration, unless for a man of great wealth who could wait for it. I would rather see him plant some Duchess or Wealthy or Ontario—such apples as come into bearing and he can get his money out of them. Spys stand for a great many years, and you do not get your money out of them. I have now some 400 trees some sixteen years planted, and the total crop off these, two years ago, was some twenty barrels.

Mr. BOULTER: What cause do you give for them not panning out?

Mr. DEMPSEY: When the Spy in our section comes into bearing it bears for about four or five years, then it goes to pieces.

Mr. CASTON: That is the way they did in our section.

The PRESIDENT: I think I shall ask Mr. Beall a question that possibly he will be very glad to answer. I think he took a very great deal of pains in the preparation of this report. Now, we find it necessary, as years roll on, to make changes. How shall we accomplish that in the best way? I find the western counties strongly urge that Ben Davis be placed on the list. It is not on the list now.

Mr. BEALL: When that list was adopted by the committee they had no idea in the world that it was going to last for ever. We expect it to be changed from year to year; but a great deal of care should be taken in making a change. I think a change should not be made merely because one particular variety is very much liked in one particular orchard. I think the matter should be well considered. I think the Association in the first place decided on something which was as near perfect as can be within the limited number. We are only to allow five varieties of winter apples. Mr. Boulter could not understand why the Northern Spy was not placed on there. Well, a great many others no doubt think the same. The reason was simply this: Being limited to number, and also to certain characteristics—for instance, they were to be limited to varieties that could be successfully and profitably grown. The Ontario is mentioned here, instead of the Northern Spy. They are so nearly alike that it would be absurd to put in the two. The Ontario was believed by that committee, and by a great number of other persons, to be the more profitable of the two. This list was to be a guide for persons in planting orchards. With regard to the President's question, I have a scheme to lay before the Association in connection with the paper I am to read here, that will embody this and a great many other matters connected with apples and fruits generally. I suggest that this matter be dropped until I read my paper. It simply means this: I propose having a committee appointed that shall be permanent, and that shall, subject to certain limitations, take all these matters into consideration, condensing the reports, and putting the lists in such a shape that they can be easily understood—epitomising, as it were, all the transactions in connection with new fruits and these matters also.

The SECRETARY: One point has been brought before us very plainly by this discussion: that certain apples are suited to some districts, and succeed wonderfully well there, but fail when planted in other districts. This list will be complete when we know what suits each separate part of the country. Formerly our Association gave just one list for all Ontario. That was found to be very faulty, because the apples that were recommended for general cultivation only suited certain parts; but now we have divided it into thirteen parts, and we are trying to find the apples that do the best in those thirteen sections, and we may subdivide it more by-and-by. The Cranberry Pippin, which Mr. Boulter spoke of as being not very desirable in Prince Edward County, is a great success with me in the County of Lincoln. This year, when I ought to have had two or three thousand barrels of apples, I only had two or three hundred. That is what I call a failure in the apple orchard. However, the Cranberry Pippin constituted the chief part of the crop that I had this year. Most other varieties failed, but the Cranberry Pippin was fairly successful, and the apples were clean and beautiful—there were very few culls, and they were the most desirable apple I had for market. Now, in all the Niagara District the Cranberry Pippin is a very fine apple, beautiful in appearance and very fine as far as quality is concerned. The Spy also succeeds in the Niagara District. It is too tender for some northern sections; but where it succeeds and colors properly we find the quality is beyond criticism. We found in Chicago that there was no Canadian apple that was so much in demand in the western States and cities as the Canadian Northern Spy.

Mr. BOULTER: Was there any apple to compare with it?

The SECRETARY: I don't think so; and if you go through the Chicago markets and ask, "What apple are you selling most?" they will say, "The Spy;" and if you ask the commission men, "What is most in demand, they will say, "Your Canadian Spy." Commercial orchardists in Canada have several questions before them. One is: "What can I grow best in my district?" The next is: "What market am I shipping to?—is it the American market or the English market?"—and so on. You have to consider what the people want in the market you are shipping to. (Hear, hear.) And these questions will influence us all as to the varieties we plant; and if we have planted them, and they are not the kinds we want, we must top-graft them. The Ben Davis as grown in the west, in Oregon and in British Columbia, is most wonderful—twice the size we grow it in Ontario, four times the size they grow it in Prince Edward Island. It just emphasizes the truth of my statements.

Mr. BEALL: The speaker just now stated that the Northern Spy would not perhaps do in the northern or colder parts. I would like to know where that is. I know where there is a long row in an orchard fully one hundred miles north of Lindsay, and they are bearing well, as they have borne for several years.

The SECRETARY: Do you know how long it is planted?

Mr. BEALL: I do not. I have a memo. at home of the locality and name of owner, etc.

Mr. CASTON: I can corroborate a good deal of what Mr. Dempsey says. In the lower end of Simcoe County the Northern Spy thrives very well. In North Simcoe it does just as Mr. Dempsey says,—after it bears a few years it begins to fall apart. That has been the experience of growers in our section. Now, travel about thirty miles south and you will find old trees there growing all right, and bearing every year; and I don't know that you will get any better specimens in Ontario than you will in South Simcoe.

Mr. BOULTER: Why do you condemn it and throw it out of your list?

Mr. CASTON: I am not condemning it; but that is the reason I did not wish it put on our list—that after it bears a few years it gets rotten in the heart and begins to fall back. But I have proved by experience that it can be grown where any apple can be grown, by top-grafting. That is a very important matter, and one that deserves attention. You can grow any apple that can be grown in any other part of Ontario by grafting it above the crotch, on healthy limbs. It brings them into bearing earlier. As to quality, of course tastes differ. I would say the King is by all odds a better desert apple than the Spy, but it is not nearly such a good bearer.

Mr. BOULTER: I have about four hundred Spy trees and have not lost one tree. They have been out 12 or 14 years.

Mr. CASTON: They have not come to the failing part of the business yet. (Laughter.)

The PRESIDENT: In reference to Mr. McNeill's remark about the Ben Davis being so good, I would say that the judges at the World's Fair would score the Ben Davis from Nebraska in quality as high as 10; but when they would come down to Canada they would only score it about 8. So with the Kieffer pear. Out in those southern and western states they seem to have better quality in their eyes than we have in this country, farther east and north.

Mr. BOULTER: I would suggest that we defer this discussion till Mr. Beall's paper is read.

The PRESIDENT: Is that your pleasure? Carried.

FRUIT GROWING IN ONTARIO AND HOW TO MAKE IT PAY.

Mr. A. M. SMITH, of St. Catharines, read the following paper: Fruit growing in Canada in the past has been a series of experiments, many of which, on account of want of knowledge of what varieties were adapted to the soil and climate of different localities, have been disastrous failures. But enough have been successful to demonstrate the fact that most if not all the fruits grown in the temperate zones can be grown here in greater perfection, taking, keeping and quality into consideration, than in any other part of America, if not in the world. Thirty years ago the larger portion of the fruit consumed in this country was brought from the United States. The Mother Country then knew nothing of Canadian apples. To-day we are not only independent of these States as far as these fruits are concerned, but our apples stand at the head of theirs in the markets of the world, and we have shown in competition at their own great World's Fair that Canada stands second to none in the production and excellence of this most useful commodity. This being the fact—is it not well to ask themselves the question—What is to be the future of this great industry—Are we to rest contented with present achievements, or are we to press on and develop the vast resources at our command? There is no other country of the same extent that has as much land as we have bordering on lakes and large bodies of fresh water, which is particularly adapted to growing the apple in perfection, and although we have not as large areas adapted to growing pears, peaches and grapes and some of the more tender fruits, we have enough to supply our own markets and some to spare for our neighbors; and plums, cherries and most of the small fruits can be grown wherever the apple succeeds. And when we consider the increased demand for fruit, the increased consumption, the markets already opened up in the old country and the neighboring States, and the markets opening up in the newer portions of our own country, where fruits can not be grown with success, and think of the increasing facilities for preserving fruits, such as canning, evaporating, etc, so that they can be transported to any part of the world, we can easily see that this industry is but in its infancy. And if we but carefully improve the advantages we possess and systematically develop our resources it will soon become a vast source of income and prosperity to the country. The question then of how best to accomplish this object, or in other words how to make fruit growing pay best in the future, is one that deeply interests us as fruit growers. While I do not consider myself competent to answer this question in full, I may be able to offer a few suggestions that will be of value to planters. As I remarked in the beginning, many of us have had serious failures from planting varieties not adapted to our soil or climate. This need not be repeated if we, as members of the Fruit Growers' Association, avail ourselves of the information obtainable from it, watch carefully the experience of our neighbors, and remember this rule. "Plant only fruits that are adapted to your soil and locality and the markets you want to supply." Don't plant too many varieties. Five or six of the leading varieties of apples or any other fruit are all that are profitable in any one locality, and when these are planted they have got to be carefully cultivated and fed in order to make them profitable. No starving the orchards or robbing them with other crops must be allowed. In order that fruit growing may pay in the future it must be engaged in more as a business than in the past. The chief attention given to other products of the farm and a little, or entire neglect of the fruit will not make it pay. The fruit grower has to be educated then to attend to his business. The adaptation of different fruits to different soils and localities has to be considered. While I do not believe as, the saying is, in "putting all your eggs in one basket," I would say to the planter "if your soil and location is particularly adapted to the growing of pears or plums or any particular variety of fruit make that fruit a specialty particularly if there is a market and demand for it." The cause of many failures in the past, and I fear will be in the future in fruit growing, is so many people embark in the business without any knowledge of the principles and requirements necessary for its success. They imagine if they get into a peach section, for instance, they can grow peaches on any soil there, and the same with other fruits, not knowing that in our best peach belts there is comparatively but little soil and a few choice localities where that fruit succeed well. Consequently not only a knowledge of how to grow fruits but a knowledge of where to grow them

necessary. The day is coming when nothing but first-class fruit put up in first-class shape will pay and in order to secure this result we must give careful attention not only to cultivation but to the destruction of insect pests and the prevention of the various fungous diseases which our fruits are subject to. In the matter of grading and putting up fruits for market also, there has to be a radical change with some of us. I think we might take a few lessons from our California competitors in this matter. If it pays them to carefully wrap their fruits in tissue paper and put them in neat boxes why would it not pay us? I believe the time is not far off when our choice Spies and other apples will be carefully wrapped and sent south and to California in exchange for their oranges, lemons and other citrus fruits. But I need not enlarge upon this subject—members of the Fruit Growers' Association can readily understand it. While I would advocate only the planting of tried and known varieties for profit, I would by no means discourage the trial and testing of new fruits with the hope of making valuable additions to our present stock of valuable varieties. Doubtless the experiments of the future will bring out many additions to those already produced by our Arnold, Dempsey, Saunders and others whose labors in this direction perhaps did not pay them in dollars and cents, but which will be of untold benefit to us and future generations. While I regret that our government has not taken hold of this work and given us an experimental station for it, I still cherish the hope that our future legislators will awake to the importance of it and do something worthy of the cause and the nation, and not leave this important work to be performed by individual effort and at individual expense. I am aware that the Dominion government, at their experimental farm in Ottawa, with their efficient staff, are doing what they can there; but on account of a climate unadapted to fruit they can do but little comparatively for the great fruit growing sections of the country. I would, therefore urge upon the members of this Association, particularly the younger ones, to redouble their efforts in this direction, not only by producing new hybrids and seedlings, but also by testing new importations as far as their means will admit, and disseminating them till Canada shall be known not only as the best fruit growing section but for the best varieties produced in the civilized world, and if it does not pay you in dollars and cents it will pay in the increased prosperity and blessings that it will bring to your country and posterity. Most of the pioneers of fruit growing in this country have passed away, and the remainder will soon follow. They have done well in building up this great industry, and the results are left in your hands. Try to improve them.

The PRESIDENT: Now, gentlemen, we will be very glad to hear from you all. The valuable paper you have heard is open for criticism.

Mr. BEALL: Referring to the suggestion in the paper that the Government should encourage hybridizing, I would like to ask: Why has not this Association taken that matter in hand? The Association has never, as far as I know, done anything to impress that fact upon the Legislature of Ontario, except the publication of an article in last year's report intended to draw public attention to the matter of remuneration to any person for their efforts in that branch. I think there should be some public acknowledgment and remuneration from the Government to persons who have already done work in this direction. If that were done it would possibly encourage others. I believe there is but very little being done in that respect. Fifteen or twenty years ago there were five persons who did much for this Province in hybridizing—Arnold, Dempsey and Mills are gone; Haskins we never hear of—I do not know what he is doing; we have only Saunders left, as far as I am aware. This country and this Association have done nothing to my knowledge to recompense these men for the time they have given, the care they have taken, and their experience and labor in this very important branch.

Mr. MCNEILL: I think we should appoint a committee and do something worthy of this body in this matter. The gentlemen named by Mr. Beall are worthy of recognition and possibly a few might be added to the list. I should certainly suggest the addition of the late Mr. James Dougall, of Windsor, a gentleman who has done perhaps as much as any of those mentioned. You will have noticed the Windsor Cherry, lately written about in the *Horticulturist*. It was my pleasure, sitting in the shade of that tree, to hear the history of the Windsor Cherry. Mr. Dougall also originated lilacs that are

famous the world over. People do not usually connect his name with the Persian lilacs that are now being disseminated. I know a gentleman that has half a dozen moss roses that were the result of his hybridizing. The town clerk of Windsor has a collection of gooseberries that were given him by Mr. Dougall ; and the township clerk is responsible for the story that one of the finest gooseberries now on the market—I think the Industry—was stolen from Mr. Dougall ; that he sent it to London, and it afterwards made its way across the lines under a new name. Now, could we not appoint a committee who would gather these instances of hybridizing experiments, and let us do honor to the men as far as possible. Mr. Dougall died poor, and I believe as the result of the interest he took in horticultural matters in that line.

Mr. EDWARDS : Would it not be well, while we are honoring the dead, that some provision should be made to encourage this line of experimenting for the future? The last speaker has not given a favorable impression of the profits.

Mr. MCNEILL : It doesn't pay.

Mr. EDWARDS : Still I think this might be done, possibly, if we could so impress the Ontario Government or the Ottawa Government with the desirability of making improvements in this direction as to make it possible to benefit the country to introduce new varieties either of apple trees or of other varieties of fruits, that the Government might be persuaded to offer a standing reward for the production in the future of improvements in varieties of fruit of various kinds. A man would then be likely to receive from the Government a sum that would to some extent compensate him for his labor, which would be similar to the benefit of a man obtaining a patent.

Mr. CASTON : I appreciate, and have often spoken publicly of the obligation that these progressive men placed us under ; yet I do not think the plan of a government reward would be wise. Some of those men, at least, have made money out of their productions. Some of them no doubt have been unselfish in their work, but others work for the hope of reward. I do not think there is any more reason why the Government should offer a reward for them than they should for a patent. We are told that the company that had control of the Niagara grape made about half a million dollars out of it. I know I have paid $3 a dozen for strawberry plants, and somebody must have been making money out of them (laughter). And a great many of them turn out to be worthless after all. But I think it is only fitting and proper that we should acknowledge in some public way what these men have done towards making Ontario what it is to-day as a fruit-growing country.

Mr. BOULTER : It is pretty hard work to do much good to a man after he is dead. It is very well to speak in eulogy of these men, but the trend of public opinion is, not what has been done but what is going to be done for the good of the future? I think this Association would be doing something for the coming generation if they pressed on the governments the necessity of establishing more small experimental stations, in different localities than at present, where new fruits could be tested and the results given to the public. We have to learn by experiment what is best. Now, the Government can afford to do this, and they ought to do it, so that we may have positive knowledge as to what fruits are suited for the various localities. I don't think we could accomplish much good by endeavoring to get a grant for those who have gone before. We find it takes a long time to get a monument to a man after he is dead, no matter how much good he has done.

Mr. DUMBLE: I think that the best experimental farm you can have, and the most extensive and the most certain in its results, is the country just as it is. Now, take the action of our Ontario Government in getting those fruit statistics. Supposing they had sent several questions to each farmer—because they wrote directly to each—thus : "What apple have you found thrive best on your farm, in quantity and quality?" "When do your trees come into bearing?" and so on. Would not the results from these questions tabulated, be the best possible data you could get anywhere? They would get more figures in that way than in any other possible way. I throw this out to Mr. James as a suggestion for a series of questions next year. I know from experience that if you group Northumberland and Durham with Peterboro' and Haliburton you have not a fair group. The

trees that will grow on the lake shore, on the other side of the summit, as we call it—ten or twelve miles from the lake—would be under totally different climatic influences on this side of the summit, so that this group, for designating the apples to be grown, is not fairly grouped to get good results. I suggest you should divide the country into smaller sections; and, within a radius of ten or twelve miles around Peterboro', you could tell from what fruit we could get results better, than by grouping those four counties named here. I don't think we ought to complain very much about either government, they are doing very handsomely in regard to these experimental farms.

Mr. CASTON: The difficulty Mr. Dumble mentions is one we have in all the districts classed here; but we can't help it. For instance my district takes in Muskoka. Of course, in a great part of Muskoka they cannot grow anything better than a crop of apples, anyway; but when you come as far south as Lake Couchiching and take in Lake Simcoe, they can grow any variety of apples as well as any part of Ontario. When you get beyond the influence of the great lakes, and get into the great prairie countries, you may travel for 150 miles without noticing any appreciable difference in the climate. Probably the thing that will flourish here will flourish 150 miles farther on; but owing to the influence of the lakes this country differs so much that you will find a fruit will do very well in one place, and 30 miles further up it won't do at all.

Mr. DUMBLE: Down on the shores of Rice Lake, 10 or 12 miles from here, they grow cherries very successfully. We can't grow them here at all.

The PRESIDENT: Do cherries thrive here?

Mr. DUMBLE: No, sir; unless it be the commonest cherries, and they are grown along the shores of Rice Lake. The horse chestnut will not flourish here.

Mr. A. M. SMITH: I understand they are quite successful in growing cherries at Ottawa.

Mr. STANTON: I don't think there is any section in Canada that will grow cherries and plums with South Monaghan, and that is only 10 or 15 miles south of this. I have seen trees there with ten bushels on them of the Lombard plum.

Mr. BOULTER: Mr. Smith suggested that in time we would be wrapping our fruit up, as they do in California Has anyone had any experience in sending apples to the Old Country in any way other than in ordinary barrels? I ask this question because the Australian people are sending their apples there in packages quite different from ours.

The SECRETARY: I have experimented in wrapping in tissue paper, and I believe in some instances it will pay. I don't believe it would pay to send apples that way for general sale on commission, because unless people know you, and know your fruit, they want to see the apples, and it takes a good while to unwrap them and find out what you have rolled up. They think you want to deceive them, perhaps, and so have hidden your fruit. If your brand is known, and your reputation is secure, it will be an advantage, because they carry better; decay cannot spread from one apple to another; they preserve their bloom a great deal better; they will be dry, and open out in better shape. The cases where I have tried this plan successfully were those where I had made a special sale. I had special orders from private parties—in Edinburgh and one or two parts of England—where people wanted a few barrels for their own special use, and had confidence that I would put them up to please them; and I was able to make the sale at $4 a barrel, delivered at my own station, for apples put up in that shape. That was satisfactory to me. Of course, I was careful, when wrapping them, to put nothing but the very finest class of apples in for wrapping, and the result was that I have had repeated enquiries from those parties to have apples shipped to them successive seasons. This year I did not feel that I had the quality of fruit to do for them, so did not attempt to fill their order; but I believe that a business could be done in that way if we could once get in close enough connection with the consumers in the Old Country. (Hear, hear.) If we could once get by the middlemen who make the money out of us, and deal directly with some consumers that are willing to pay high prices if they can get just what they want, there are no doubt large numbers of people in England who, if they only knew us, and could get near enough connection with the Canadian growers, would order freely, and

be willing to pay us our own prices. They would not hesitate to pay us $4 a barrel for our apples put up in that shape if they could depend on the brand. The opening is not for everybody—it is for those who know how to do the thing right. If you are putting up a special brand of fruit, I think it would pay to put it up in tissue paper. I tried shipping pears in small crates, about one-third of a bushel, and I had hoped for success; but the variety I tried was one I suppose nobody will ever get through to England—viz., the Bartlett. I thought I had picked them sufficiently on the green side, and that by pushing them through speedily I would succeed; but I didn't. When they reached their destination they were all mush.

Mr. BEALL: Did you try Flemish Beauty?

The SECRETARY: I did not.

Mr. PATTISON: I believe the late Mr. Dempsey had some experience.

Mr. DEMPSEY: He shipped none except in 1886. They carried over perfectly. Of course they went over in connection with the Colonial Exhibition. They sold well there at that time, according to the Government reports.

Mr. HILLBORN: I shipped some at the same time, of Duchess apples and several varieties of pears, in bushel cases. They went in cold storage, of course, but few of them reached there in good condition. Those that did arrive sold at good prices, and the parties who handled them thought they would pay. The only difficulty was to get them there in good shape.

REPORT ON PEARS.

The PRESIDENT: Is the Committee ready to report on pears?

Dr. BEADLE: I have in my hand several copies of the old report, on which the Committee has marked in ink, opposite each variety, the change that they suggest. After I have finished my report I think it would be a good plan for the meeting to take up this list and criticise each item, and let us know what they think of the value the Committee has placed upon the several varieties for dessert and for home market. I have said nothing about cooking. At our last meeting it was decided, I understood—and this list was printed in accordance with that decision—that we would omit any account of cooking. I may say that the Committee came to the conclusion, after looking the matter all over, that they were not appointed to make out a list for planters. If you will notice in the Report, page 137, the catalogue is said to be for use of judges on exhibitions, consequently they think that the division into summer, autumn and winter is not necessary. They recommend that the list be finally printed alphabetically, without any reference to the season of ripening. Judges do not care anything about the season of ripening. At exhibitions the prize-list usually calls for the best plate of Bartletts and the best plate of Beurre Giffard, etc. Then, again, there is this difficulty about settling on the time that these pears ripen—we have a tremendously large country as to climate. We have an almost sub-tropical climate on the north shore of Lake Erie, and we have an almost Arctic climate up in Muskoka; and a pear that will ripen, say, on the 1st of September in the County of Essex, will not ripen till October up in Muskoka, if it will grow at all there, consequently there is great difficulty in deciding about the time—the classification that we should make of the different varieties of pears as to summer, autumn and winter. The difference is even greater than I have spoken of. You may take the shore of Lake Ontario near Grimsby, along from St. Catharines to Hamilton. Close on the lake shore, where the spring winds from the lake keep vegetation back quite late, you will find the Bartlett pears will be two weeks later than they will be ten or five miles inland. Then comes the question—is the Bartlett a winter pear or a summer pear? It is a winter pear just under the brow of the mountain; it is a summer pear on the lake shore. Taking all these things into consideration, your Committee have decided not to take notice of summer, autumn and winter, but to arrange the list alphabetically. I would suggest, therefore, that you take up this list and find out from those present who have had experience in these different varieties, whether we are right in our estimate of value for dessert and for home market.

The PRESIDENT proceeded to read the list.

Belle Lucrative was changed by Committee from 10 dessert, 4 home market, to 7 dessert, 6 home market.

The PRESIDENT: How should this pear be so high for dessert and so low for home market?

Dr. BEADLE: Its appearance was against it, and it was hard to get people to buy it. It is a very sweet pear, and there is a moderate sale for it, but on the whole it does not "take" in the market on account of its lack of color. It is always green; it never has any color.

Mr. SMITH: But you have raised it two points for the home market.

Dr. BEADLE: Yes; we dropped it for dessert. It is sweet, and that is all you can say about it. It has no richness of flavor—just sweetness.

Mr. BOULTER: What was the reason for raising it two points for home market if the color was against it?

Dr. BEADLE: The color was against it, but as there are people who like a sweet pear, they thought it ought to be raised a little for home market. Mr. Orr will be able to tell you more about it. I deferred to the experience of persons who had marketed it.

The PRESIDENT: If no change suggested in that, we will go on with the rest.

Flemish Beauty, changed by Committee from 8 and 9 to 8 and 8.

The PRESIDENT: Why did you drop it for home market?

Mr. CLINE (Winona): Because it is a miserable pear to raise. It does not begin to compare in selling with the Bartlett. We have the Bartlett only at 10, and it is certainly fair to put it two points lower. I would like to have it only at 7.

Mr. BOULTER: Wouldn't 7 be pretty high?

Mr. CLINE: If you can grow them they sell pretty well.

Mr. BOULTER: Can you get two successive years' growth from them?

Mr. CLINE: No.

The SECRETARY: Would you plant any of them for the home market?

Mr. CLINE: I would not, except for grafting Beurre Gifford or some other on. We must consider this, that Flemish Beauty are always in the list of pears for varieties; no list is considered right without it.

The SECRETARY: You don't encourage anybody to plant it?

Mr. CLINE: No; all good collections have the Flemish Beauty in them, though.

Mr. BEALL: I think it is a mistake to speak against a particular variety because it cannot be grown in some particular section or in several sections. The principle should be that wherever a valuation is given on a fruit, it should be a perfect specimen. Then the question arises: If a man anywhere, in any part of the Province, can grow a first-class Flemish Beauty, should it be rated at a high rate? My own opinion is it ought to be rated as if a first-rate specimen was grown. We can grow them that will average very nearly a pound apiece, perfect in size and shape, and of a beautiful red or brown color. If pears can be grown like that, I do not see that you ought to try to prevent the people from growing it. It depends altogether where it is grown. I know it scabs in a great many places; but I think the scab is not such a bugbear now as it has been in the past. I think that should be left as it was.

Mr. BOULTER: We have been buying pears for eleven years, and I never yet, with the exception of one year, got good Flemish Beauty pears—buying from different parts of Canada. It is almost impossible to grow them without being cracked or specky.

Why it is kept rated as high as this I don't know. If this list might deceive buyers into thinking this is a standard variety, or help nurserymen to deceive them, it should be changed—otherwise let it remain. It is not going to deceive me when I am buying it. I would not give for a Flemish Beauty 50 per cent. of what I would for a Bartlett.

Mr. M. PETTIT: This scale of points should not be considered as the pear is found in the market—affected by this fungus—but as it is when perfect.

Mr. CLINE: That is what we supposed—that when you put pears on the table you put perfect specimens. We did not get this up for a planting list, though people might plant by it and not go very far astray.

The PRESIDENT: I would suggest that somebody move the adoption of this report; then any change would come as an amendment.

Dr. BEADLE: I will relieve the chair of a dilemma by moving the reception and adoption of this report.

Mr. M. PETTIT seconds.

Mr. BEALL: I move in amendment that the Flemish Beauty figures stand as they are in print—8 for dessert and 9 for market.

Mr. BOULTER: I move in amendment that the points for home market be reduced to 7.

Mr. ROBSON seconds Mr. Beall's amendment.

Mr. HILLBORN seconds Mr. Boulter's amendment.

Both amendments were lost, and the original motion carried, making the figures 8 for dessert and 8 for market.

Kieffer, changed from 3 and 5 to 4 and 6.

Mr. BOULTER: With us it is not a success.

Mr. McNEILL: We used it in our home last year as a canned fruit almost exclusively, and I think for market purposes it is a somewhat valuable pear. It has simply one fault as a canning pear—those little granules. For flavor in home use I think it is simply exquisite.

Mr. BOULTER: Has it been hardy as a grower?

Mr. McNEILL: Yes, and it is a fine-looking pear. It sells well on the market.

Mr. BOULTER: I planted out half a dozen trees, and I lost every one of them. As to canning, the only true test is putting up thousands of cans by dry steam. The Kieffers won't do for canning at all. We would not think of putting them up in our factory; they won't stand up in the cooking.

Mr. A. M. SMITH: Some years ago I planted about 40 trees; this year I gathered from them about 175 12-quart baskets. Last year—the sixth year—they had on probably about 50 baskets. They are early, and a constant bearer. This year I sold them to the canning factory at Grimsby for 2¼ cents a pound. They wanted all I had, and more, too, if I could get them. I have friends who grow them largely on the other side, who claim that they are the best pear they have for canning there.

Dr. BEADLE: This is a variety of pear that the Committee expected a good deal of kicking about, because it depends for its quality on the soil in which it is grown more than any other pear I know of. In Prince Edward County it would be poor and have no quality, but at Grimsby, or on the shores of Lake Erie, it would be very fine and desirable. I have seen some of very fair quality grown by Mr. Cline at Winona. I have eaten them from tins, and they had a very pleasant quince-like flavor peculiar to themselves. When prepared in the way these were, they lost none of their firmness, and seemed to be very desirable for canning. I find the public are asking for it and buying it in the Toronto market—I suppose for canning.

Mr. M. PETTIT: Some few years ago I planted 25 trees at Grimsby. The fourth summer they were out they netted me $1 each; and they came into bearing so early, and bore so heavily, that this spring I planted 1,400 more, and I think I can make more money on them at $1 a barrel than growing apples at $4 or $5 a barrel.

Mr. EDWARDS: Mr. Stinson has at some of our Peterborough meetings spoken very highly of the Kieffer pear for canning purposes, and they were grown in this county.

The clause was passed without change.

Dana's Hovey, quoted at 8 and 4—no quotations hitherto.

The PRESIDENT: That is a considerable drop.

Dr. BEADLE: It is good for nothing for market. It is good enough for amateurs.

Lawrence, changed from 7 and 8 to 8 and 6.

The PRESIDENT: Why was that lowered?

Dr. BEADLE: Because someone who had had experience in marketing it suggested it. I can only ask my colleagues to explain, as I have had no experience in marketing it myself.

The SECRETARY: I think the Committee is about right in that. It is an excellent pear for dessert—nothing we like better for home eating—but the size and color are somewhat against it.

Mr. A. M. SMITH: My family generally market all I can grow of it. I don't think it would be a very bad pear for market this time of year. I am inclined to think they have put the market value too low. If kept till the Christmas season and sold on our markets, it brings a very good price.

The PRESIDENT: I certainly would like to move that up a little for market.

Mr. SMITH: I move that it be increased two points for market—that is to leave it where it was.

Mr. CLINE: One particular reason we put that so low is that all pear shippers know that there is not much market for winter pears in Canada. You send pears to market now, and you would scarcely sell them at all. Just a few baskets will sell, and a small pear will not sell as much as a big one.

The PRESIDENT: I think the finest pears to go on the market to-day are Beurre D'Anjou and the Lawrence. When we can raise the Lawrence in its dessert qualities we should not put it back in its market. That is giving it a "black eye"—and it is too good a pear to get a black eye.

Mr. HILBORN seconded Mr. Smith's motion.

Mr. EDWARDS: It is a pear that will grow well here.

The motion was carried to leave it at 8 for market.

The report as a whole, as amended, was then adopted. (See Appendix III.)

The SECRETARY: It has always been our custom to appoint a committee to examine and report on the fruit. I would move that a committee be appointed by the chair for that purpose.

Mr CASTON seconded the motion. Carried.

The PRESIDENT: I would now call for Mr. Hutt's paper. I am sorry it is so near the close of the session, but we can take it up again at our evening session and complete the discussion of it, if there should be need.

SOME NOTES OF TRAVEL THROUGH SOME AMERICAN ORCHARDS AND GARDENS.

The following paper was read by Mr. H. L. Hutt, Horticulturist at the Ontario Agricultural College, Guelph :

It was my privilege during the past summer to visit a number of the most prominent sections of horticultural interest across the line as well as in our own province, but I have thought it best at this time to speak more particularly of what I saw being done by our American cousins over the border. By so doing probably we shall be able to learn a few lessons from them.

If then you will go with me in an imaginary trip, we will leave Ontario at Niagara Falls, and after three or four hours' ride we stop at Geneva, situated at the head of Seneca Lake, in the Southern part of New York State.

This is one of the finest fruit growing sections of the State and here are to be found some of her most extensive nurseries. One mile out of town is the State Experiment Station, where, under the direction of Mr. Beach, excellent work is being carried on in the horticultural department. Much is being done in the testing of small fruits. This summer there were 230 named varieties of strawberries being tested side by side, and there were 430 unnamed seedlings fruited for the first time. One of these gave promise of being valuable on account of its extreme lateness, coming in after all others had gone.

The strawberry rows are all mulched in the fall. In the spring the mulch is removed till the ground is cultivated, then put on again. Rye cut green, in which there are no weed seeds, is sometimes used as an early summer mulch ; this is left on for the season. The collection of gooseberries is said to be the largest on the continent. They have been importing largely of English varieties and now have about 200 English and American varieties in bearing, with a lot of untried seedlings coming on. In the larger fruits there is nothing of very marked importance going on besides the testing of insecticides and fungicides.

But in the neighboring country are to be seen some of the finest orchards to be found most anywhere. The first we will visit are those owned by the Maxwell Brothers. These gentlemen were formerly extensively engaged in the nursery business, but now give most of their attention to fruit growing. One of their farms, about four miles south of Geneva on the lake shore, consists of 300 acres, nearly half of which is in fruit. The other half is devoted to stock raising, most of the manure from which goes to the orchards. The three principal fruits grown on this farm are plums, quinces and cherries. The land is a rather heavy clay, but is given the very best of clean, level, cultivation. An excellent tool for this work we will find in use. It is a spring tooth harrow in two sections, that can be raised and lowered by a lever like our Wisner cultivator, but instead of having wheels it slides, when the teeth are out of the ground, on a pair of runners like a sleigh. Mr. Scoon, the manager of this farm, says that, "To take hold in heavy land and work easily up close to the trees, it beats anything tried yet." Another tool we will find in use here for working close under low-headed trees is the Morgan Grape Hoe. This tool might be of great value to vineyardists in this country. It is drawn by one horse attached to the side of a tongue and consists of a broad blade on the end of a horizontal arm which works under the trellis, and can be worked in and out around the vines by a revolving disk guided by means of the left handle. It is a very simple tool, and cost them $12. Mr. Scoon tells us " it has paid for itself many times in a season in the saving of hand hoeing." It might not do that on every farm, but on this one we find they have about 20 acres of cherries, thirty acres of quinces and eighty acres of plums.

Besides the extent and high cultivation given, the method of pruning is a noticeable feature of these orchards. On plum, quince, and peach trees they practice the "shortening-in" method of pruning. That is every winter the new wood is cut back within six or eight inches of its growth. This keeps the head of the trees very symmetrical and compact, and with the peach tree, in which the small inner branches naturally die out, no

doubt it is an excellent method, but on the plum tree, where the inner branches do not naturally die out, there is a danger of getting the heads so dense as to shade too much the fruit in the interior of the tree. They claim, however, that although a little later this ripens up fully as well as on untrimmed trees The advantages claimed for this practice are that the trees bear longer ; the fruit is more easily picked ; the heads are smaller and more easily worked around ; and the curculio more easily managed.

Their method of fighting the curculio is to capture and cremate him. The curculios and string fruit are gathered in a sheet ten or twelve feet in diameter made like an inverted umbrella, and suppported on a light two-wheeled barrow. A slit in the sheet opposite the handles allows the tree to enter to the centre. The limbs are jarred with a padded bumper and everything in the sheet rolls into a tin drawer at the bottom. These "bugging machines," as they call them, are made in Geneva and cost $17. Six of them were seen at work the day of our visit.

The shot-hole-fungus is more troublesome here than the black-knot. Last year a lot of the plum trees were destroyed by this disease. The leaves fell in the summer before the wood had matured and the severe winter only helped to finish the work of destruction begun by the fungus.

Out of fifty or sixty varieties of plums tried in this orchard, the favorite varieties are the Reine Claude, Bradshaw, Genii and Purple Egg—the Reine Claude being more grown than any other.

Their thirty acres of quince orchard is a rare sight to see. No unshapely, scrubby bushes like we usually find, but all handsome little trees with a three-foot trunk and a head, by "shortening-in" pruning kept as round as a ball. These receive the same clean cultivation as the plum trees and much the same treatment throughout, except that in the early spring the plums get two or three applications of nitrate of soda ; one pound to a tree at each application. This gives them a very luxuriant foliage, but makes the fruit a little later in ripening. It is to avoid this late ripening of the quinces that they receive little or no nitrogenous fertilizers.

The quince trees are doing best on the lowest parts of the orchard, while peach trees alongside of them are doing best on the highest parts. The orange or apple quince, the old stand-by, is the only variety grown. The crop last year on this quince orchard, we are told, sold for $3,500—on the trees. There are about 6,000 trees.

The cherry trees received the same high cultivation as the others, but are not pruned back. The Early Richmond, one of the best of the Morello type, is the chief variety grown.

If we visit Messrs. Hammond & Willard's orchards and nurseries we shall have to do some travelling, for they are scattered here and there in fifteen, twenty and thirty acre lots, two or three miles apart.

They have the largest fruit nurseries in this section ; while W. D. Smith has the most extensive nursery of ornamentals. Mr. Willard's orchards are all under very clean cultivation. They consist mostly of plums and peaches, but the varieties in the orchards are as mixed as the men on a checker-board, for Mr. Willard is a firm believer in working over a variety that does not suit him. In nearly every plum orchard we find them hard at work capturing the "little Turk" with the "bugging machines." Mr. Hammond still has faith in spraying and is waging war on them with London purple.

It might be pleasant for some of us to spend more time in the beautiful orchards about here, but we must hasten on.

At the Cornell University Experiment Station at Ithaca, forty miles further on, we may find a number of young Russian Apricot trees heavily loaded. This may be encouraging to some of us from the Niagara district, who have planted rather largely of this fruit and are still doubtful as to the success of the experiment. We may congratulate ourselves, however, on being able to beat anything we may find elsewhere in grape growing. In Stamford Township may be seen a two-acre vineyard, only three years from planting, that this summer bore ten tons of grapes. I am sorry to say, though, that these went to the wine factory for $20 per ton.

In another vineyard almost across the road from this, where the soil is just as good and the vines twice as old, there was not one-quarter the crop. Good cultivation is the secret of the difference.

If on our way to Chicago last summer we had stopped off at Lansing, Michigan, we might have seen at the State Experiment Station there, a striking experiment on the effect of sod in an orchard. One half of the apple orchard was under good cultivation and the other half in sod. Although there was little or no fruit on any of the trees this year, the contrast in the vigor of the trees was very marked. The foliage on those in sod was turning yellow at the end of August, while those under cultivation were still as fresh and green as in June.

Leaving now the orchards and fruits we will continue from Cornell, along the winds and curves of the Lehigh Valley R.R. to New York, to see some of the large market gardens of the east.

The first place visited is the establishment of the great seedsman, the late Peter Henderson. Here I expected to find large seed testing grounds, but found that the grounds, and greenhouses covering nearly a couple of acres, are now almost entirely given up to the growing of ornamentals for sale. But out on Long Island are to be found a number of the large gardens that help to supply New York and Brooklyn. At Jamaica, ten miles out of Brooklyn, is one of the finest vegetable gardens on the western end of the Island.

There are thirty acres in potatoes. These are planted one foot apart in rows two and a half feet apart, opened by a fertilizer drill, which by means of projections on a wheel following in the furrow measures and marks the spot for each piece of potato. The potatoes are not hilled, but the ground is gradually worked up to them with the cultivator. The potato beetles are kept in check with Paris green applied with a barrel sprayer, spraying four rows at once. In potato growing, however, I value more the experience of a Niagara grower who raises twelve or fifteen acres every year, and is probably one of the most successful potato growers in that district. He takes his seed potatoes out of the cellar a couple of weeks before planting time and puts them in a warm shed to start the growth. Just before planting they are cut and sprinkled with freshly slacked lime. Experiments with and without liming show a marked difference in favor of liming. His favorite method is to plant in a well manured clover sod, plowing in the potatoes in every third furrow. The potatoes are dropped eighteen inches apart on the shallowed or mould-board side of the furrow. As soon as the tops begin to appear above ground, a harrow is put on and the ground thoroughly harrowed. In cultivating the soil is worked gradually to the rows. Out of a large number of varieties tested the most profitable early varieties are the Early Ohio, Toronto Queen and Burpee's Extra Early, and for late varieties the Empire State, Rural New Yorker No. 2, and Beauty of Hebron.

But we must stay in the Jamaica garden on Long Island to see the sights in growing rhubarb and asparagus. There are about four acres in rhubarb, the plants standing $4\frac{1}{2}$ x $2\frac{1}{2}$ feet apart. These are cropped but two years in the open ground. The roots are then taken up and forced in the greenhouses for winter market. The stalks are of immense size, very few of them shorter than a foot and a half. The asparagus, Conover's Colossal, is truly colossal, each stalk being eight or ten inches long and as big around as a hoe handle. To suit the fashion of the New York market this is all bleached perfectly white. The bleaching is done by banking the earth in the spring twelve or fourteen inches high over the crowns of the plants, and as soon as the stalks appear on the surface they are gathered by cutting from below with a long knife. They are then bunched in two pound bunches, cut square at the bottom, washed clean on the outside, packed in barrels, and sold in New York for fifteen cents per bunch. The immense market wagons used by all the New York and Brooklyn gardeners are quite in keeping with the extent of the business. These wagons alone cost $300, and generally carry all that can be drawn on a good road by one team of horses.

There are plenty of fine gardens to be seen on Long Island, but to see one of the most extensive vegetable gardens of the Eastern States, if not in the whole of the United States, we must visit that owned by W. W. Rawson, of Boston, the author of that

valuable little book "Success in Vegetable Gardening." Mr. Rawson has two hundred acres in garden, and devotes thirty acres to the growing of cauliflowers. The soil is a rich sandy loam, and kept filled with manure. Although so extensive, the closest system of cropping is adopted. All of the smaller vegetables, as beets, onions, carrots, radishes, lettuce, etc., are grown in rows one foot apart and kept clean with hand weeders and the Arlington scuffle hoe. This hoe has a gauge on it regulating the depth to which it can be worked, making it quite a safe tool, even in the hands of an awkward workman.

There were eight or ten very large greenhouses in connection with this garden, where vegetables are forced for early market. One of the largest houses is 400 feet long by 50 feet wide, and another of the same size is being built alongside of it. This large house is devoted entirely to the growing of cucumbers. It is divided lengthwise by six walks. The vines grow on each side of the walks and are trellised over head, forming six beautiful green arches 400 feet long, under which the cucumbers hang in abundance, where they can be easily seen and gathered. The White Spine is the only variety grown. These are picked when about eight inches long, and sell in Boston at from $6 to $25 per hundred according to the season. They were planted about the 1st of January, and occupy the house till August, when the vines are cleared out, and a crop of radishes and lettuce grown for the Christmas market, before the cucumbers are again planted.

Other gardeners in the neighborhood who have not such houses, grow the cucumbers under sashes, resting on long frames made by setting planks on edge. A foot of manure is put in the bottom and covered with a half a foot of loam. When the vines have filled the frames, and the weather is warm enough, the sashes are taken off and the vines allowed to run at large. When the crop is off the frames are removed, the land plowed and planted with celery.

Probably we have spent time enough for the present among the fruits and vegetables, and those who have an eye for the beautiful may wish to spend some time among the ornamentals to be found in the Arnold arboretum and the city parks. We will stop to speak of only one or two of these. One of the handsomest hardy climbers very common here and in many parts of the state of New York, is the Japan Ivy (*Ampelopsis Veitchii*). This will climb and completely cover a brick or stone wall with a beautiful mat of bright green leaves. Unlike the English Ivy it is deciduous, the leaves turning to a bright crimson in autumn before falling. To what extent this may be grown in Ontario is doubtful, but it is well worthy of a more extended trial. The purple beech (*Fagus purpurea*), with its large dark purple leaves, is a very pretty lawn tree much grown about Geneva.

At La Salle, in New York State, a few miles from Niagara Falls, may be seen a fine collection of hardy ornamentals on the grounds of E. A. Long, one of America's most popular authors on landscape gardening. One very pretty clump here cannot fail to attract our attention. It is a mound having for its centre the purple-leaved plum (*Prunus Pissardii*), and around this a border of the smaller growing Cornelian Cherry (*Cornus variegata*), with its varied green and white leaves.

Probably most of you are already weary after all our wanderings, so I will leave you here to rest and enjoy the beauties of the scene, within hearing of the roar of Niagara's mighty cataract.

Dr. BEADLE: In reference to the Japan Ivy, I presume it will grow well enough here; it grows well in Toronto. All that it needs the first two years of its life is to protect it a little, especially to cover up the surface of the ground over the roots with a few leaves. No matter if the plant does get killed back for the first year or two, it only enables it to spread more; and if it does not get killed back it ought to be cut back so as to keep a mat of foliage all up the wall. If properly trained, it is one of the most beautiful climbing plants we have for those who wish to cover a wall. (Hear, hear). It will cling by its own tendrils. The end of the tendril flattens after it touches the wall, and seems to adhere to it very much as we say the fly's foot adheres to the glass as it is walking over it. It looks as though there is a little vacuum under the spread of the tendril, and if you undertake to tear it off you will break the tendril, but you wont break this little adhesive portion from the wall at all---you will have to scrape it off. It fastens itself as it climbs, and makes a perfect little sheet of foliage, that during the summer mer is bright green, and in the autumn is of the autumnal hues of our ordinary *Ampelopsis.*

Mr. TURNER: We have the Japan Ivy in Cornwall unprotected.

Mr. McNEILL (Windsor): It is finer on the north side than on the south side. We have some fine examples of it in Windsor.

Prof. CRAIG (Ottawa): I would like to ask the writer of the essay if he learned the name of the variety of Russian apricot that was in the vicinity of Geneva.

Prof. HUTT: No, I did not get the name. I have an idea, though, it is the Alexis.

Mr. McNEILL: One of the most remarkable things in that paper, to me, is the experience in the matter of spraying. Prof. Cook of Michigan, and the Cornell student and everybody else, reported that all you had to do was to go out and spray your trees, and curculios and everything else would disappear; but here we find them back again to the old-fashioned article, and it appears to me a little explanation is necessary from the gentlemen at the experimental stations. I find, without exception, all favor the new modes of spraying. Here we have our good friend reporting that right along here spraying has not been a success, and they are going back to the older—and apparently the better—methods. That struck me as rather peculiar, and I was not prepared for it after what I read in my other reports.

Mr. PATTISON (Grimsby): I spoke to Mr. Willard, of Geneva. He can't trust an ordinary man to go ahead and spray properly. We all know, particularly in the case of plum trees, if they are sprayed with too strong a solution, it will not only injure the tree, but may kill it. In a short time, enough damage may be done to completely offset the value of spraying; but where there are small orchards, and you have men that you can trust, as in our district, as far as curculio is concerned, plum-spraying is actually satisfactory.

Prof. FLETCHER (Ottawa): During four or five years I have had a good deal of correspondence in reference to the result of spraying, and I summed it up lately very much as this gentleman has said—that if the work is done carefully the remedy is quite satisfactory; but if it is not done carefully, or if you trust people to do it who are not fit to do it, the results will be disappointing. The experiment stations have employed men who have taken probably more care than the ordinary orchardist and fruit-grower takes in carrying out those experiments, because the one object they have in view is to know whether that remedy is satisfactory or not; whereas the fruit-grower's first idea is to save the crop, and not the absolute question of whether it is a satisfactory remedy or not. Where the work is done carefully, with due regard to the circumstances of the case, the results are satisfactory. A discovery of very great importance, namely, mixing lime with the arsenical poisons was made two years ago. I think it should be made known as widely as possible. The lime has a neutralizing effect on the causticity of these poisons, and the uncertainty will be less than if you use the Paris Green, and trust to others to do the work; but this is the very place where such matters should be discussed, and in fact, is the one question I came to hear discussed at this meeting.

Mr. M. PETTIT: Will lime-water neutralize the poison as well as lime?

Prof. FLETCHER: No; lime-water, I believe, is not strong enough. Prof. James, who I see is present, can tell us if this is the case as well as anybody.

Prof. JAMES: I should think lime-water would hardly do, because lime-water is very weak.

Dr. BEADLE: I submitted that question to the chemist at Ottawa, and he wrote me a letter. In that letter he shows why lime-water will not be sufficient. You cannot get enough lime into the water to answer the purpose, because if you try to increase it by increasing the quantity of water, then you will dilute your other solution too much. I think that is about the result he arrived at.

Mr. CASTON: There is another idea that paper brought out that we sometimes might learn something from the Americans in the matter of implements. (Hear, hear.) There seems to be a great deal of ingenuity about them; they seem to be the first to invent anything that will lighten and cheapen labor. I think a man in Canada is kept back if he has not the proper implements.

The PRESIDENT: I will name as the Fruit Committee: Prof. Craig, E. B. Edwards, and Geo. W. Cline.

EVENING SESSION.

Mr. CASTON: I want to ask Prof. Fletcher in reference to an insect that is so very common that we never took much notice of it in past years—that is the grasshopper. During the last season, that was one of the most destructive insects we had in our section, because, after they could not do any more harm to the farmers, they invaded the gardens and ate the young apple trees, and sometimes attacked the apples themselves; and they sometimes destroyed the vegetable gardens also. I think this is a pretty difficult insect to deal with. Some years ago, when he was very bad out in Kansas, one of the comic papers represented him as a soldier, and called him General G. Hopper. We want to know how to fight him; because it is the opinion of a great many that if we do not have severe frosts to destroy the eggs, we will have enough of them. If they increase in our section in the same proportion as they did last spring, there will be enough of them to eat up every green thing in the country. I thought that Paris green was a sufficient cure for almost any insect, provided you could get it to eat it. I tried it on turnips, but the grasshoppers devoured every turnip. They even ate part of the bulbs. I tried Paris green first mixed with water, but the turnip leaf is so glossy that it will not stay on it. Then I tried it with plaster and flour, and it would adhere to the leaf, but the mystery was that those leaves were all eaten, and on examination I found only one dead grasshopper; and I am inclined to believe he died from natural causes. (Laughter.) The Paris green seemed to have no more influence on them that it would on a graven image. I consider Prof. Fletcher one of the best authorities on entomology that we have in this country, and I want him to tell us how to fight Gen. G. Hopper, if he comes next summer.

GRASSHOPPERS.

Prof. FLETCHER: I feel somewhat that I am in a delicate position speaking here this evening. You had your programme already made out, and I do not believe in any outsider coming in—especially myself, who had not the possibility of telling you whether I was coming or not, so that there was no arrangement made; but I shall speak for a short time on your invitation, and I hope that what I say may be suggestive of further questions on matters upon which I may be able to give you some light. As to the grasshoppers, I do not wish to put myself up as a prophet, but I think we shall not have the same visitation as we had last year—in the same districts where those insects were bad this year. The excessive increase of any particular pest is due generally to some exceptional circumstance; and, as you are all aware, last summer we had exceptional drouth in many parts of Ontario. From the crop reports you will see that the grasshopper plague extended over some areas in Ontario. This gave a chance to the grasshoppers. Regarding the suggestion that a cold winter would destroy the eggs, it is just as well for everybody to understand that the most excessive cold is not going to affect the eggs of any insect at all. The eggs of insects are prepared by nature to stand the conditions of the climate where they are found—in all places, at least, where an insect pest increases in large numbers. Insect eggs have been submitted to very great temperatures of heat and cold—far greater than are found in any place in nature—by artificial means, and they have not been found to destroy the eggs at all unless the eggs were brought into unnatural conditions. The life of our common grasshopper is simply this: The eggs are laid in the late autumn. Each female lays about four pods, or collections, of eggs The eggs are arranged in four rows, and there are seven to ten in these rows. The eggs are deposited by the female, which bores a hole in the ground, generally in the sand—and in passing I may mention that grasshoppers are generally more abundant in sandy districts. When the eggs are laid they are covered with a glutinous material by which they hold together like a little pod. The eggs are beneath the surface of the ground, and when there, no extremes of cold will affect them in the least; but we find by experiment that if these pods are broken up, or brought into an unnatural condition, they are easily destroyed.

In the States of Minnesota and Dakota, where grasshoppers are numerous every year, and sometimes extremely so, and do a great deal of harm, one of the best remedies is supposed to be to plow up the stubble late in the autumn, by which the eggs are exposed to the winter frosts and laid bare so that they may be attacked by their enemies—predaceous birds, and other insects and animals. Where this is done, the occurrence of these insects next year is very much less, so much so that the State of Minnesota passed a law making it necessary for the farmers to plow their stubble in the autumn; and if they don't do it, it is done by the State, and the farmer is charged with the amount of the labor. The next means relied upon is a machine called the "hopper doser," or tar pan; and this consists of a pan ten feet long by two feet wide, turned up at the back 18 inches and at the sides are side pieces of wood or iron soldered in. To these at each end rings are attached and this pan is drawn over the fields or pastures—and you will probably all have noticed that grasshoppers are most injurious in pastures of long standing. That simply means where the eggs were laid. We find these insects are very particular as to the choice of a proper place to lay their eggs; and in this part of the country they are laid in old pastures. In the West they are laid in stubble fields; and where these stubble fields cannot be plowed regularly in the autumn it is found very profitable to draw the hopper-dosers across the fields in the spring. On the top of this pan is placed some gas-tar or kerosene emulsion, or water with a little kerosene on the top. These are drawn across the fields before the insects have got their wings. Roughly speaking, it would be about the 1st of July in Ontario when these insects develop their wings. The eggs hatch early in spring; the young grasshoppers pass five moults, and then they develop their full-grown wings; but before that is done they are very largely at our mercy, and if these tar pans are dragged over the fields they are gathered in great numbers. In Minnesota they are destroyed by thousands of bushels in the spring months. This is found a practical remedy. Probably in western Ontario, if these insects are in such numbers next year, it will pay farmers and others to apply this remedy to their pastures—because in the early part of the year the young grasshoppers live in the pastures or in the grass meadows; and although we do not notice them very much in the hay lands, they are generally there in very large numbers; they do not show so much and the extent to which hay lands can be injured without it being observed is very great. In experiments carried on by Professor Osborn in Iowa, 35 per cent. of the grass could be saved on crops which were measured out and treated by these pans being drawn over them three or four times during the early months. That being the case, how much better it would be for all farmers systematically to do this; for not only are there grasshoppers which destroy this important crop of grass, but there are numberless other smaller insects. These insects that Mr. Osborn was treating were a small leaf hopper, similar to that called thrip, on vines. This diminishes the crop of grass every year; and if these grasshoppers are abundant next year, farmers ought to be on the look out early to make use of this remedy, because until the insects get their wings they are unable to fly very far from where they are born. As to Paris green on turnips, it is very important for fruit-growers to know that it may be made to adhere to such plants as the turnip and cabbage, and all such as have that waxy glaucous covering, by mixing soap in the water before you mix the Paris green. As to Paris green not having effect on grasshoppers, I think possibly it had effect on a good many but their places were taken by many others. There is a remedy sometimes used in California—mixing bran and arsenic and sugar together; and this is made into a sticky paste, and about a teaspoonful is used about the bottom of each vine in vineyards. The grasshoppers do not fly very much in hot weather, and instead of mounting into the vines they ate this poisonous material and were killed. In experiments I tried five years ago at Ottawa, when the grasshoppers were very abundant, I made some of this mixture; but there I saw very little effect, because no sooner were the grasshoppers killed by this mixture than they were eaten up by their companions. A little flour in water will also make the Paris green stick. In regard to the plum

Spraying with Arsenites.

curculio discussion, it is a very important thing that we should recognize how we stand as to that. Either spraying Paris green is a good thing, or it is not. I am not con-

cerned whether it is or is not, except as an entomologist. We have been advocating this remedy for ten years, and if it is a failure our work has to be done over again. The number of successful experiments has so far overbalanced the unsuccessful that the latter are not worth mentioning. The records of five years correspondence are almost universally in favor of spraying; yet we must not forget that failures are often not reported—and that is the one question I want to ask you here. Are there any that have failed, after having taken the proper precautions, and carried out the directions with care? I know very many instances of success. I know very well that Prof. Weed, of Ohio, sprayed alternate trees with Paris green, and checked the trees that were left unsprayed. On the unsprayed trees most of the plums fell; on the sprayed trees 75 per cent. remained. I remember when the remedy was first proposed, Mr. Hilborn sprayed here and there through an orchard of a hundred trees; and the sprayed trees were the only ones that had any fruit on them. Mr. Rolph has told me of an instance where he sprayed, and the crop was so large as to break down the trees. I have tried spraying, and my correspondents have tried it, and it has been successful. Now, if this method is a failure we want to know it so that we may change our methods and save the loss that has occurred. My conclusion in regard to spraying plum trees for curculio and apple trees for the codling moth is that the protection is sufficient in all instances to warrant people in applying it. Mr. Sidney Fisher, of Brome, in the County of Knowlton, Quebec, never sprayed his trees till this year, when he used the Bordeaux mixture and Paris green to treat at the same time the black spot of the apple and the codling moth. I saw his orchard in September, and he challenged me to find a single injured apple in the orchard. There were some trees that were well loaded with fruit. I could not find a single apple in his orchard that had a codling moth injury in it, and I don't think there were any that had black spots. From my experience I think the generalization may be made that 75 per cent. of the crop of plums and apples may be saved by spraying trees—in proper proportions and at proper time—with these poisonous arsenites. If I am wrong in that, it is important to the rest of Canada that I, at any rate, should know it, because I have the responsible position of making the recommendations every year to the farmers and fruit-growers of Canada.

With regard to the use of lime mixed with the arsensical poisons, for my own part I prefer Paris green, and I put in my mixtures an equal amount of Paris green and freshly slaked lime. It is true that London purple, being an arsenite of lime, is a little more convenient to mix with the lime mixture called Bordeaux mixture; but if you put a small surplus of lime in your Bordeaux mixture, Paris green is equally successful. Paris green is a substance with an exact chemical formula which demands a certain percentage of arsenic. London purple, being a waste product, has not that set and constant amount, therefore it is not so sure. What we want is an exact proportion of poison, so that we may get the result that we look for.

Mr. BOULTER: Which is the best time to spray the plum trees?

Prof. FLETCHER: As soon as possible after the flower has dropped.

Mr. BOULTER: And the apple tree?

Prof. FLETCHER: Directly after the petals have dropped.

Dr. BEADLE: I think it is advisable to spray before the blossoms open at all.

Prof. FLETCHER: For what?

Dr. BEADLE: For the scab.

Prof. FLETCHER: Oh, for the scab on the apple, certainly.

The SECRETARY: Sometimes spraying for plum curculio seems to be a perfect success, in other seasons it does not. How is it that in some seasons we seem to attain perfect success, and in others we do not? I have been wondering whether it was not because we did not make the first application early enough, and whether it is not an advantage to apply it on the young leaf even before the blossom appears at all? Do you think that the parent curculio eats the young leaves, and that by poisoning the young leaves they might thereby be destroyed?

Prof. FLETCHER: Yes, I think it might be a good suggestion, for this reason: The plum curculio is about before the leaves open, and it has also been found, in confinement, to eat not only the young leaves before they open fully, but also the young bark and the young twigs; and therefore if the poison could be made to act on the parent beetle it would be a good remedy; but we do not know exactly what is the effect of this treatment. We do not know if the insect is poisoned by eating the leaves, or whether the females are prevented from visiting sprayed trees. I think there is no more representative body in Canada than this to which we can appeal as to the value of such remedies. We should have a sufficient number in this room who have either failed or succeeded in their use to settle this question at once. For my own part, I cannot think of a discovery more important to fruit-growers than the discovery of these methods of spraying trees. In a large collection of different plants you will find some varieties or species in the genus are attacked by insects while others are left untouched. That points to the fact that some are injured more than others. I think that some of the failures may have arisen from the fact that some plum trees are more susceptible to the attacks of the insect, or the insect is more attracted to them; and where the very decided reports of success have followed, it may be that the insect is not so much attracted. All this could be checked in a series of experiments carried on for two or three years. There are one or two insects that have not appeared at all this year, where they were very destructive before, and that brings me back to speak about the grasshoppers. We know that all insects that appear in very large numbers are attacked by their own parasites. It is supposed that every insect known has its own special parasites, and sometimes these themselves are attacked by parasites. Some of these parasites are described from the actual insect from which they are bred. When grasshoppers are abundant, you will find many of them that have red mites on them; these are parasites which are feeding on the insect and destroying a large number of them. Again, there are parasites which live inside of them. Sometimes, in crushing a grasshopper, you will see a large white maggot, like a meat maggot. This is one of the tachina flies which are very active in destroying the grasshoppers. The egg is laid on the skin of the grasshopper after hatching. It eats its way inside, and lives upon the juices of the body until it is full grown; it then emerges and after a time turns to a fly. Many of these insects are destroyed by the gordius worms, which may sometimes be seen in water swimming and look like a piece of horse-hair. It is supposed by the ignorant that horse-hairs thrown in water will turn to these worms. It is nothing of the sort. These are parasites which have lived in insects, and then got into the water, where the eggs are laid, and then they enter the insects again in some of their preparatory stages, and live inside them as parasites. Speaking of insects which were not so abundant as usual, the white cabbage butterfly, which is usually so abundant at Ottawa, was noticeably absent this year. We usually have to sprinkle our cabbages two or three times a year with pyrethrum powder; this year it was hardly necessary at all. This year one of the worst pests was the root-maggot. We found this might be controlled with sufficient success to make it pay by mixing hellebore with water and putting it around the roots. Some experiments were made with salt, and these pointed certainly to success; but in some experiments I tried the results were so contradictory that they will have to be tried again before any definite statement can be made about them. One insect which I should like to ask St. Catharines or any western fruit-growers about, is the peach-bark beetle—a very small beetle. I found it very abundant last spring at St. Catharines. It was a very wet day, and the gum which had exuded from the bark in some of the peach orchards could have been scraped off in handfuls. On minute examination I found it was the beetle that had been boring in the bark. I doubt if it enters the wood at all; but it was an injury to the tree to have the bark injured to the extent it was then. I should like to know if any of these gentlemen have tried any alkaline washes. With regard to borers, it is known that the best measures are preventive; for successful treatment it is necessary to find the time the beetle is abroad and lays its eggs on the tree. This would probably, with this insect, be in June. As we have no peach trees growing at Ottawa, I have not the opportunity to test washes on the bark, but I presume any of the well known alkaline washes or kerosene emulsion would be satisfactory.

The SECRETARY: Tell us what the insect is like.

Prof. FLETCHER: It is hard to describe. It is very small—not longer than a sixteenth of an inch—and under the microscope it is very easily recognized by the shape of the antennæ, the blades of which lie together like a fan; and it is the only insect that attacks the peach which has the antennæ of that kind. It lives burrowing in the bark.

The SECRETARY: It would escape our attention easily?

Prof. FLETCHER: It would unless you were examining to see what caused the gum on the bark. Mr. Fisher, of Queenston, brought it to my notice first, and then Mr. James Sheppard sent me specimens afterwards. The fruit pests of the year have not been very important. As I have not prepared any address, I will not take up any more time, but if there are any questions to ask, your time will be better employed in asking them and I will do my best to reply.

Mr. CRAIG: The apple curculio?

Prof. FLETCHER: What is generally discussed under the head of apple curculio is nothing but the plum curculio; and the plum curculio attacks apples almost as much as it does plums. There are some features about insect pests that are hard to understand or explain. In the State of Maine their worst enemy is the apple maggot. I do not know a single instance in Canada where this insect has caused any trouble at all; and yet it is common through all the country, feeding in the fruit of the hawthorn. There is hardly a bush that you can examine that you don't find some of these apple maggots, and I have bred it frequently, as well as the apple curculio. The latter, in the district around London, has been found injuring apples; but it is rare in my experience to find it injuring apples. I have some plum curculios that were bred from apples from the Eastern Townships, which were brought me in the spring, attacked both by these and the codling moth. To spray with Paris green should in most cases be sufficient. I believe in this orchard Mr. Craig brought me those apples from the spraying had been done and it was not successful, whether it was that the Paris green was not of a sufficiently pure nature, or that the spraying was imperfectly done, we do not know; but it was a careful man that did it, and a man who has had good success in the use of these poisons before. There is no book treating of the apple but lays great stress on treating the canker-worm. At Ottawa it is most exceptional for that insect to attack the apple at all. The maple and other trees were almost defoliated. It is an easy insect to fight; it is merely a matter of spraying the trees when the larvæ are seen upon them. I have no doubt that the apple curculio could be treated the same way as the codling moth, and at the same time.

Mr. BOULTER: What proportion of Paris green is used for apple trees for spraying?

Prof. FLETCHER: One pound in 200 gallons. It is very important to observe that proportion, and not put one pound in ten gallons, as some people do.

A DELEGATE: The oyster-shell bark-louse?

Prof. FLETCHER: It is better to treat this pest twice, early in the spring before the buds burst, and in June when the bark lice have legs. This is only for a few days after emerging from the mother-scale. It crawls to a suitable place and inserts its beak through the bark, and at once begins to form a waxy coating for itself; and by the autumn it is simply a scale covering a bag of eggs, and these eggs will not hatch till the following spring. Kerosene emulsion made of coal oil and soap suds—two gallons of coal oil to one gallon of soap-suds; add ten to twelve times the amount of water before you use it. A spray-pump is a necessity now for fruit-growers, and you probably all have them; if you have not, it is a very good thing for you to get.

Mr. BEALL: I know of two persons this year who have used the Bordeaux mixture with Paris green, and I have good reason to know that the same formula exactly has been followed; both used precisely the same quantities of everything. One of the men failed entirely, insomuch that he destroyed the leaves of his trees so as to nearly ruin his orchard, or at least injure it very materially. The other had no injury whatever. On strict enquiry afterwards it was found that where the leaves were injured the lime had been two or three years old, but it was slaked, of course—would that have made the difference?

Prof. FLETCHER: Decidedly it would make a very large difference. It would simply be chalk by that time, and have very little effect on the copper mixture.

Mr. BEALL: You would recommend to have new lime?

Prof. FLETCHER: As new as you can get it. If it is not quite new, use double the quantity. Everybody who has tried to make the Bordeaux mixtures finds it is a very inconvenient thing, because the lime made in this country is very difficult to slake thoroughly. In Australia the lime is made from marble, and it slakes readily into a powder; in England it is made from chalk, and does the same; but our lime does not easily disintegrate. It is easier to put in a larger amount of lime than you require, and get the milk of lime off it, and not bother with the residue afterwards. What does not run through your sieve, throw it away—don't bother with it. In mixing lime with Paris green, the proportion I find convenient is one pound to one pound —the same amount of lime as of Paris green.

Mr. BOULTER: What quantity of Paris green would you want to kill ordinary tent caterpillars? Could you kill them by spraying with the mixture you have mentioned?

Prof. FLETCHER: Undoubtedly. They leave their tent to go on to the leaves, and when they eat the leaves they die. That is strong enough for anything—one pound in 200 gallons.

Mr. EDWARDS: How often do you recommend spraying apple trees?

Prof. FLETCHER: It depends very much on the season. For the codling moth the recommendation has always been to spray it directly the petals drop from the flowers. There is an idea, among apiarists at any rate, that when the honey is being secreted in the flowers spraying trees is liable to poison the bees. Whether that is correct or not, we do not know; we can get the results we want by spraying at the time I mention. Then, after that, a fortnight later, it is considered well to spray twice, at any rate; and three times is surer.

Mr. EDWARDS: Are there other worms that bore into the apple later in the season?

Prof. FLETCHER: No; but there are two broods and sometimes there is also what we call a half brood—that is, an exceptional brood will develop—a brood that should have gone over into the winter will emerge in the fall and lay their eggs where the apples come together. Sometimes it is a very large brood, but generally it is a very small one.

Mr. EDWARDS: It was a very large brood this year in Peterborough in July and August—in some cases the fruit was almost eaten up.

Prof. FLETCHER: Was that even where they had been sprayed?

Mr. EDWARDS: The spraying had been done in the early part of the season.

Mr. PATTERSON: I have noticed that after spraying thoroughly the early part of the season, along the end of July and August there comes along another brood.

Prof. FLETCHER: Yes, sometimes a large brood and sometimes not large. In California there are always three, and sometimes four, broods of the codling moth.

Mr. HILBORN: Can a tree be protected from the moth by mechanical appliances?

Prof. FLETCHER: Yes; but many of the caterpillars will spin their cocoons before they get up to the protectors. I do not think it is such a practical remedy as the application of Paris green.

Mr. HILBORN: A firm in London who manufacture these protectors claim that Prof. Saunders says they will prevent from 75 to 80 per cent.

Prof. FLETCHER: Their claim is probably made on Prof. Saunders' book on injurious insects, which was written before the Paris green spraying was as well known as at present. I saw considerably over fifty specimens in one of the bands which was exhibited at London at the last annual meeting of the Entomological Society of Ontario,

where one of these was put on the tree. They cost ten or fifteen cents each, and whether it would pay the fruit-growers is, of course, a matter for them to settle for themselves.

Dr. BEADLE: I think they would be very much more effective in catching the female canker-worm.

Prof. FLETCHER: Yes, and the females of the canker-worm are unable to crawl over them while they are new.

Mr. CASTON: I do not see, if an insect is able to crawl up a tree, why it should not crawl over this protector.

Prof. FLETCHER: They slope outwards from the trees and are very smooth inside when new. Of several specimens I watched, I saw nearly all drop as they got on that smooth surface. I did not find that they crawled over them while they were new. But as to the canker-worm, there is no doubt the remedy is to spray your trees while the caterpillar is on them. The great pest in Manitoba on their shade-leaf maple is the canker worm; and in the streets of Winnipeg for the last two or three years these trees have been almost defoliated by canker-worms. This year Mr. Fonseca, of Winnipeg, used a spray-pump, and got some others to do it, and the trees were to a large extent saved. Another pest there was one of the aphides, or plant lice. The town clerk of Selkirk wrote to me, and I recommended him to use kerosene emulsion, and he wrote back that they had sprayed several hundred large trees and saved them. That was on the ash-leaf maple.

Mr. M. PETTIT: In the Niagara district this spring the plum trees were very badly injured by the aphis on the under side of the stem of the plum, and on the young growth of wood. It made its appearance quite early and kept on increasing until the plums were the size of a marble. Where it was very thick over the fruit leaves it checked the growth of the trees, and the fruit withered and dropped, and it weakened the trees very much. We sprayed with kerosene emulsion. Where you can get that on to them it is all right; but it is simply impossible to cover any proportion of them, they were so thick; and you could not spray so as to strike up under all the leaves and touch them. If it appear another year, should we commence earlier, before they become so numerous, and what is our best means of fighting them?—because it is going to be a serious matter in growing plums.

Prof. FLETCHER: Were they black plant-lice?

Mr. PETTIT: Yes, but they appeared green when young.

Prof. FLETCHER: That species has been successfully fought in the States—in New York and New Jersey—by using kerosene emulsion. The eggs are laid on the trees, and pass the winter there, and then they hatch in the spring, and if you treat your trees early enough you will have much less trouble.

Mr. PETTIT: How early would you recommend?

Mr. FLETCHER: I think as soon as the buds burst.

Mr. PETTIT: They could be reached at that time; but it is simply impossible when the foliage is thick.

Prof. FLETCHER: They are sometimes very injurious. One great pest in British Columbia last year was the apple aphis, and I have received a large number of letters saying that large fifteen year old trees had been destroyed entirely by the apple aphis. The kerosene emulsion has been tried by some satisfactorily. For plant-lice one part of emulsion to twelve of water would be sufficient strength.

Mr. MCNEILL: Is there any connection between the disappearance of these and the appearance of the little orioles, and the little bird that appears at the same time? I have actually seen those little birds go along and just eat them in countless hundreds—duck around and gorge right into where there was a mass of those insects—eat them out by the millions.

Prof. FLETCHER: I think the summer yellow bird would, but I don't think the orioles would.

Mr. EDWARDS: Year before last I saw a large number of these on the trees, and the kerosene emulsion did not seem to have any effect on them. I sprayed it on and almost destroyed the leaves. I made an emulsion of two parts coal oil and one of soft soap.

Prof. FLETCHER: There has been a good deal of harm done by the wide publication of an erroneous formula called the Cook formula. Prof. Cook tried to simplify the kerosene emulsion, and he got it so simple it would not work. The Riley-Hubbard formula is the one that is successful It has been worked out very carefully It is: Two gallons of coal oil and one gallon of soap suds—made of a gallon of water with half a pound of hard soap. I should like if anyone would let me have his address so that I may send the printed formula to him. It is as follows:

Mr. EDWARDS: I would suggest to our secretary the publication of the formula at the time it is needed.

The SECRETARY: That was done last year.

Mr. EDWARDS: One of our members not only destroyed the oyster-shell bark lice, but produced a much heavier growth of the trees, by a solution of carbolic acid, diluted with water, I suppose.

Prof. FLETCHER: It is almost impossible to get the crude carbolic acid—which is the article that is nearly always supplied—to mix with water at all, unless you first emulsify it. It can be made into a carbolic acid emulsion—which is made very much in the same way as the coal oil emulsion. Prof. Cook gives a formula, and he thinks a great deal of the carbolic acid, and it is very useful, no doubt, but the difficulty to get it to mix is very great. Mr. Boulter, who has a particularly clean orchard, treats it with domestic lye made from ashes, and with very satisfactory results—so much so that I had very great pleasure in drawing public attention to it in my annual report two years ago. In New Zealand and other countries they use concentrated lye diluted. Mr. Boulter put the ashes in a barrel and let the lye run through, and reduced that about one half. On the Experimental Farm we have trees almost as good looking as Mr. Boulter's, and Mr. Craig uses a soap wash every year.

Mr. BEALL: How is it applied?

Prof. CRAIG: With a white-wash brush, on the main branches and the trunk.

Mr. RACE: You will find that louse at the very tips of the smaller branches. Isn't it necessary to spray those?

Prof. FLETCHER: Undoubtedly. It has only the power of locomotion for about three days. It comes before that young shoot is being made, and it settles down on that young bark where it is thin. It then drives its very fine beak through the young bark and remains fixed there for the rest of its life. Where there is green bark it will attach itself to any part of the tree.

Mr. PATTISON: I have found an excellent remedy for both the borer and the bark louse is to wash the trees in June every year with a mixture of washing soda, soft soap and water.

Prof. FLETCHER: You get the same alkaline wash I have spoken of. With regard to the bark louse, some fruit growers claim it can be prevented from injuring the trees simply by feeding the trees, and that is part of Mr. Hillborn's method—to dig ashes around the trees in large quantities.

Mr. HILBORN: There is another insect in our part of the country that eats the cherries and the pears—the slug.

Prof. FLETCHER: Very easily treated with weak Paris green. It is more particularly injurious to the oak-leaved mountain ash and the hawthorne with us at Ottawa.

The PRESIDENT: How are you going to deal with it on the cherry? It is just at the season of the year when the cherry is pretty nearly ripe.

Prof. FLETCHER: I don't think there would be very much danger in putting on a very weak Paris green mixture. I have used that generally.

Mr. SMITH: There would be no difficulty in using slacked lime.

Dr. BEADLE: Have you had any experience in regard to the Bordeaux mixture in keeping it for any length of time—for a fortnight or so—to see whether it had lost its efficiency? I am under the impression it ought to be used pretty fresh.

Prof. FLETCHER: The first recipes for the Bordeaux mixture said: "Keep it for a time." That meant a day or so. If it is kept for a long time I think it does lose its strength. I enquired from Prof. Shutt, the Chemist, and he said, as far as I can remember, that some change took place.

Mr. BOULTER: A friend here says he took ordinary brick clay and rubbed his apple trees as a coating.

Prof. FLETCHER: That would prevent the eggs being laid.

Mr. W. M. ORR: How long does the curculio act on the plum?

Prof. FLETCHER: I think about three weeks.

Mr. ORR: Does spraying with Paris green effect the larvæ?

Prof. FLETCHER: No.

Mr. BOULTER: If you could tell me how to destroy the potato bug on tomatoes I would give you a donation.

Prof. FLETCHER: I think the only way is to plant potatoes near them and trap them. I must not take up more time, Mr. President. I am extremely obliged to you for allowing me to introduce this question of the value of spraying with the arsenites for insects. I know the plan is of enormous value to fruit growers; but I had heard lately rumors that the method was discredited by some; but what I have heard at this meeting proves that this is not the case.

The PRESIDENT: If it were not for tiring Prof. Fletcher out, I am sure we would all like to have him remain on the floor longer. (Applause.) We have Mr. G. W. Cline and the Secretary who have been practising these customs for some years. Let us hear the result.

Mr. G. W. CLINE: I have had quite a bit of experience in spraying Paris green. We have been at it ten or twelve years. I guess I was the first one to start it in our section, and I have had very good success. Sometimes through the rains it is not as satisfactory as I would like. It is pretty hard when you spray in the morning and it rains before noon, and when you spray in the afternoon it rains before night. However, I generally have a very good crop of plums, and have succeeded very well also with pears, though the curculio was very bad on pears.

The SECRETARY: How many times out of ten years have you failed with spraying your plums?

Mr. CLINE: I have not failed once.

The SECRETARY: You have had a partial failure some years?

Mr. CLINE: Oh, some years my crop would not be as heavy as others.

Mr. M. PETTIT: Have you left some unsprayed some years?

Mr. CLINE: Yes, and they never came to perfection; they all fell off.

Mr. BOULTER: Has any member been troubled with the curculio in the Damson plums?

Mr. CLINE: A good many persons have Damson plums in our neighborhood, and they always have a crop of them.

The SECRETARY: What do you think you spend per year in spraying plums?

Mr. CLINE: I generally spray my plums about five times in the season. I have sometimes sprayed them only three times. It does not cost very much. I use three

ounces of Paris green to forty gallons of water. I have never injured any trees, except to take some leaves off, when the water would begin to thicken in the bottom of the barrel. I commence spraying just as soon as the little covering drops off the plum. I have never found a curculio yet until after the blossoms were gone, and sometimes for a week afterwards. It is generally cool weather at that time, and the curculio won't work in cold weather. On a warm night they will work as lively as can be. I have left my trees watching for curculio for a whole week, and perhaps on Saturday it would come hot, and on Monday morning there would be any number of curculios and the plums badly stung.

The SECRETARY: The force of my question is this: that if you, after ten years' experience, have so much confidence in it that you will spray your orchard—which is a large one—five times in the season, it is a positive proof of the good results of your experience.

Mr. CLINE: I don't think I could get the success in any other way. I jarred them for several years, and, of course, it is tremendous work. You have to do it in the evening. Very seldom you find curculio on the tree in the day time; but from six in the evening until dusk, and in the morning from daylight until seven o'clock, they are thick, and then is the time we always had to jar. I found it this year a great deal easier in spraying. I got a horse power pump from Lockport, and I find it is a light job now to spray, compared with the hand pumps.

Prof. FLETCHER: Do you know the name?

Mr. CLINE: It was the Victor I got. It has worked very satisfactorily. It is driven by cogs and chain. The price is $70. It cost about $100 with the duty.

Mr. HILBORN: Do you find the foliage injured?

Mr. CLINE: No, I sprayed this year also with the Bordeaux mixture for the rot four or five times, until the leaves were white with the lime—I had a good deal of rot—and I think it helped them. I know it helped the Flemish Beauty pears. Where I didn't spray I didn't have any, and where I did spray I had a very fair crop.

The PRESIDENT: Now, Mr. Woolverton, we would like to hear from you.

The SECRETARY: I think Mr. Cline has ventilated the subject very well. I have also been testing it for eight or ten years past, and every year I spend a great deal of time in spraying my orchard. I do not omit it any season. I do not know that I need give you any greater testimony of my confidence in it than that fact, both for plum trees—though I am not so largely in plums as Mr. Cline—and also for the curculio in the apple and pear, and for the codling moth. In the latter I am confident of the great benefit to be derived from it. The codling moth has been exceedingly troublesome in the Niagara district in the past. Our apple crop has been frightfully diminished by this insect, and since we are using Paris green regularly we have a far smaller proportion of wormy apples.

Dr. BEADLE: What about apple scab?

The SECRETARY: I have been trying faithfully copper mixtures and some seasons I felt confident that there had been great benefit from it, but some years when we have tried most faithfully there has been no scab at all even on trees not sprayed, so that I don't feel prepared to report that I have had complete success yet.

Mr. CLINE: Have you had good success with the Paris green on the codling moth this year?

The SECRETARY: No, not very good on account of the rains.

Mr. CLINE: This is the worst season I have had. I have had more wormy apples than any year for ten years. There didn't seem to be any until just as the apples were ready to pick, and then you could notice they were getting full of such all over. It may have been a late brood—too late for the spring.

Mr. M. PETTIT: Is there any way that a fruit-grower can determine the quality of Paris green? A little of some brands put in a glass of water will color the water and appear to stay in suspension. Other brands you put in and it seems to curdle a little, or

collect together and settle more, and not color the water so much. Now, this brand that colors the water more, we consider the best to use. I would like to know if there is anything in this.

Prof FLETCHER: I should rather think it would be the other way. The Paris green should settle partly at the bottom; but I think the best way of telling whether Paris green is pure or not is to dissolve it in ammonia. If it thoroughly dissolves it is pure.

Mr. M. PETTIT: We are not chemists.

Prof. FLETCHER: You need not be. Get a little spirits of hartshorn—or ammonia, for which it is another name—from the druggist. What is in the water is something in suspension, but it should not stay in suspension—it should sink to the bottom. Measures have been taken now to have all the Paris green that is sold in Canada of a pure and known grade. That is now being considered—(hear, hear)—and I think before very long there will be some legislation to insist on it.

Mr. EDWARDS: I have heard amongst farmers and others a great deal of dissatisfaction expressed with regard to the strength and quality of Paris green; and if some measure of that sort were taken it would be very satisfactory.

Mr. FLETCHER: At any rate it would regain confidence. I find this, as a matter of experience, that if there is any idea about a remedy not succeeding, ninety-nine per cent. of the people won't try it at all. As a matter of fact the adulteration of Paris green never amounted to ten per cent. of the samples we tested; but the idea got abroad that it was impure, and it was no use putting it on; so, instead of putting on a little more, or trying to find that out, they wouldn't put it on at all. So with this spraying, if there is any doubt about it a large number of people will not use it at all. I have found by experiment that it is worth a great deal, and therefore it is going to pay everybody to spray Paris green over their trees.

Mr. BOULTER: I have been told by people selling it that Paris green is very expensive—about 40 cents a pound; that it is all adulterated to a greater or less extent.

Prof. FLETCHER: That is not the case. I have been told by the man who makes two-thirds of all that is sold in Canada, that when their travelers go out through Canada and offer Paris green at, say, 20 cents, the buyers say, "No, we want it second grade;" and they insist on having it, and he cannot get them to buy the best grade at about 5 cents more. The difference is between the pure and the second grade. They are prevented from selling it as "pure" Paris green, but they sell it as "genuine" Paris green.

Prof. CRAIG: I know some agents who sell this article to druggists as "pure" Paris green and Paris green "off color." The difference is 4 or 5 cents a pound. The difference in the actual value of the insecticidal powder is several dollars a pound—not only in the actual damage it does in preventing the spread of spraying, but as loss of faith in the remedy. Mr. Tweddle, of Stony Creek, has been conducting some experiments with me this last year in spraying plum trees for curculio, and one effect he seems to have attained is that Paris green applied with Bordeaux mixture is not as effective as Paris green applied alone. His experience is that the mixing weakens the toxical effects of the Paris green. That is very important to know; and if there are any present who have had experience I would like to know it. Mr. Tweddle's whole experiments this year have pointed to the fact that insects must have been very abundant, because I visited his orchard early in October and was surprised to find the trees that he had sprayed faithfully with Paris green had the apples largely on the ground.

Mr. PATTISON: Don't you think it was an extraordinary late brood that didn't get poisoned at all?

Prof. CRAIG: He sprayed the 25th of July the last time.

Mr. CLINE: Do you know if these were the same varieties of trees?

Prof. CRAIG: No.

Mr. CLINE: Take the Duane's purple; you can hardly keep curculio off them.

Mr. RACE: Last year in the county of Perth we were troubled with curculio for the first time in my recollection. This year I used Paris green alone, and my neighbor used the Bordeaux mixture. We applied it about the same time, and were the only parties in that district that had any plums at all, so I am very confident of the success of spraying; but my experience was that my success with the Paris green alone was greater than his, although he put on just as much and did his work as thoroughly as I did. A great many of his plums did drop, and we found they had been stung by the curculio. In my case it was a very rare thing to find they had been stung.

Prof CRAIG: It is very often difficult to judge by a glance in an orchard, or even by looking through it, of the actual benefits of any spraying experiments. I have often at the end of a season's work been discouraged, in looking at the trees that had been sprayed, and those that had not, that I was unable to see a more distinctly marked difference; but on picking the fruit the result showed up very much more plainly and distinctly than I was led to suppose it would.

Mr. RACE: You think the Paris green is most successful.

Prof. CRAIG: I threw that hint out as a feeler. I shall try and get exact data on it next year.

Mr. EDWARDS: Will the spraying be as effective for the second brood of the codling moth as for the first, that is, those that lay their eggs between the apples, and so on?

Prof. FLETCHER: It will be more difficult to apply, on account of the large amount of foliage then on the trees; but where it can be applied it will be probably as effective, because any surplus of moisture will run between those apples and lodge there, just where the eggs are laid—in the calyx or cup of the flower. I do not remember seeing an apple injured where it hung alone; it is where there are two or three together. I think it would pay you to spray, but I don't think it would be as effective as the first spraying.

Mr. EDWARDS: When should that spraying be done?

Prof. FLETCHER: In July. The first time I have taken the first actual beetle at Ottawa is about the 26th May.

Mr. CLINE: I have found they make their first appearance about the 1st June.

Prof. CRAIG: Has anybody present had any experience in spraying peach leaf curculio with Bordeaux mixture?

Mr. HILBORN: This last spring it was not so bad as a year ago. We thought it was on account of the weather. A year ago we had a very wet, cold, backward spring, and the trees were very much injured. This spring trees that escaped the best before were the most injured.

Mr. SMITH: What would be your remedy for that?

Prof. CRAIG: Some information was given to me a short time ago which was new to me, and I asked the question in order to bring it out. A horticulturist from Australia told me he had most complete success in spraying peach curculio with Bordeaux mixture four times. It kept their trees in perfect health; and peach curculio there is one of the worst difficulties of peach growing. They began before the leaf was nearly out, and the sprayings were, I think, about a week apart.

FLOWERS AND THEIR RELATION TO US.

Mr. W. M. ROBSON, of Lindsay, presented the following paper:

By way of introducing my subject permit me to give a brief historical sketch with a few intimations on their commercial value. It would indeed be difficult to assign a greater antiquity to any industrial art than that which may be claimed for floriculture. The traditions and historical notices of this art refer to periods of very remote antiquity; ancient legends celebrate the gardens of the *Hesperides* and of the *Alcinous*, and authentic his-

tory tells of the Hanging Gardens of Babylon, by means of which a mighty king sought to reconcile his Median Queen to the flat and naked country of her adoption. The Persians appear to have cultivated gardens from their earliest period. The Grecians followed in the same steps; they formed gardens not merely for fruit and vegetables but for the cultivation of flowers. With them the narcissus, the violet and rose were in high repute, myrtle and box trees were clipped in fantastic forms, and flowers out of season were produced in their forcing pits; for violets in profusion could be bought in the markets of Athens while the snow was thick on the ground. In Ancient Rome flowers and fruits were placed under the guardian care of special deities, and floralia or flower festivals instituted. Indeed to such a pitch of extravagance was the passion for flowers carried that at one period it became necessary that sumptuary laws should be enacted to restrain it. Still the extravagant love of flowers predominated, for, at one single supper given by the luxurious Cleopatra, the roses alone are said to have cost an Egyptian talent—about $1,000 of our money. Nor was the love of flowers confined to wealth alone;—the humble hermit's cell had its little plot of ground for the growth of a few choice flowers for the chaplets and garlands of some favorite saints. The same love, admiration and devotion continued through all stages of history; for we find the immortal bard of Avon, through the fair Ophelia, so beautifully describing the virtue of flowers and herbs (in her method of madness), and still onward in their aggressive and subduing influence to the present modern times, where their worth and value is becoming an important factor of commerce, yielding large revenues in different parts of the old continent and thus giving employment to tens of thousands. But pursuing this idea my subject becomes unlimited, and still more so on estimating tropical productions, their merchantable spices and perfumes, of such immense value to them and the world, only to be overshadowed by the speculative wealth in florticulture on this continent. Think of $6,000 paid for one rose (the Bennett) and the fabulous prices attained for the orchids and many other new and rare flowers. Then if wealth is the pursuit of this period, here is an avenue open to it.

But I have grave forebodings that in this age, those beautiful gems of earth, that are exhaling a bountiful fragrance, enriching and exhilarating our very existence, are scarcely receiving a reciprocal response of gratitude or attention that is commensurate with their universal beneficence. It must be admitted that the present epoch of time is pre-eminently materialistic, speculative and inventive, and in this there is a danger of our finer feelings becoming susceptible to their absorbing influence and alienating us from the beautiful.

But pardon this digression in blending the useful with the beautiful. Flowers being my theme, let us review their status: Old as humanity; broad as the universe in their adaptation; deep beyond expression in the affections of our people; high as the flight of imagination can describe in their chastity, innocence, beauty and fragrance; emblematic of Heaven's best gift in their refreshing mission to the sick and suffering; enjoyable alike by the monarch and lowly peasant; poets and writers of all ages have vied in the lavish description of their charms and influence; enjoyable alike in all states and conditions of life without any reaction of feeling; expressive of human affection at births, marriages and deaths; woven in the victor's wreath; flung as grateful tributes to valor, to patriot, statesman, or orator, who is able to captivate by deeds of daring, or thrill with eloquence; talisman of love and sincerity to youth and maiden; pleasing and refreshing reminiscences to maturity and age; to all, refining and inspiring, breathing delightful perfumes, floating like rich incense o'er the earth, soothing human sorrow, exalting and ennobling character, touching a responsive chord in humanity, to the Giver of all good for those types of divine beneficence—surely such qualities ought to awake a vibrating chord of love, sympathy and devotion in every recipient heart, as it did in Scotland's greatest lyric poet to the modest mountain daisy:

Wee modest crimson-tipped flower,
Thou'st met me in an evil hour
For I maun crush amang the stoure
Thy tender stem
To spare thee now is past my power,
Thou bonnie gem.

The SECRETARY: What flowers are the most satisfactory in your garden?

Mr. ROBSON: I think the rose is the king of flowers.

The PRESIDENT: Mr. Beall, let us hear from you on this subject.

Mr. BEALL: I have a number of hybrid roses, we have no difficulty in keeping them. All I could say would be to encourage hybrid roses instead of the common summer roses, because there is scarcely more difficulty in growing one than the other, and it is pleasant to have roses when every other person's have gone. We always have roses until the snow comes. In winter we lay them down, put a piece of wood on them, or some cedar brush, or something of that kind.

The SECRETARY: You cannot grow La France rose in Lindsay out of doors?

Mr. BEALL: No, I have not succeeded in doing it. I don't think there would be any difficulty if special care were taken to protect the roots. I don't care for growing anything that requires extra pains; it doesn't pay. There is no difficulty in growing and protecting the hybrid roses.

The SECRETARY: Can you mention the one that has given you the greatest satisfaction last year?

Mr. BEALL: The one that has given me the greatest satisfaction every year is the Lena Turner. It is beautiful in shape, and in the conformation of its petals, and it has a very fine flower. Its greatest beauty is it is constantly in bloom. We can always find a rose on that bush. The color is very bright, but rather of a deep pink. I sent some buds to Dr. Beadle and Mr. Mitchell, but I never heard that they have been successful in propagating them, and I cannot find it in any catalogue now. I believe it was from Dr. Beadle I got it, perhaps 25 years ago, and I am very anxious about the matter because the old bush is getting weaker.

Mr. MCNEIL: What is your method of pruning roses?

Mr. BEALL: We never touch them in the fall of the year. Bend all down; high branches will shoot up four or five feet high. Those are all laid down in the winter. In the spring we leave no shoot more than a foot or a foot and a half high.

The SECRETARY: Do your summer prune?

Mr. BEALL: No, of course we occasionally cut out old wood. I would pay ten or twenty times the price for the Lena Turner that I would for any other, for the great satisfaction of blooming the whole summer long. I recollect one year we had fine beautiful roses on one branch in November. Of course we hadn't very much frost before that.

Dr. BEADLE: I have tried several times this last eight or ten years, and I cannot get it—cannot find anybody who is growing it.

Mr. RACE: Would you recommend confinement to a few varieties?

Mr. BEALL: I would recommend every person to grow all he can find room for. The more that are grown the better for the family and for everybody else. I would certainly choose the varieties that would bloom the best. I have a great deal of satisfaction with the old Jules Margottin.

Mr. RACE: Have you Jules Margottin growing on its own roots?

Mr. BEALL: No they are all budded roses. I would not take the trouble with a rose growing on its own roots, because I can't find any person that keeps them more than two or three years. I want it to last as long as I do. I don't think any man can find a better rose than the old John Hopper. I believe that is the very first produced in England—one of the very first at all events—and I don't know of any better rose to-day.

Mr. EDWARDS: Would you give some roses that could be grown successfully here?

Mr. BEALL: We like the Camille de Rohan. I have the Marshall P. Wilder, but it does not suit me at all—it is a great big coarse rose. Caroline de San Sal I don't care much for. The Baron de Rothschild and Gen. Washington are good roses. The latter is not double enough, but it is a very fine rose, and of good color.

SECOND DAY—MORNING SESSION.

The President : It is usual to have our financial report submitted as early in the session as possible. I will ask the Treasurer to read his report, and then the Auditors to present theirs.

FINANCIAL STATEMENT.

Mr. Woolverton read his report as Treasurer as follows :

TREASURER S REPORT FOR THE YEAR 1892 3.

RECEIPTS.	$ cts.
Balance on hand	153 78
Members' fees	2123 39
Government Grant	1800 00
Advertisements	294 87
Bound volumes and binding	48 80
Back numbers etc.	8 16
	$4429 00

EXPENDITURE.	$ cts.
Canadian Horticulturist	1613 98
Salary, Secretary, Editor and Clerk.	1200 00
Chromo lithographs	339 55
Directors' expenses	192 07
Commission	186 18
Express and duty	175 52
Plant distribution	118 58
Postage and telegrams	107 33
Printing and stationery	94 08
Stenographer	66 25
Electrotypes	55 65
Book binding	54 92
Discount	23 74
Committees	23 44
Auditors	20 00
Care of rooms at meetings	5 00
Russian exchange	3 00
Petty cash	1 50
Balance on hand	148 21
	$4429 00

We, the undersigned Auditors, having examined the various books and accounts kept by your Secretary-Treasurer and carefully compared them with the vouchers, have pleasure in testifying to their correctness, and the careful manner in which the books have been kept.

Dated December 6th, 1893.

E. B. Edwards
F. G. H. Pattison } Auditors.

Mr. Edwards read the report of the Auditors as appended to the Treasurer's report and added : I have much pleasure in emphasizing the fact stated in the report as to not merely the correctness, but the satisfactory way in which the accounts are kept. This is the first year in which I have been Auditor, and it has given me a very great pleasure to see the thorough and systematic way in which all the accounts are kept, enabling the Auditors to complete their work with satisfaction to themselves, and I hope, also to the Association. I have much pleasure in moving the adoption of the Treasurer's report as audited.

Mr. F. G. H. Pattison seconded the motion, and as the second auditor endorsed Mr. Edwards' remarks as to the correctness and neatness with which the books were kept.

The motion was put and carried.

The President : It has been our custom to proceed with the election of officers the second day, and although the programme says this would be done on the last day, I think it would be better to continue our custom, as we have always a full meeting the second day.

Mr. Race : Would that require a motion ?

The President : I think it would, because I think there is a motion to the contrary ; is there not, Mr. Secretary ?

The SECRETARY : Yes. the reason the programme mentions the elections as taking place on the last day is that at Brantford the opinion was expressed that this would be better as the members would be better acquainted with one another and more able to judge who were fitted for the various offices. I presume, however, that we are pretty well acquainted with one another by this time. I have no objection myself.

Mr. RACE : After due consideration last night by the Executive it was decided to submit the question to the meeting this morning whether we had better depart from the arrangement of last year and go on with the elections this morning. I would move that the election of officers be proceeded with this morning.

Mr. SMITH seconded the motion.

Mr. BEALL : I would like to ask Mr. Edwards if this would make any difference to the people here. Are there any considerable number who had intended to be here at the election of officers ?

Mr. EDWARDS : No, I don't think so. I am sure it was not the intention of the people of the County of Peterboro' to come in and swamp the meeting in connection with the elections. (Laughter.)

The SECRETARY : The reason I gave last night to the Directors for proceeding at once with the election was that the new officers ought to get together before they leave the Convention and lay plans for work, and go home feeling that they know what they are going to try to carry out during the year.

The motion was put and carried.

The PRESIDENT named Messrs. Alex. McNeil of Windsor and T. M. Grover of Norwood to act on the Nominating Committee. The three chosen by the meeting were : Messrs. Turner of Cornwall, M. Pettit of Winona, and Dr. Beadle of Toronto.

REPORT OF COMMITTEE ON FRUIT EXHIBITS.

While the Nominating Committee were at work, Prof. Craig reported for the Fruit Committee. He said : You will be interested to recognize your old friend, Ben Davis, from British Columbia. Grown in that genial climate it takes on quite a handsome appearance. I think the limits of improvement are comparatively narrow in the Ben Davis, though in its home it is very much better than we can grow it in Ontario. An interesting little apple, to which I may draw your attention later in the report on new fruits, is this Pomme de Fer, literally the Iron apple, which originated in the Province of Quebec. It is a small dark red apple, and keeps easily till June. From Mr. Robson of Lindsay. We now come to an interesting exhibit of W. H. Dempsey, the fruit of the labors of the late P. C. Dempsey, so long known in connection with our Society. This consists of apples all raised from the seed of the Northern Spy and crossed with the Golden Russet, and exhibits very well the work we may expect when we go into the work of hybridization. Another interesting cross is the cross of the Duchess pear with the Sheldon ; and this is the product. You see the progeny resembles the Sheldon considerably, and it has the same characteristic—gritty flesh—of the Sheldon, only more intensified I think. There are large gritty granules about the core of this that depreciates the quality considerably. Showing how apples may be preserved, we have specimens from Mr. Beall of Lindsay of the Lawrence. These apples are part of the crop of 1892, and are in perfect eating condition. They were kept in an ordinary cellar without more than ordinary precautions. (The Professor here showed by illustrations taken from the table the advantages of cultivation, one apple having been grown in an old pasture and the other having received high cultivation. Both were of the same variety, yet the latter was twice as large as the former.) The report was then read as follows :

Exhibit of selected fruit by the Secretary : Gilpin ; Jonathan from Quebec ; Blenheim, Ontario ; Æsopus' Spitzenburg, British Columbia ; Newell, from Wisconsin—a flattish green apple, keeps till May ; Ben Davis, British Columbia, large, fine colored ; Ben Davis, Quebec ; Longfield ; Wealthy, Ontario ; Canada Red ; Pomme de Fer.

Mr. Robson showed Agawam Grapes ; Fameuse, an extra good plate without scab or spot ; Josephine de Malines ; Fallawater.

J. H. Toole, Orillia, exhibited La Rue, Hurlbut, Fisher, Pewaukee, very fine specimens, well colored ; Ben Davis ; Mr. Leaf, Colvert, very green ; Golden Russet ; Mr. Toole, Pomme Grise ; Mr. Gillet, Wealthy and Fallawater ; Mr. Willis, Talman Sweet ; Ribston Pippin ; Belmont, by Mr. Willis.

Exhibit of Hybrids by W. H. Dempsey : No. 80, cross of Golden Russet and Spy, large oblate crimson with light dots, calyx closed basin moderately large, round, regular, stem $\frac{1}{2}$ to $\frac{3}{4}$ inch long ; cavity, deep, narrow, russeted ; flesh, yellowish white, firm, crisp, juicy ; acid, quality fair. Mr. Demspey says tree is a fair grower and apparently a fair bearer. Walter—same origin as last—large, round, or oblong, yellow ground overlaid with splashes and stripes of light and deep red ; calyx, closed deep ; stem slender set in a deep, narrow cavity ; flesh, white, soft, melting core, very small ; quality only fair at this date, though now past its best, a handsome apple.

Same origin as last. Medium to small, round, dark crimson ; flesh, firm, woody sub acid, not promising.

Seedling apple W. H. Dempsey, medium to small, round, dark crimson ; quality, not to be commended.

Pear, cross of Duchess and Sheldon ; about same size and appearance of Sheldon flesh, peculiarly granular about the core, very interesting as the product of hybridization but hardly valuable from a commercial standpoint.

Lawyer, exhibited by Thos. Beall, Lindsay, in good condition. Remarkable from the fact that it is from the crop of 1892, showing great keeping qualities. Vale Mascal Pearmain also Ontario.

Seedling, grown by F. Crandall, medium size, flattish, greenish, and believed by your committee to be Belmont.

By T. H. Race, Mitchell, Ont., large handsome, apple, has been called Spanish Pippin, resembling Spy in appearance, but poor in quality.

By A. M. Smith, Lawrence pear, Keiffer pear, Princess Louise apple.

G. W. Cline, Keiffer pear.

By W. S. Turner, Cornwall, Shiawassie Beauty, Golden Russett, Scott's Winter, Bourrassa, Northern Spy, McIntosh Red, Fallawater, Ben Davis,

E. B. Edwards, Blenheim Pippin, Canada Red, Northern Spy.

Mr. McGibbon : La Rue, Roxberry Russet, Northern Spy, Ben Davis, Fallawater, Ben Davis.

The Secretary moved the adoption of the report, Mr. Beall seconded it. Carried.

JOHN CRAIG,
Chairman.

REPORT OF NOMINATING COMMITTEE.

Mr. PETTIT read the report of the Committee on Nominations, and moved, seconded by Mr. Smith, its adoption, which was carried. The full list appears on page 2.

A COMPLIMENT TO THE RETIRING PRESIDENT.

Mr. BOULTER : I think it was the proper thing for the Ontario Government to make preparations to have the fruit-growers of this Province properly represented at the Worlds' Fair, and I believe their choice of a representative was a wise one. I wish to move :

"That the thanks of this Association are due and hereby tendered to our retiring President for the action that he took whilst representing Ontario's fruit interests at the World's Fair in placing our exhibit to such advantage."

From personal observation during a month's visit to the Fair, I know the choice was well made, and that our representative tried to do his duty. You all, as patriotic Canadians, felt your blood tingle when you knew what Canada had done at that World's Fair. Americans who thought we had a cold country that could produce nothing, found that we can compete with them in any products almost, we may say. To-day we stand on record as one of the greatest fruit producing countries on this continent. Our apples have ranked five shillings a barrel higher in the British market than any to the south of us, and I believe to-day they will rank higher than ever. Outside of the national view, I believe we will be benefited financially by the exhibit we made at Chicago.

Mr. CASTON suggested that this matter be deferred till the new President took the chair.

The PRESIDENT : I will now ask our friend Mr. Race to come forward and take the Presidency of this Association. I thank you, gentlemen, most sincerely for the cordial manner in which you have supported every effort of mine as your President during the last two years. In leaving the chair I feel that I am parting with gentlemen who have done everything in their power to advance the interests of the fruit-growers of this Province, and in every act of mine I have received their support and advice in every respect. I ask you, gentlemen, to tender that same courtesy and kindness to our new President, who will now take the chair. I have much pleasure in introducing Mr. Race, the President elect.

Mr. RACE : I am sure, gentlemen, that I thank you very heartily for the position in which you have placed me here to-day. I may justly boast that I am the first newspaper man who has ever occupied this position, and I also boast the honor of being the only newspaper man who has been, or is at the present time, the President of a Farmers' Institute in Ontario. I have had a great interest all my life in agricultural matters, and I am still as deeply interested as I ever was in horticultural matters. I believe I am becoming more enthusiastic year after year. Sometimes we imagine there are too many professional men introduced into this sort of thing, but as long as a man is a professional man and at the same time a practical man, I think probably the two qualify him better than one who is only giving one side to a question. I take the theoretical side of this, and I also do a good deal on the practical side. I do a great deal of work in connection with horticulture. I have to do so. I am generally up pretty early in the morning in the summer time working among the fruit and flowers. I trust I may do honor to the position you have conferred upon me. I am heartily in accord with the sentiments expressed in regard to the ex-President. We thought he was a man so eminently qualified for the position and the duties that were going to devolve upon the the President at Chicago, that we thought he was the right man to keep a second term in office, although it was contrary to precedent ; and I trust I may be able to fill the duties as satisfactorily. It shall ever be my endeavor to do so. You have heard the resolution that has been proposed by Mr. Boulter, that the thanks of this meeting be tendered the retiring President for the very efficient manner in which he has filled the chair, and for the manner in which he has performed the onerous duties that devolved upon him in connection with the Ontario fruit exhibit at the World's Fair.

Mr. CASTON : I take great pleasure in seconding the motion. I think we would be lacking very much in our duty as fruit growers if we failed to express our appreciation of the remarkable success that has attended the labors of our President as Commissioner for Ontario at the World's Fair. I think we are all proud of the success that Ontario has achieved there ; I think it will be more profitable for the Province than all the immigration agents that we could send out. In the selection of the Commissioner, the right man was put in the right place, and we owe our gratitude first to the Government, secondly to Mr. Awrey, and last to our ex-President, who has so ably filled the duties. It required a man who was thoroughly conversant with the capabilities of Ontario—a man of energy ; and above all, a man with a great amount of executive ability. All these qualities we had in our ex-President. We ought to be proud of the

position our Province has taken at Chicago—due in the greatest measure to the ability of our representative. I doubt if we could have got any man who would have filled the position better, and we are only doing our simple duty in recognizing his work. I do not forget our Secretary either. We all know him, and know what kind of a man he is. Of course he was not so directly connected with our provincial exhibit, being a Dominion officer; but we know he would not be dallying around the Midway Plaisance instead of attending to his duties. (Laughter).

The motion was put and carried amid applause.

The PRESIDENT: I have great pleasure, Mr. Retiring President, in extending to you the vote of thanks of this Association for the very efficient manner in which you have performed all the duties that have devolved upon you during the past year.

Ex-President PETTIT: Gentlemen, I am sorry it is just this time of day. (It was nearly noon). I would like, in reply to this resolution that has been so kindly tendered me, to present a very short address as the President's Address, in which I trust I would be able to embody what I would like to say to you on this resolution. If you could bear with me for ten or fifteen minutes I would do so. (For this address see page 5.)

Mr. PETTIT continued: I would like to say a little more on this subject. I have spent the last six months with men engaged in the same work as myself, fighting, with every energy possible, to win for our Province that credit that she ought to have. Every State was doing the same; and yet we met as men together on the most friendly terms, and the six months were the happiest I ever spent. From the day I entered that building till the day I left, I never heard one word unkindly spoken between us. You will not often see that at large exhibitions of this kind. Another feature of the case was this: We had men from the finest fruit states of the Union as judges; every man was a foreigner, and I believe the verdict he rendered for Ontario was a true one. I believe it was rendered in the best of his judgment; and instead of looking as we do sometimes to the other side as being in advance of us in fruit culture, and as our pattern in other respects, I say, gentlemen, they want to look to Ontario for their pattern. (Hear, hear, and applause). Trace it where you will throughout Ontario's exhibits at the World's Fair,—I care not whether it is in agriculture, in stock, in fruit-growing, or any other branch of industry—and you will find she stands at the head of almost any other country that exhibited there. (Applause). They have difficulties to overcome in our neighboring states, they are not placed in a happy position anywhere to-day; in many respects, they are far from markets. They have greater distances to reach the markets of the old world, that we have convenient to us; and I do not believe their agriculture is equal to our own. Look in the matter of cheese. We have heard of the United States being the great cheese country of the world. How is it with us to-day? We went there in the spring of the year, and out of 134 awards offered to the whole world in the cheese industry, Ontario took 125 of those prizes. (Applause). Americans said afterward they thought Ontario was a little slow because she didn't take the other nine. (Laughter The only reason she didn't take the other nine was that she was just short nine cheeses (Laughter). We had another exhibit to make in the fall of the year, collected from all parts of Ontario; and what did Ontario receive there? Ontario received 99 per cent. on cheese at the fall exhibit. (Applause). In our horticultural department what did we do? The awards were not all out when I came away, but I know we have awards innumerable in our fruits. How did we get them? Those awards were decided by weights, and our weights were ahead of other countries We also got another award for our style—the nice way in which Ontario's exhibit was placed. We got an award there which but one other State in the Union got. Then we have got numerous awards in our educational exhibit; and we have got one award which I think is a credit to the Province of Ontario—a credit to our country in every sense of the word; we received a national award for our system of education. (Applause). Could we ask more than what I have mentioned? I say it is enough to make a Canadian prouder and prouder every day of his life. I was proud of my country when I went there; I am prouder of it to-day, because we have the people, the country, the soil, the climate that will produce better than any other climate in the world. Here is an advantage for our fruit-growers'

to look at; the fruits of many countries ripen at a season of the year when the weather is too warm. We are thousands of miles nearer to the foreign market, our fruit ripens at a later season of the year our apple crop—the great staple crop to benefit our country—ripens later; and those fruits can be placed in the markets of the world very much earlier, and I would not be surprised to see a great many of our American friends writing back to us to supply their winter trade. I visited a large number of the cold-storage warehouses in Chicago, and I found a large quantity of their apples were Canadian. They got them for late keepers because they could not hold their own. I believe there are very few parts of this Province that cannot produce apples of the very best quality, every locality can produce some quality in far greater excellence than other localities. If you want certain choice varieties you have to go to the northern part; if you want other varieties you have to go to the south. We are capable of producing varieties that will supply the world for nine months in the year. When we see our grain product over-abundant, at prices too low to be profitable to the farmers of this country, cannot we wisely increase our product in some other line, as we are doing in cheese—as I believe we will do in butter before long and connect with them the fruit—the apple—industry as well? Further than that: I think our manufactured product in the fruit line should be pushed more than it is. I had a conversation with a German from Hamburg, in Chicago. He comes out to this country every year to purchase large supplies of provisions for Hamburg. He says there is a grand opening in that country for our apple crop. He looked over our apples and said: "That is the stock we want, and we want large quantities of it, and I will be glad to open up communication with you." The Government of this country is sending Mr. Robertson—perhaps the greatest authority we have in our country on butter and cheese—to speak on the subject in Britain, and they have made a mammoth cheese to be drawn from one end of the country to the other. I believe the butter industry will receive the same attention. I believe if Mr. Robertson would take our fruits also, and advocate them in Germany and other countries, we would greatly widen our market, and instead of curtailing the production of fruit in this country we would increase it largely, for we have the market that will bear a large increase with profits to the producer. Now, gentlemen, I thank you most heartily for that resolution you have passed. I appreciate most fully the words you have expressed; but I appreciated your assistance the more when I was in Chicago. I felt there that I was to fight your battle, and without your assistance at home I could do very little; but it was that assistance you gave me, and your liberality in your contributions and selections, that took the world's prizes—not my work; and that gave me thanks louder than anything else I have received at your hands. I was proud I was connected with that institution; I was proud that I had the privilege of being your representative there; and any man who goes forward out of this country to represent the people of this Province or of Canada in a competition like that, with the world, can truly rely that he has behind him the best and foremost race of people in the agricultural, horticultural, or any other field, that will stand up for our country and place it where it is destined to stand—at the head of any other country of the earth. (Great applause)

The PRESIDENT: I know, gentlemen, that you have all listened with a very great deal of pleasure and interest, and I believe a great deal of profit, to the remarks which have been made by the retiring President. I do not think it would be well to emphasize those remarks, or to repeat them, lest we might, like Alexander of old, begin to smite ourselves in the side that we have no more worlds to conquer in that line. (Laughter). I have had an increasing hope and expectation for the last two or three years that what Ontario has won for herself in the way of cheese, she was also likely to win in the near future for her apples; for I am fully convinced from my own observations in this country and in the States of the Union, that there is not another apple produced on the continent equal to this one that we produce here in Ontario. It is not necessary to ask for any expressions of opinion on any remarks on this address. I think you are all ready to receive it, and to express your gratification in the manner that you have done; and as it is now time to adjourn, probably we had better adjourn till, say, two o'clock.

Mr. SMITH: Could we spare about five minutes longer while we are on this business?

The PRESIDENT : I think so.

Mr. SMITH : While I am fully in sympathy with all that has been said and done in regard to the work of our late President, I think we ought not to forget that we have another member of our Association who has taken a very prominent part in that work, although not a representative of our Fruit Growers' Association. We all know the part that our esteemed Secretary has taken there ; and although he has not been working as directly for Ontario, he has been working for Canada, of which Ontario is only a part. (Applause). We are one country, and I think the honors of Ontario and Canada ought to be equally divided ; they ought to be identified ; and I have much pleasu
a vote of thanks to our Secretary, as an appreciation of his labors at the World's Fair during the past summer. I know something of the labors that he performed there, having been with him a few weeks, and I think this vote of thanks is but his due.

Mr. A. H. PETTIT : I have much pleasure in seconding that motion. I can assure you that I saw the great work the Secretary was doing for this country of ours at the World's Fair. I did not wish to refer to that department, or to trample upon his territory, as I wished him to have an opportunity of expressing himself more fully in that line.

Mr. EDWARDS : As one who was present at the Fair, and saw the splendid exhibit of Canada as a whole and of Ontario in particular, and observed the excellent work of the Secretary as well as the ex-President, I wish to add my expression of appreciation of the work that has been done. I think it is fortunate for Ontario that she had not merely our ex-President as the director of the Ontario exhibit, but that she had our Secretary as the chief director of the whole exhibit for Canada ; and I think it is a matter of which we have reason to be proud, that our two officers were the chief men in our Province and in our Dominion respectively.

The motion was put and carried heartily.

The SECRETARY, in responding said : If there were time I would be very glad to reply at some length to your very kind motion, because there are a great many points which I believe would be interesting to you, which I might bring before you. However, I hope that I shall have opportunity in other ways to give you those points, so that you may read them, and it is not necessary for me to take up time here to place them before you at this late hour. But I do wish to most heartily thank the Association for their great kindness to me in the indulgence which has been shown me by the directors and members of this Association, because I fully understand my position as its servant ; and in taking up the work that I did at Chicago I had necessarily to give less time and attention to the work of the Association during the last year. I feel this. However, I may say that I did not lose sight of your interests and the interests of Ontario while looking after the interests of Canada as a whole. With regard to our own Association, I felt proud to make an exhibit of the literature which has been published by it during the past years ; and our fourteen volumes of the *Canadian Horticulturist*, and our bound Reports showing work during so many years past, were placed before the judges at Chicago, and I am happy to tell you received a diploma and a medal for their merits as literature in the Department of Horticulture. I would like to add my testimony to what Mr. Pettit has said as to the noble place the Province of Ontario has taken at the Fair. We had some 8,500 square feet in the Horticultural Building devoted to Canada. Of this, more than half was occupied by the Province of Ontario. (Applause.) So prominent was the Province of Ontario in all the exhibits that I had to fight for Canada to make it appear as important in the eyes of the world as the Province of Ontario. (Laughter.) Ontario made such a noble exhibit, and was so well brought before the public, that it might almost be looked upon as a separate nation. Indeed, I noticed, in one of the American papers a reference to the great nations of the earth which were exhibiting at Chicago, and it gave the list in some such way as this : Great Britain, Germany, France and Ontario. (Laughter.) We certainly have reason to feel proud of the number of awards taken by our Province. Out of sixty-six awards made to Canada for the various exhibits, and to the Provinces, Ontario has taken about two-thirds. There were several additional awards which I can speak of that are not included in Mr. Pettit's list because the individuals who exhibited sent their exhibits through

the Dominion and not through the Province of Ontario. One of these is our esteemed friend Mr. Boulter, who has taken an award for his exhibit of canned goods. There is one thing I would like to refer to with regard to the benefits to us. I think we stand a great deal higher in the estimation of the world than we did before the Fair —not only in the eyes of foreign nations across the water, but also in the eyes of our neighbors in the United States. You would be surprised at the prejudice that exists against Canada; and the "Yankees," as we call them, are more strong and more difficult to be convinced in regard to the resources of Canada and her people, than any other nation in the world. They lie here alongside of us, and they are jealous of us, and they are accustomed to belittle our importance; but when we went there with our exhibits, side by side with the exhibits of the various states of the Union, they had to admit that we excelled them in our apple products, and that we were a far more important country than they thought. Many of them would ask us, "Is it possible you grow these fruits? How finely colored they are! Surely you grow them under glass?" It was a constant source of astonishment to the thousands who walked through our courts, that we could produce such fruits under ordinary conditions in Canada. We proved to them what they were very slow to admit, indeed. I think results will be seen in the future, to our interest and general advantage. I am sure there is a market opening up in the west, and should it be, as seems probable, that the duty is to be taken off apples, and we should be able to put this fruit into the United States, I believe we shall find an increasing market for our apples on that side of the line. In Chicago the constant enquiry among commission men was for Canadian apples, and particularly our excellent Canadian Northern Spy—an apple that does not take so high a place, perhaps, in the English markets; but in the Western markets and Chicago the Canadian Northern Spy is the great apple in demand, and it will bring a very high price. I had enquiries from numerous large dealers in apples, not only from Chicago, but from States west, who were in the habit of ordering not only in carload lots, but tens and twenties of cars, asking about Canadian apples. At present the duty is almost prohibitive. Another thing: I believe we shall receive benefit in this Province in the way of colonization, and the kind of colonists that we want—not the kind that will be induced to go to the North-West Territories and so on, who have not perhaps a great deal of money, but the exhibition of what we can produce in the gardening line is likely to induce men of means to come to Canada. These are the men that we want in our older Provinces—men who will pay high prices for our land, and so make our lands more valuable. I believe this is not one of the least benefits to accrue to Ontario from the exhibits made at Chicago. (Hear, hear, and applause.)

SECOND DAY—AFTERNOON SESSION.

The SECRETARY: Perhaps everybody here does not know, as I do, that Mr. Beall has undertaken some work that I think is of considerable importance to us. At Lindsay he has been instrumental in forming a local horticultural society, which is affiliated with us; and this has worked so successfully there that Mr. Beall is inaugurating an undertaking to establish similar societies in adjoining towns and in other places. Now, if this scheme of Mr. Beall's works, it would be a very good one. Indeed, I think, if it could be extended throughout the whole of the Province, so that societies affiliated with ours could be formed under the Agriculture and Arts Act; it would be an advantage to them as well as to us, and should be considered more fully in all the towns in Ontario.

THE PRESIDENT: When we adjourned we had no secretary for this Association. Since that time the directors of the Association have met, and the secretary *pro tem* will announce the result.

Mr. MCNEILL: At a meeting of the directors of the Association, called to order by the President, it was moved by Mr. Caston, seconded by Mr. A. M. Smith, that Mr. L. Woolverton, M.A., be continued as secretary of the Association and editor of the *Horticulturist* for the ensuing year at the same salary as last year. Carried unanimously.

The PRESIDENT: You hear the report; is that your pleasure?

D:. BEADLE: We have no pleasure in the matter. That is entirely in the hands of the directors. (Laughter.)

The PRESIDENT: The directors did not really make the thing a final matter in that meeting.

Dr. BEADLE: It is final in the hands of the directors. The society has no power in the matter; you can report to the society what you have done, but they cannot help themselves.

The PRESIDENT was requested, by vote of the Convention, to appoint a Committee on Legislation.

The PRESIDENT: We have a paper here on "Raspberry Culture." I think, and some other of the directors think, that that would be a matter of interest to those who are present at this meeting, and we think well to call that question right on now.

RASPBERRY CULTIVATION FROM AN AMATEUR STANDPOINT.

Mr. R. B. WHYTE read the following paper: Before discussing methods of cultivation and varieties I would like to put in a plea for the more general cultivation of this the most delicious and in every way the most desirable of all small fruits. Only those who have grown them or have had the privilege of buying them freshly picked, have any idea of the delicate aroma and sweetness of the best of our cultivated raspberries, while in length of season, ease of cultivation and amount of crop for the space occupied, they have the advantage of any of the small fruits. By a proper selection of kinds you can have fresh berries on your table for five weeks or more, and the yield is so large and the cultivation so easy, that there is nothing to prevent any gardener—even though he has only a city lot—growing all that an ordinary family can use. No special soil is required; any ordinary friable soil is good enough so long as it is drained as well as it ought to be before being made into a garden, for though the raspberry will make good use of all the moisture that comes from above it is very impatient of stagnant water at the roots. Neither can you expect the best results if your soil is very sandy; so much water is required during the ripening season, that in a very dry and sandy soil the fruit is apt to be small and lacking in juiciness unless water is liberally supplied. The perfect soil is a heavy sandy loam that is fairly retentive of moisture and does not bake during hot weather.

By far the best time to plant is in the fall as soon as the leaves have dropped. Procure your plants from the nearest reliable nurseryman and as soon as received unpack and cover the roots with moist earth until ready to plant; do not expose them to the air any longer than is necessary. Exposure of the roots to the drying action of the wind and sun is the chief cause of plants failing to grow. Plant two to three feet apart five to seven feet between the rows according to the vigor of varieties. Weak growers like Brinckle's Orange do not require more than five feet, stronger growers like Cuthbert need six, while rampant growers like Shaffer require seven feet between the rows. Before the ground freezes cover with rotted stable manure one foot on each side and 3 or 4 inches thick.

During the next summer they do not require much attention. You can grow a crop of peas or beans between the rows if you like, but be sure and keep them free from weeds, cut off any laterals that may appear within two or three buds of the main cane, cut out any weak shoots and all suckers that you do not want; in the fall cut back the main canes to 4 or 5 feet high according to their vigor, mulch with manure as when planted and bend them down as close to the ground as possible, putting on them pieces of board or scantling or anything heavy enough to keep them under the snow. No other protection is necessary even for the most tender varieties.

During the second and each succeeding season the treatment is the same. As soon as the frost is out of the ground I remove the covering and tie the canes to stakes driven about a foot into the ground close to the plant. I find the cheapest and most convenient

stakes can be made from what is calling "furring" 1½ x 2 in., used to nail lath to in house building, cut into 6 ft. lengths and pointed, the most satisfactory tying materi,l is a cheap, soft, jute twine. When tied up spread the mulch between the rows and lightly fork it under. Never use a spade. The roots are so close to the surface that they are very much injured if spaded. To keep down weeds and suckers I use a Planet Junior double wheel hoe which reduces the labor of weeding to a minimum. For a small garden a very good substitute is a "Crescent hoe"—an improved form of the Dutch hoe—sharpened on convex and concave sides so that it cuts equally well both ways.

As soon as possible after the fruit is picked cut out all the old wood and surplus canes, leaving four to six to each hill, tie them loosely to the stake to prevent their being broken by high wind, and no further attention is required till the autumn. When the leaves fall I go over the rows cutting back all branches to six inches long and the main canes at five feet; they are now ready to be laid down for the winter.

This is the system of pruning I have practiced for fifteen years and am every year more convinced that it is the correct one for our climate. There is no variety that I have grown so hardy that it does not winter-kill more or less during our severe winters and sometimes to the snow line, ruining the crop for that year. The only safe course is to lay them down, and to do that they must be grown long and limber so that they can be easily bent. Another advantage of long canes is that the fruit being higher up on the plant it is not so liable to be soiled by the rain splattering the earth on it. It is also much more easily picked than if on a low growing branching bush, and being better exposed to the sun and air, they are finer flavored. When picking for immediate consumption I always take those along the top of the rows, finding them much sweeter and richer than when protected from the sun's rays by the leaves.

The question of what is the best raspberry to grow is a very difficult one to answer. So much depends upon conditions of climate, exposure and individual preferences that it is impossible to say of any one variety that it is the best one to grow under all circumstances.

During the last fifteen years I have grown over 20 named varieties and have fruited 21 seedlings of my own. Out of the named kinds I have kept 8, though not all of equal merit, yet as having all some points of excellence about them that make me reluctant to part with any of them. Before discussing what I consider the eight best sorts for amateur cultivation, it may not be uninteresting if I give you a brief account of those I have discarded and in what respect they fell short of my standard. My raspberry experience began with the Clark and Franconia.

The Clark is a large, sweet, juicy berry in quality, the very berry for home use; but with me it was too shy a bearer, not a vigorous grower, and was supplanted by other varieties as good in quality and more productive.

Franconia is a large, fine-colored, well-flavored berry and a very heavy bearer. I think it produced as much fruit as any berry I ever grew, and would be a very profitable berry to grow for a near market, but for the amateur to whom quality is the first consideration, it has the serious fault of having a very large seed, still it had so many good points that I discarded it with considerable reluctance.

Crimson Beauty I procured specimens of from the introducer, but two years sufficed to show its worthlessness. Neither in size, quality or productiveness was it superior to our wild berry.

The Philadelphia at one time a very popular variety, and which is still grown somewhat extensively for market, fell far below my standard in size, color and quality. It is a very heavy bearer of small dark-colored, poor-flavored berries quite unworthy of a place in the amateur garden.

The Hansell is a an early medium sized, fair quality, but with me was too shy a bearer to be worth keeping.

The Marlborough is a very large, bright-colored early berry, and I have no doubt a very profitable variety to grow for market but is the poorest-flavored berry I have grown, being altogether too insipid to be worthy of a place in the amateur's collection.

About the Turner as a fruit I can say nothing, but with it as a plant my experience is so singular that I will give it to you in the hope that some of you may be able to

account for the phenomenon. Five years ago I procured 20 plants from a well-known nursery firm, they made a good healthy growth the first season. In the spring there was a fine show of blossoms but no fruit set. Thinking that probably some peculiarity of the season was the cause I gave them every care and the following spring had the finest-looking row of plants I ever grew—a magnificient show of foliage and blossoms, but not a solitary berry did I get. I would very much like to know if any one else has had a similar experience and how they accounted for it.

Everbearing berries is the name given to some varieties that in addition to the usual summer crop fruit again in the autumn. I got some plants from a friend near Montreal under the name of "Everbearing Red." I found that the summer crop was a very small one, and that we never got more than a few scattering berries in the fall, as they were always caught by early frosts before they had time to ripen. They might be a success farther south, but with us in eastern Ontario they are valueless.

Saunders' Hybrid sent out by our Association in 1880 is a hybrid between a red raspberry and a black cap; Johnson's Sweet possessing some of the characteristics of both types, the softness and juiciness of the Reds with the flavor and habit of growth of the cap berry. I fruited it for several years, but though very satisfactory in productiveness and quality it was eventually supplanted by the Shaffer of the same type but much larger.

My experience with the black cap family is limited to the Mammoth Cluster, Tyler, Gregg and Hilborn. The first three I have discarded, but still retain the Hilborn and will refer to it later.

The Mammoth Cluster at one time the most famous berry of the class is now very little grown, having been supplanted by others of doubtful superiority.

The Tyler is a very early, good flavored, fairly productive berry but too small, in no way superior to the *Rubus occidentalis* of our woods.

The Gregg is much larger than Tyler but inferior to it in flavor and productiveness. I never could get a paying crop from it. Indeed it is doubtful if any of the cap berries are productive enough to be worth growing in a small garden.

In my collection of what I consider the 8 best raspberries and none of which I would like to part with are three reds—Cuthbert, Herstine and Heebner; three yellows—Golden Queen, Brinckle Orange and Caroline; one black cap, the Hilborn, and one Purple Hybrid Shaffer.

Of the reds the best-known and I believe the most extensively cultivated of all rasps is the Cuthbert, well-known to all raspberry growers, a large, fine-flavored, firm berry, very productive, holding on well to the receptacle, therefore not apt to drop till picked, a combination of good points that make it one of the best for amateur cultivation and the best of all for market. It is the only red raspberry that reaches our Ottawa fruit stores in good condition, looking fresh and attractive, while Philadelphia shipped at the same time looks sodden and mouldy with the boxes not more than three-quarters full.

The Herstine is too soft for a market berry, but for home use I prefer it to the Cuthbert. It is a very large, fine-colored, sweet and juicy berry which I have grown with great satisfaction for ten years and have yet to see a fault in it.

The Heebner which I got from my friend, Mr. W. W. Hilborn, five years ago—and who, I believe, controls it—is a very fine berry of the same type as the Herstine, as large and juicy, rather finer-flavored and I think more productive—for amateur cultivation upon the whole the best red raspberry I know of; it and the Herstine ripen about the same time a week before Cuthbert.

If growing only one yellow I would take the Golden Queen, sometimes called a yellow Cuthbert—hardly so vigorous a grower—but otherwise very like it, except in color, which is a very pretty pale yellow. Its only competitor for first place among yellow is Brinckle's Orange which is considered by most raspberry growers to be the finest-flavored of all rasps, and it is undoubtedly a most delicious fruit, large and very handsome but unfortunately too delicate in constitution to stand the extremes of our climate. It can, therefore, only be grown with great care, and even with the best management they are sometimes winter-killed. In texture it is too soft, except for home use, but freshly picked, with a suitable allowance of sugar and cream, there is nothing that I know of in the fruit line that can equal it.

Caroline does not compare in size or flavor with Golden Queen or Brinckle, but has some good points. It is an immense bearer of beautiful pinkish yellow berries of the black cap shape and type, and though not equal to Brinckle in flavor is still very good.

The Hilborn, the only black cap in my collection, is considered to be one of the best of the class, but with me the fruit is too small and too dry to suit my taste. Like all the caps it is very short-lived and difficult to manage in a small garden. I have had to renew my plants every three or four years, a serious drawback when space is valuable. The canes grow so stiff that they are difficult to lay down for winter and often break during the operation. Altogether I doubt if they can be profitably grown by the amateur. Indeed since the advent of the Purple Hybrids, their equals for canning, and very much their superiors for table use, it seems to me that their usefulness has departed.

The best of the Hybrids is the Shæffer, a large purple berry, very productive and vigorous. It is much liked by some for table use, but is rather too acid for my taste, Its color is also against it for that purpose, but as a canning berry it is unequalled. The canned fruit is of a beautiful dark reddish purple color, the seeds not near so prominent as in the canned black cap, and the flavor is much superior to any other berry that I know of.

In addition to these named varieties I have fruited 21 seedlings of my own during the last three years, five of them black caps, four of which proved worthless and were thrown out; the other, I think, will be worth propagating. The rest are all red, some of them of no value, but most of them very good, and a few of them of great excellence. Nos. 3, 6, 7, 13 and 17 I have propagated, and they are now on trial.

No. 17 is the largest raspberry I know of—too soft for shipping, but a very handsome berry and very productive.

No. 7 is also a very large berry—firm and bright-colored, with a very refreshing slightly acid flavor that has been much admired by those who have sampled it; foliage large and dark green, canes strong and vigorous.

No. 13 is also a very large, sweet-flavored, fine berry between 7 and 17 in firmness.

No. 6 resembles No. 7, is not quite so large, and differs from it it flavor.

No. 3 made a good showing on the original plant, but did not do so well last year when set out in the garden. It did not fertilize properly and some of the berries were imperfect. If it retains that defect the coming season I will discard it as there are too many good varieties in existence to perpetuate any others that are not equal or superior to the best of those now grown.

The seedlings here described appeared at different times as stray plants in various portions of my garden, probably from seeds of the cultivated varieties, but I am unable to give the exact parentage in any case. Mention is made of them here, with the object of creating a greater interest among fruit-growers in that most fascinating of all horticultural work, the production and development of new varieties.

The PRESIDENT: Now, we will allow a reasonable length of time for discussion.

Mr. WHYTE: I will be happy to answer any questions or reply to any criticism.

The SECRETARY: Will you tell us more about your method of pruning? It is quite different from what we adopt in the southern part of Ontario. We cut them short, two or three feet from the ground in the growing season, and you prune them up quite high with the object of laying them down?

Mr. WHYTE: The only sure way of getting a crop every year is to lay them down. A friend of mine told me he did not lay them down, and he lost every vine in the severe winter. I find no difficulty in bending a cane as thick as my finger if it is sufficiently long. We have every winter practically snow enough to cover them.

The PRESIDENT: You don't require to lay the Marlboro' down?

Mr. WHYTE: I laid it down.

The PRESIDENT: Up near Stratford we can bring the Marlboro' through the winters easily.

Mr. WHYTE: Are you subject to 30° below zero?

The PRESIDENT: No.

Mr. WHYTE: That fetches any of them.

The SECRETARY: Tell us when you do your pruning, and how?

Mr. WHYTE: As soon as the fruit is off, if there are any very rampant I prune them then. If you prune the new wood any way severely there is too much centre growth when the frost sets in in the fall. It is the last garden work I do, after my grape vines are pruned, to go through my rasberries and cut them back to five or six feet.

Mr. EDWARDS: Don't you prune them during the season at all?

Mr. WHYTE: No, not unless they are growing too rank. As a rule I don't meddle with the canes till the fall, and then I cut them all down to five or six feet, and cut off all the branches back to the main stem.

Mr. TURNER: Cornwall is not far from Ottawa not much difference in temperature; still one of our members—a Mr. Leitch—has his raspberries growing in hedge form; does not cut them down. He had a splendid crop this year—grows them four feet high.

Mr. WHYTE: There is this difference at Cornwall—they have the St. Lawrence river. Even though my Cuthberts would stand the winter without laying down, I would lay them down. I have left up plants, but I find those laid down fruit earlier.

The PRESIDENT: The Hillborn Black will stand 20° below zero.

Mr. WHYTE: I left half of my Hillborns up last season. The plant was not killed outright, but the tops of a great many branches were killed. I was more than ever satisfied that it paid to lay them down. I have between 200 and 300 plants, and on a Saturday afternoon I can lay the whole lot down.

The PRESIDENT: Can any one in this immediate district give us any information?

Mr. GILES (Peterborough): I have quite a lot of Cuthberts and the black cap. I never lay them down. I have brought them through several years, and get a fair crop every year.

The SECRETARY: Have you compared the results where you laid them down and where you did not, in the same year, to see whether you got a better crop by laying them down?

Mr. GILES: I have never laid them down, but they have generally sprouted out most years right to the tip; not even the tip was affected to any great extent.

The PRESIDENT: What is your method of pruning?

Mr. GILES: Well, I prune the Gregg by the rules laid down in the *Horticulturist* and other papers, but the Cuthbert I did not prune at all—I just let them run for three or four years and then cut them down, and have a new plantation pretty much all the time.

Mr. SMITH: The cultivation of the plants affects their hardiness. If you cultivate them late in the summer and keep up a tender growth they are liable to be injured in winter. If you give them good cultivation the fore part of the summer, keep the ground well stirred and get up a good growth, and then leave your ground alone and let them harden up, ripen up their wood toward autumn, they will stand the winter much better than if you keep cultivating till the snow comes.

Mr. HILBORN: I can corroborate what Mr. Smith, says. We have sometimes below 30° in our section, and we have never laid down the Cuthbert yet, and have a fair crop, by ceasing to cultivate early in autumn. I think it is a very important point in a great many other things besides raspberries, to have the wood well made and hardened up before the cold weather comes. If the plants are killed back a few inches, we cut that in the spring, and they throw out sufficient laterals to give a fair crop.

Mr. BOULTER: How late do you cultivate?

Mr. HILBORN: I never cultivate much after the middle of the summer. I make it a point to have the ground thoroughly clean, and then I don't put the cultivator in again that season; I don't touch them again till the spring; but I get in among them in the spring and encourage a good growth then. I always leave the old canes till the spring.

Mr. STINSON (Peterborough): I grow four raspberries—the Souhegan, the Gregg, the Shaffer and the Red Cuthbert. I don't prune the Gregg in the summer at all, and find I have better results; the others I prune down about two feet. The Souhegan I prune to get the branches. Last year my berries came through all right, but two years ago they killed badly, which was the general experience around here. The red raspberry I don't prune in the fall. In the spring I cut out the old wood, and if they are killed I cut back the cane as far as it is killed. Leaving the old wood on during winter protects the plant by allowing the snow to lodge.

Mr. FISHER, (Orillia): I grow Cuthbert and Caroline quite extensively. I don't do any cultivation of the Cuthberts after I finish picking. I consider that is one of the great secrets of the plant being hardy; next spring we cut out old timber. The Caroline will stand more frost than any other raspberry, and will bear more berries—at least at Orillia.

Mr. TURNER: I don't see how these men can take a pride in a garden or a plot of ground of any description if they don't keep it clean. If there is anything I dislike to see, it is a dirty garden. These men can't grow raspberries that way without having a dirty garden; you must cultivate. The idea of these last two gentlemen saying they don't cultivate any after picking the fruit! It is ridiculous! Your garden is full of all kinds of weeds, and these weeds are going to seed. I am the greatest enemy of weeds, I don't allow a weed of any description to go to seed in my garden, summer or fall. I cultivate up to frost. I decidedly object to this idea of dirty gardening. I think both the last speakers are entirely wrong.

The PRESIDENT: May be these gentlemen do not consider simply hoeing out weeds to be cultivating.

Mr. CASTON: I can assure Mr. Turner he is mistaken. He can come and see my garden, and this gentleman, too, in Orillia. The Cuthbert fruits pretty late with us, and by cultivating up to that time we can manage to keep our gardens perfectly clean. I can't account for it except that Cornwall is a very wicked place, and has a greater visitation of weeds. (Laughter).

Mr. A. H. PETTIT: I want to go one better on the Cuthbert. I have seen the Cuthbert two seasons in Manitoba perfectly sound without being frozen back, and perfectly good crops. In August and September they usually have dry weather; the wood ripens and matures, and is not killed back; and there they certainly have lower temperature than we have here. So I think you will find the Cuthbert perfectly hardy under ordinary circumstances.

The PRESIDENT: Mr. Hilborn, will you tell us your experience?

Mr. HILBORN: My experience with raspberries has been that the pruning-back system has done the best. I don't quite agree with Mr. Whyte in the method of pruning, although I have seen his garden, and I must say that he has very fine raspberries, and he puts a good deal of work on his garden and has it perfectly clean and in good shape. At the same time, I think they can be grown more cheaply for market by the other system of pruning back, that is, the planter allows the canes to grow the first year until they are about a foot high, then pinches back, lets them branch out and does no more pruning till the following spring; then he cuts back any surplus wood. The second year he allows them to get about two feet high before pinching back. In pinching back you must be a little particular. If you take off too much of the tip of the new growth, the cane does not recover; it does not appear to make a good growth afterwards. If you take off the whole of the tip, it sends out the last lateral without branching out, and you miss the object in view. I would say, take off 4 to 6 inches of the cane when it comes to 2½ or 3 feet high, according to the age of the plant. Do no more pruning till

the following spring. Do the cultivation early in the season; start as soon as you can in the spring; keep down all suckers and weeds until about the end of the picking season, and after that allow the wood to ripen up.

Mr. ORR: Would you recommend fall plowing?

Mr. HILBORN: No, I think not, from my experience. Of course, that might be varied in some localities, but, on the whole, I would not like to touch the ground in the fall. You cannot do that without breaking more or less of the roots, and I like to leave all the roots without injury, as they retain the moisture which helps to sustain the life of the plant during winter.

The PRESIDENT: I think it would be well to understand that Mr. Hilborn is from the Lake Erie shore, and that the methods of cultivation there would not suit the season here.

The SECRETARY: Would Mr. Hilborn recommend the shortening system of pruning for cold sections, or wouldn't he consider that the laying down would be a better system?

Mr. HILBORN: That depends on the man. If a man will give careful attention, as Mr. Whyte does, laying down is the best; but the shortening-in system will work with an ordinary cultivator. More quarts can be grown at a less figure, take it as a whole, by growing in that way. My first experience was in Lambton County, quite a distance from the water; at present it is along the Lake Erie shore, and for a time I was at Ottawa. Taking it in all three sections, I think on the whole the shortening-in principle will work best with the majority of people.

The PRESIDENT: I gave up the cutting-back system three years ago, and I find I can get a nicer berry, and have a bush that is easier to work among, by allowing it to grow right straight up, and not cut it off till the following spring. I also find you will get a nicer berry produced from the stalk than from the lateral that has been sent out the August before.

Mr. SMITH: Would not that involve the necessity of tying up the canes?

The PRESIDENT: Sometimes I drive a stick right down the centre and tie it to the stick; but my canes grow very high, and when I find that they are over-high and I am afraid they will blow down in winter time I cut back in the fall. I always cut back to 4½ feet.

Mr. HILBORN: That is all right where the work is done properly, and those who give careful attention can succeed very well and get a finer quality of fruit grown in that way, but the great majority would give what we call only a slip-shod method of cultivation, and I think that is more easily done with the pinching-in system.

Mr. WHYTE: The raspberries grown on the top of a plant exposed to the sun, have a very much finer flavor than those grown below the leaves. From the amateur's standpoint, quality is the first consideration rather than a large crop. Short pruning, therefore, is not suited for amateurs. I am surprised to hear that some growers do not cultivate after the crop has been picked. I would a great deal rather not grow raspberries than have my garden grow in the foul condition that it would be in. I don't understand about leaving them without pruning till the spring. Some of mine would be 12 feet high if I did not cut them back twice in the season. What an awkward thing to lay down!

Prof. CRAIG: Mr. Whyte has described the ideal method of growing raspberries for home use from the amateur standpoint. It is just a question for growers to decide whether or not they can be grown with profit on a large scale with the fine fruit that Mr. Whyte gets. In Wisconsin, a large grower, who grows 25 to 30 acres, lays down his plants every year, and finds it pays him to do it. In a series of experiments last year and the year before I found it paid me in this way, that the bushes laid down and covered, grown tall, as Mr. Whyte described it, were a week or ten days earlier than those not treated in that way, and were sufficiently more productive to pay for the cost of the labor. That is with all varieties rivalling in hardiness with the Cuthbert. I don't think with Hansell and Turner it paid me to do this, but with such varieties as Cuthbert, Hornet, Clark, and all that type, the results were very satisfactory.

Mr. BOULTER: I have 40 or 50 acres in raspberries. The Shaffer is not good for canning at the factory; it goes all to mush like the Cuthbert, and uses too much sugar; and we have discouraged it so much that this year there were at least 50 acres plowed up in Prince Edward county. I know to-day of 500 or 600 cases of Shaffers in tin cans, that were sent to Winnipeg at 20 cts. a dozen less than it cost to put them up. I would not spend money on raspberries that had not good flavor. If you go into raspberry culture for money-making, you must put them seven feet wide—even the Cuthbert. We pinch them off when they get about three feet high. Then the laterals start out. When we let the canes grow too long they weaken and freeze. We don't lay down the plants—too much labor; yet I have seen the thermometer down to —30°. We have lost them only one year. We cultivate with potato hoes. The Cuthbert is a different berry from the Shaffer—one grows from tips and the other from suckers. We put them about twelve inches apart, and in a couple of years we have the rows filled right up. We give them thorough cultivation about two weeks before the berries ripen. In the fall we plow, and throw the dirt well up to the bushes; that keeps them up so that they don't break down with the snow, and plow that around them in September thoroughly. Keep the manure from under the rows—they will draw all out three feet from the side all right. I believe strawberries also can be successfully grown. I paid a man $1,000 for what strawberries he brought me off three acres.

Mr. WHYTE: Stakes only cost 2½ cts. apiece, and they last four or five years. We have canned 25 or 30 cans, and it is the universal testimony that the Shaffer cans better than any other, and has a better flavor. I have not heard anything yet that has disturbed my opinion.

Mr. BOULTER: There is a difference between offering canned fruit to a guest, who is not going to be critical, and trying to sell it.

APPLES FOR THE FOREIGN MARKET.

The PRESIDENT: It has been suggested that we might discuss with profit to growers in this section, these questions; and I would call on Mr. Edwards to open the discussion:

Q. What three varieties of apples should we grow for the British market? One early winter, one mid-winter, and one late keeper.

Q. Are there any other good markets for Canadian apples, besides Great Britain, and what varieties are in demand?

Mr. EDWARDS: I made one shipment to the Old Country in connection with a friend of mine, and I found that the nett returns from all the varieties sent were about $1.89 per barrel here. The Blenheim Orange, of which I sent 27 barrels, realized exactly $3.13 here after all expenses were paid. All the rest—including Northern Spy, some Ben Davis, some Russets, Rhode Island Greenings, and two or three barrels of Fameuse—which should not have been sent at all—netted exactly $1.57 per barrel; so that the Blenheim Orange netted within one cent of being twice the returns of the others. It would strike me, therefore, that the Blenheim Orange was, for the British market, a more profitable variety than any others that were sent at that time. It sold readily at a time during last year when the markets were quoted as being from 10 to 16 shillings, and where no other variety in the same shipment realized more than 16 shillings the Blenheim realized 18, 20, 22, and one barrel as high as 25 shillings. The trees bore well also.

The PRESIDENT: Which of the three classes would you put it in?

Mr. EDWARDS: It would be called with us a mid-winter apple.

The SECRETARY: With us, in Southern Ontario, it would be called an early winter. I think the apple has been very wisely brought before us, and deserves all that has been said in its favor. It is one of our best apples for the British market, and one that grows clean and good, and is therefore very desirable. In mentioning two others—including

the Blenheim as an early winter—I would suggest the King as a mid-winter apple. That apple is growing in value every year in the British market. The last returns that I read classed it away up. It is constantly growing in favor and rising in price, but the difficulty is in procuring it in sufficient quantity—the tree is not a good bearer. The fact has been brought before our Association in times past that the King apple will produce better if grafted upon the Talman Sweet; and if this is true it opens out a remedy. Of course for a late keeper the Roxbury or the Golden Russet are about the only apples that we can plant. For the British market the Spy does not seem to succeed as well as it does in some other markets. It does not bring as high a price as either of those we have been speaking of. The Baldwin carries so well that it stands well in the British market.

The PRESIDENT: What are the bearing qualities of the King in this district?

A DELEGATE: Poor.

J. G. GALVIN (Peterborough): Also the Baldwin. I find the Wagener one of my best.

The PRESIDENT: Do you find the Wagener a hardy tree here?

Mr. GALVIN: Fairly hardy; but it is a grand fruit.

The PRESIDENT: For the early winter?

Mr. GALVIN: Yes.

The PRESIDENT: A short-lived tree?

Mr. GALVIN: Yes; but very productive while it does live.

Mr. BEALL: With us the Ontario apple is doing exceedingly well. This last winter we have had scarcely any winter apples of any variety—all have failed except the Yellow Bellflower—but the same trees, for instance, that would produce from a bushel to two or three barrels last year, would produce this year only from half a dozen to a peck, and then what we had were very poor. The same rule would apply to all other of our winter varieties—scarcely a good apple in all.

The PRESIDENT: Can some one suggest a later apple than the Blenheim or King?

Mr. EDWARDS: I believe the Ontario apple will in a few years from now be one of the most profitable that can be grown in this country. I understand they have been sent already to the English market, and have brought first-class prices—equal to the best.

Mr. SMITH: Is the tree considered quite hardy in this section?

Mr. EDWARDS: Yes, perfectly hardy. I have not seen the slightest indication of anything else. I have several trees. There is only one question yet to be considered in regard to it—as to the length of life of that tree. It may partake of the short life of one of its parents. The fact that it bears so early and so very abundantly would show that that is one of the possibilities. I believe there is nothing to show that that is the fact; but that is the danger.

The PRESIDENT: What has been the experience in this locality in connection with the Spy as a profitable apple for the British market?

Mr. BEALL: In growing apples for profit, there are a good many things to take into account. The trees will cost the same, perhaps, but the Northern Spy will take, in our locality, from 12 to 15 years to come into bearing, and not more than 25 per cent. of the trees will ever come to a bearing condition—they never live that long. No doubt it is principally because of the bad condition in which they are planted and cared for. I know of cases where there has been proper care and no loss. Then the Ontario will produce as much to the tree, and will come into bearing in the second, third, or fourth year—or the third year after planting from the nursery—and will bear almost every year. The reports we have from the Ontario apple in the British markets show that it is fully up to the Spy, or a little beyond.

The PRESIDENT: They have not had very much experience yet in the British market with the Ontario apple, as it is a comparatively new apple. The Ontario was introduced to take the place of the Spy, largely on account of the tree coming into bear-

ing so much earlier. The Ontario is a direct cross between the Wagener and the Spy. It partakes largely of the properties of the Spy, and the tree partakes of the properties of the Wagener by early bearing; but up in the Huron district I have found the last year or two that the Ontario is not going to be a long-lived tree; it is going to fail, as the Wagener tree does. It is going to be a heavy bearer, and it is already showing all the indications of scrubbiness.

Mr. ROBSON: I would acquiesce in what the President says about the tree, and also corroborate Mr. Beall's statement. I never saw anything so abundant in fruit as the Ontario apple is when grafted on the Talman Sweet. It was covered with fruit, and very fine specimens, every one of them. I think grafting on the Talman Sweet would be the very best way to produce the Ontario apple.

Mr. CASTON: I think that the same might be said in regard to some of the best of our commercial apples—the best way to produce them would be to graft them on Tolman Sweets. I have had a number of years' experience now in growing an orchard, and I would plant a great number of Tolman Sweets, because I don't know of any better stock. It is very hardy, and very suitable for grafting on. You can form a nice top on it; and I would graft on to this the Northern Spy, the King, and from what Mr. Edwards said, I think I would be inclined to try the Blenheim Orange, which is a comparative stranger to me. Only once I met it in our section, but it seems to be grown in great perfection in Oxford county. There is another apple I would like to try—the Newtown Pippin—that brings the very highest price of anything I have been able to see that has been sold on the Liverpool market. Do any of our Niagara district growers know anything about this apple? Does it succeed there? Would it be likely to succeed in any other part of Ontario? Would it succeed if grafted on hardy stock? If so, it would be one of the best apples we can get. I should judge the best way to proceed in this locality, and in many parts of Ontario, would be to plant only the very hardiest trees, and plant a number of Talman Sweets, or something that is very hardy, and then graft while those trees are young.

The PRESIDENT: How many years?

Mr. CASTON: It depends on the growth of the tree. As soon as I get a limb as large as my thumb that would hold a graft, I would begin and take a third of the top off the first season, and and a third the second season, and the third season I would finish it. Graft far enough out from the body of the tree so that you will have your top not too close together. In that way we can bring the Spy into earlier bearing, and the King into more productive bearing; and I think we ought to grow more of those apples. We find that the King stands next to the Newtown Pippin in commercial value, and it certainly is a splendid apple and it is hard to equal it in flavor at this time of year—and I think that would be the best way to proceed. Now, we have another among the new varieties that I would recommend from experience so far, and that is the Pewaukee; it is an early and abundant bearer. It is an extremely hardy tree—as hardy as the Duchess. It is a seedling of the Duchess and is nearly as handsome as the King, though not up to it in flavor. I would like to hear from some in the Niagara district, whether we could grow the Newtown Pippin top-grafted on hardy stock.

Mr. SMITH: It is worthless in the Niagara district.

The SECRETARY: It is one of the oldest apples in our district, but one we don't grow because we can't. It is more liable to scab than any other. At the World's Fair there was shown some magnificent samples that were grown in New York state; and the superintendent of that exhibit said that they were grown clean and beautiful by the application of copper mixtures by spraying. Should we be able to overcome this difficulty in that way, we shall be able to grow that magnificent apple.

Mr. CASTON: Wherein does its great excellence consist?

The SECRETARY: Its good appearance, good size and very high quality. Of course its quality is its great recommendation. There is a yellow Newtown Pippin and a green Newtown Pippin.

Mr. SMITH: Which do you consider the best?

Dr. BEADLE: It is the green they send to Great Britain. Thirty years ago we planted out about a dozen trees at home, but we never got any fair fruit. It always from the very start began to scab. From all the trees we would perhaps get a peck of apples that were fairly good; and it kept going on from bad to worse until we could not get a solitary apple that was any good. Then we abandoned the idea that we could cultivate it. Now we have got new light on the matter of the apple scab, it is possible we may be able to grow it. It was just as true in all western New York as it is in the Niagara district—it scabbed; but there was just that one particular locality on the Hudson River about five miles long by a mile wide, where they could grow that apple to perfection, and they did and took great pains to treat it as a choice apple—pack them up in paper as they do oranges, pack them in half-barrels and get as much for a half-barrel as we do for a whole barrel.

The PRESIDENT: The Newtown Pippin has been tried in Goderich dislrict. It has not been troubled with the scab there, but it is never going to be a profitable apple on account of the great amount of cultivation necessary to bring it to perfection.

Mr. ROBSON: There is another apple come out—Magog Red Streak; I would like to hear about it.

Prof. CRAIG: That has been brought out on account of strength and hardiness of the tree. The apple will not rank with the Newtown Pippin, Ontario, or even Blenheim Pippin. It is not sufficiently attractive either. In this district, where apples take on a very high color, it might be sufficiently attractive, but as ordinarily grown it is not a handsome apple, and I don't think it is one that can be very generally commended.

Mr. TURNER: The Pewaukee is a favorite with us, and hardy also—a fine large fruit.

The PRESIDENT: I don't think too much can be said in behalf of Pewaukee. It is a good bearer and very fine shaped apple.

Mr. CURTIS, an old resident of Peterborough, told of his great success in small fruits. He recommended vigorous measures against grass and weeds and suckers.

The PRESIDENT: Prof. Craig has something to lay before us, and I think we had better hear from him now.

Prof. CRAIG'S paper was illustrated with the aid of a large chart showing apples of same variety grown in different localities.

MODIFICATION OF FRUITS BY CLIMATE.

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

The variations and modifications wrought by the influence of climate on plants and their products has long been a topic of interest and a subject of research and I might add of speculation by the student of botany and natural history.

Much has been written with regard to the effects of climate on plant and animal life, and we find great variation in plants as a variety is moved from its original centre of development. Again, we find particular acquirements and special provisions made for certain plants whereby they are enabled to endure the rigor and vicissitudes of the climates in which they have been developed. Thus it is that we find with plants natives of a dry climate, that their leaf surface and stomata or breathing tubes have been reduced to the smallest possible area and number, thus giving the least possible opportunity for evaporating moisture. Examples of this class are found in the hot and dry climate of New Mexico and Arizona where the fleshy and prickly leaved cacti abound. In the character of other products the modifying influence of climate is also observable.

I have mentioned the change in the character of the leaves or foliage. There is also a distinct change in the color and shape of the fruit as well as the size, weight and color of the seeds This latter peculiarity has been noticed by Thomas Meehan in comparing the weight of seeds of our American trees to their European allies. This modification of plants and their products may be direct, and influence the immediate progeny or it may be indirect and the variation is preserved through long years by means of natural selection working in the wake of gradual change.

Some of the interesting features connected with the late Columbian Exposition to the Horticultural student were the variations shown by the same variety of fruit grown under different soil and climatic conditions. In fact so wide is the variation in apples of the same variety that frequently the Ben Davis of New Mexico or Arkansas for instance is quite unrecognizable to the fruit-grower who has been acquainted with this variety, say as grown in Michigan or Ontario.

A brief study, as opportunity offered, was made by the writer, of the variations of form of a few of the standard of apples as grown in different apple regions of the northern continent. In this study, while the larger share of the incentive may be of scientific interest, yet most fruit dealers recognize the fact that the form of the apple has an important bearing on the shipping and consequently keeping qualities of that variety. It is well known to shippers that a round apple of regular form will ship and carry much better than an oblong irregular and ribbed variety. So that in looking over the diagrams which I am using as illustrations you will easily see wherein this question of variability of form has a practical bearing.

Taking Ontario as a centre and travelling westward, the round apple seems to become elongated and to have reached a distinctly oblong form. When we arrive at the Pacific coast in British Columbia, Oregon or Washington, with this lengthening tendency is developed prominent ribs on nearly all varieties, with frequent wrinkling about the calyx. The same changes are noticed when the variety is carried eastward into Maritime Provinces, but to a less marked degree.

With regard to color—travelling east and west from the point mentioned, the coloring and marking becomes less vivid, except in the case of the Blue Pearmain which in British Columbia and Oregon is as highly colored as the same variety grown in Quebec or Ontario. Another point not clearly shown on the diagram is the increasing size of the core and seed cavities in the western apples.

In discussing the variations it is not difficult to say that it is a change due to climate, and there let the matter rest, but why should the variation always proceed in the same direction?

A study of the development of an apple from the blossom is an interesting one. L. H. Grindon in his charming little volume on fruit trees, describes it and the flower as follows:

"The upper portion of the flower stalk is deeply concave, the sepals of the calyx springing from the margin as do the petals and the numerous stamens, while in the centre are five slender pistils. The curious should note this carefully since the apple as regards structure is one of the most remarkable productions of nature. The rule in plants is for the ripe fruit to consist only of the matured ovary. In the apple the matured ovary is the smallest portion of the fruit. Soon after the petals drop, the vase-like top of the peduncle becomes gradually distended with juicy tissue. By degrees it adjoins itself to the petals within. These at last become completely embedded and constitute the core (French, *Cœur*), the heart. A horizontal section of the ripe apple shows plainly where the adhesion took place, this being indicated by the green fibres. A ripe apple is thus in truth a fruit within a fruit."

The elongation of the ovary noticed in the specimens grown near the seaboard seems to be favored by climate, and the longer growing period gives it an opportunity to develop in this direction. On the other hand, in the drier and hotter climates of the interior the ovary is more rapidly developed and opportunity for elongation is not afforded, therefore the fleshy part of the apple is laid on laterally.

We learn from this brief glance at the modifications of fruit as wrought by climate, that each apple has its particular locality where it reaches the highest state of develop.

ment. Thus we find that Ben Davis of Missouri and Iowa surpass in beauty and quality, those grown elsewhere. Although they will not keep as long as if grown in Wisconsin or Canada. Again the Northern Spies and Kings of Ontario—and of particular sections of the Province—are unexcelled by those grown elsewhere. Nova Scotia has long been famed for the fine quality and appearance of her Gravensteins—which after all are produced with the best results on a comparatively limited area.

It is manifestly very desirable that the fruit-growers of the province should study these cases of local adaptation in order that in the present era of close competition they may be able to place Canadian fruit products on the markets of the world with profits to themselves and credit to our country.

The PRESIDENT: I will name Messrs. A. H. Pettit and McNeill and Dr. Beadle, the persons to constitute the Legislative Committee.

Mr. A. H. PETTIT: I would urge very strongly to appoint a larger committee, not less than five, and that they fairly cover and represent all parts and interests of the Province, then when their report comes that it should be open for discussion.

The PRESIDENT: Well, in order to expedite matters I will enlarge that at once by adding Mr. Edwards and Mr. Boulter.

Prof. CRAIG: I intended to have said something on the fact that Ontario growers have one of the finest climates in the world in which to grow the finest apples; but that has been so well brought out by the ex-president that I will not detain you longer.

The SECRETARY: I have been growing Gravenstein. The trees are probably thirty years of age—they were planted by Mr. A. M. Smith; they are very thrifty and healthy and bear regularly, and very good samples of fruit. I am inclined to think they are not excelled by even those beautiful Nova Scotia Gravensteins that we saw in their exhibit at Chicago. If they do not equal them they are very close to them. One summer I shipped ten barrels to the British market, and I was rather surprised as well as pleased to find that they sold at $6 a barrel. I am only sorry that I have not a large orchard of that variety. I believe it will be one of the most profitable fall apples we could grow to ship in those sections of Ontario where it succeeds. I do not know that it would succeed in other parts as it does where I live—on the borders of Lake Ontario.

Dr. BEADLE: A few weeks ago I received from Nova Scotia some samples of a Gravenstein apple which was a natural sport of a branch of a Gravenstein tree that has now been propagated for about eight or ten years. It has a much higher color than the ordinary Gravenstein apple as grown in Nova Scotia. The letter stated that in Nova Scotia they had been unable to grow that apple with as high a color as they wished, and as they believed it grew in Ontario, but that this sport was about to relieve them of that condition and give them a high-colored Gravenstein apple, and as they had propagated it now for a number of years they thought it was likely to prove permanent, and enhance the value of the Gravenstein in the British market. I think I could easily get some scions of this sport, and I thought it would be well to get some of our friends to graft it into their Gravenstein trees here, and see how it compares, in point of color and flavor and appearance, with our own Gravenstein. The sample sent us was a small apple, and the writer of the letter said that they were inferior in size to what they had had, but the best had been sent to Chicago and other places in the States in order to get the opinions of people there in regard to the fruit. I would like to see this tried side by side with ours, for it did not strike me that it was so much more highly colored than our Gravensteins. I have grown the Gravenstein for twenty years, and I never thought it lacked color—a beautiful apple with a strong flavor; and I quite agree with our secretary that if that apple were picked and promptly handled and got into the British market in good order, it would always command a high price, for it has a most beautiful appearance and as to quality is perfectly satisfactory to any Englishman's taste.

Prof. CRAIG: I saw at Chicago specimens of this apple referred to by Dr. Beadle, and also received specimens at Ottawa. I received scions, and they have been top-grafted on both Wealthy and Duchess at Ottawa, and I have a diagram of the particular apple, which is called Banks' Red Gravenstein.

Dr. BEADLE: That is the one.

Prof. CRAIG: It is quite distinct from the ordinary Gravenstein, it has a better color.

The PRESIDENT: They are advertising scions for sale in two of our Ontario papers.

Mr. BEALL: The late Mr. Dempsey showed me in his place two apples; one was what everybody understands to be the Gravenstein, and the other was what he called the true Gravenstein. There was very little difference in appearance to an ordinary observer. One had a very much higher flavor than the other, but if it stood on its base it invariably had one side a little higher than the other—that is the good variety—and the other was quite flat. The inferior variety was much larger grown than the true Gravenstein.

Mr. MCNEIL: This matter of variation in climate and soil as affecting fruit is an extremely interesting subject. Perhaps variation is not so noticeable in any fruit as in grapes. I don't believe Concords grown here are anything like those we grow in the west. On the other hand, we grow Delawares there to perfection, as far as appearance is concerned; in fact I think the large Delaware is as fine a looking Delaware as they grow in the Niagara district; but the few Delawares I have grown there have actually gone to waste; they are sweet and very insipid—there is nothing about them to amount to anything. The same with our Niagaras—they are positively nauseous, nor are they as perfect in foliage and bearing as they grow in the Niagara district. On the other hand Concords grown in New York state are not at all the same as we grow; they are a muddy grape and a thicker skin, and hang to the bunch well. Our Concords drop very freely from the stem as soon as they get ripe. Our vines come from Fredonia, and are the same vines they are using in New York State, so that it is not a matter of different varieties but a matter of soil and climate; but I could tell the difference between the varieties by simply sampling them. It occurs to me that the directors of this Association might do service to the people by making a large map of their several districts, and noting the pecularities of fruit culture in the different sections of each division. I think I could mark out in Essex County, and shade off the number of districts that would show where different fruits could be grown successfully, and where they would not, and we might bring data together, and if we could not draw any conclusions from it ourselves, those that come after us possibly might.

The SECRETARY: While we were speaking of apples, I was desirous of calling your attention to this sample of Jonathan, which was given me by Mr. Coleman, the Secretary of the Iowa Horticultural Society, who was superintendent of their exhibit at the World's Fair, and he told me that with him and in the State of Iowa the Jonathan was one of the most profitable apples they could grow. It brought more money than any other apple he put up for market. It is a beautiful dessert apple, has nice size, beautiful color and excellent quality. It seems to be perfectly at home there. I don't know that I have seen it anywhere else grown to such perfection as these samples are. It has been shown for some years at the meeting of the Western New York Horticultural Society at Rochester. They praise it very highly there as a dessert apple, but it does not grow so large in New York State as this. Samples were also shown from Quebec Province, but they are much smaller and not so fine as these.

The PRESIDENT: It resembles somewhat our Cooper's Market.

The SECRETARY: It is altogether a deeper red, and the quality is different entirely It is an excellent dessert apple. It has only one fault—that it is inclined to drop, but then it should be gathered promptly. Another point I want to speak of. He states that it is a very hardy apple—that it endures 20° below zero quite well, without suffering in the least, and he says it is a very early and a very regular bearer. Of course, its time of maturity is early winter. Now, I believe it would be worth our while to consider this apple, and perhaps give it a test here in Ontario. It is for that purpose I brought it here to show you.

Dr. BEADLE: I have grown that apple I suppose for twenty years; rarely got it quite as large, taking the whole crop, as those two samples, yet frequently perhaps a fourth of those on the tree might be as large; but I notice one peculiarity about

these—the weight of the apple. If I remember correctly the apple grown at St. Catharines was not anything like as heavy as these. The quality of the apple is good. I do not call it a high-flavored apple. It begins to bear early and colors up beautifully. I have had them fully as bright in color as these, and it always takes the eye on the market, yet I never marketed it. I have often had people come into the orchard saying, "What a beautiful apple!" and wanting to know if they could get some barrels of it.

The PRESIDENT: How does it compare with the Wealthy as a dessert apple.

Dr. BEADLE: The Wealthy is a better dessert apple to my taste. I don't call it a first quality apple. It is fair, that is all as grown by me in the soil in which I grow it—a sandy soil. Possibly with a clay soil and different exposure it might be a higher flavor; very probably it would be.

Mr. EDWARDS: We didn't hear much about the Wealthy. What about that?

Prof. CRAIG: I think for the district of Ottawa, and other localities where we have cold, it is without exception the best winter apple that can be grown; but it must be grown with this fact in mind—that it bears heavily, bears very young, and is therefore likely to be short-lived, and must be cultivated highly. I have two rows of twenty trees each in the orchard, and have used it for top-grafting stock; and for the last three years—it was planted in 1888—it has been fruiting very heavily, every tree in the row. But in keeping it it must be picked early—that is to say, it must not be left on the tree till it has reached its most thorough maturity; but if picked about ten days before—that would be on or about the 15th September—and kept in a cold cellar, I have had no difficulty in keeping it over till April. But if left to ripen thoroughly on the trees it will mature in December and not keep much longer than the middle of January.

Mr. SMITH: Don't you find it to drop?

Prof. CRAIG: That is one of its faults. The stem is long and it sways with the wind easily, and blows off somewhat readily.

Mr. SMITH: It is the only apple that has borne an abundant crop with me this year.

Mr. TURNER: I would like to hear of the McIntosh Red—one of the best flavored apples we have.

Dr. BEADLE: Very subject to the scab in the Niagara District.

Prof. CRAIG: It is the same fault with the Fameuse in that direction; but where it can be grown free of this it is a very satisfactory apple of high quality, and keeps about as long as the Wealthy.

Mr. EDWARDS: Can the Wealthy be shipped to the old country with advantage?

Prof. CRAIG: Yes, it has been shipped, not in barrels, however, but in compartment cases—the apples being carefully selected.

The PRESIDENT: I see nothing on the list with regard to the pear scab, and I think some here would like to hear about it. It is a matter that is creating some attention lately—particularly with regard to the Bartlett and the Flemish Beauty. I think Prof. Craig had better give us something on that before he leaves. A party near me was thinking of grafting some other varieties into his Flemish Beauties, but he did not know whether the spot would be transmitted from that variety to them.

Prof. CRAIG: I have found a great many Russian varieties to blight in the vicinity of Ottawa. I have other varieties grafted on them which do not blight and the disease has not attacked the graft; and in the same way the varieties not subject to scab, grafted on Fameuse, have not been affected to the same extent as the Fameuse apple grown on the same stock on its own tree; so that reasoning from that point of view, I don't think the disease would be transmitted in any constitutional way by reason of the union. I am glad to chronicle some very striking successes by fruit growers on the Island of Montreal in spraying for the prevention of pear scab. Flemish Beauty is about the only variety that is grown there to any extent, and in the last four or five years they have been very much troubled with the black spot, and cracking, which is very much allied to the ordin

ary apple scab. I have suggested spraying with the Bordeaux mixture, and I have reports this fall saying that while the pears have not been entirely free, yet the results have much more than paid for the cost of application. In conversation last evening with Mr. Murray Pettit, he said that while in many cases he did not think he had any results, yet in the case of the Flemish Beauty sprayed with Bordeaux mixture, he thought it had paid him to do it.

The PRESIDENT: Do you think that spot on the Flemish Beauty will yet be overcome so as to save that variety of pear?—because there is a strong feeling through the Huron district to discard that variety altogether.

Prof. CRAIG: Alongside the collection of Newton Pippins grown in New York State, referred to by the Secretary, were specimens of Flemish Beauty very badly scabbed, and others quite free. A card was placed on one of the latter, stating that these had been sprayed with the copper mixtures and the others, which were scabbed, had not been sprayed. There were also samples of the Seckel Pear with the same history, and if we are to take the evidence and words of these gentlemen—and I think we safely can—we are led to believe that the spraying for the prevention of this disease is going to be a paying practice.

Mr. A. H. PETTIT: I think last year you reported great success in reference to destroying mildew on gooseberries. Has it been successful again this year?

Prof. CRAIG: Yes.

Mr. ORR: Eight years ago my Flemish Beauties were paying $8 to $10 a tree. They have been failing from scab the last five or six years. We have been spraying the regular Bordeaux mixture, Paris green and lime, but they have become practically barren. I thought of top grafting them, but they have such beautiful foliage and are of such fine shape that we do not want to do it.

PROF. CRAIG: There is no doubt that the disease (apple scab) can be stopped, because I have done it. This year I sprayed a row of crab trees in the orchard, which blossomed heavily, and after the blossoms had fallen and the crabs had attained the size of large-sized garden peas I noticed that the spot had made its appearance quite generally. I immediately had the trees sprayed, using Bordeaux mixture double strength; that is, the old formula—six pounds and four pounds—taking care that every part of that tree was covered thoroughly. You know that all the instructions which have emanated from the Experimental Farm have said that this remedy was preventive, and therefore the application must be put on before the disease had a foothold Now, in this case the disease had a foothold; but I tell you, gentlemen, I examined these trees ten days afterwards, and, in every case where the Bordeaux mixture had fallen on a spot of the fungus it simply scaled off and, while the apple was somewhat distorted, the disease was not allowed to develop any further. It just showed me that this is a question of doing the work thoroughly and well. I know the conditions that arise in connection with this spraying matter, because I have handled the pump and the nozzle and have made the mixture myself, and have gone through fifteen acres of orchard and I know it is one of the most disagreeable pieces of work imaginable; but it is just a question with you fruit-growers whether you will do it and grow good fruit or fail by not spraying—and it is a question of doing it thoroughly. Speaking of experience in connection with gooseberries, I have some evidence here from Mr. Tweddle, a neighbor of Mr. Orr, whom I referred to before. He writes me: "The first brood of worms appeared in myriads shortly after the fruit set. A single application of Bordeaux mixture was given when the worms were first hatched, when only one-eighth of an inch in length, but not all were destroyed. When, two or three days later, worms again appeared and were large enough to destroy foliage rapidly, two more applications were made on the same day, going opposite ways on the rows and covering the foliage completely. This was completely successful in destroying the first brood, and also the second brood, for the lime in the Bordeaux mixture stuck the whole thing to the foliage and it remained all season, and if any second brood hatched they got their dose and vanished without delay. The currant worms must be easier destroyed than the curculio, else we must attribute the loss from

curculio on plums, treated the same as the currant, to some other cause that is not apparent. No mildew or sun-scald appeared on the English gooseberries, yet both affected neighbors' plantations under similar conditions where no fungicide had been applied; and this points to considerable benefit in these cases." That is the Bordeaux mixture with Paris green. Now, the use of sulphide of potassium has been so well demonstrated that I need not further urge its beneficial effects in preventing gooseberry mildew.

Mr. A. H. PETTIT: In mixing this Bordeaux mixture for currant bushes, do you use the same proportion of Paris green as when spraying for trees?

Prof. CRAIG: I use the same proportion. It may be a little more than is necessary, but if you keep changing formulas you are apt to make mistakes, and the one that was recommended is certain to kill them.

Dr. BEADLE: One pound to 200 gallons of water?

Prof. CRAIG: It was 4 pounds of copper sulphate, 4 pounds of lime and 4 ounces of Paris green to an ordinary barrel of water.

Mr. ORR: With plums we make a perfect success of spraying, but the pear trees bother us, though we covered them with Bordeaux mixture till the trees looked as if they had been whitewashed.

Mr. RACE: What time in the development of the plum did you do this?

Mr. ORR: Before they bloomed at all. We have followed it up thoroughly for one or two years. The spot first appears when the pear is from the size of a pea to the size of a marble. We tried spraying before the bloom, then followed it up afterwards.

Dr. BEADLE: Don't you think the ammoniacal carbonate of copper would be a good mixture?

Prof. CRAIG: It is a matter of convenience for the grower and depends on which he can mix and use most easily. I have not found it any more effective I would like to ask Mr. Orr if he left any trees unsprayed, and was the crop entirely destroyed?

Mr. ORR: It has grown worse every year, until now it is utterly worthless. We had not a specimen fit to market last year or the year before.

The SECRETARY: Yet they were treated with Bordeaux?

Mr. ORR: Every year, with one exception.

Prof. CRAIG: When did your treatment close this year?

Mr. ORR: I cannot give you particulars. I was not at home this year. I can give you all particulars by mail.

Mr. CASTON: This scab seems to affect the Flemish Beauty pear every year. We find that when we have a season where in June, say, we have a considerable amount of close, moist weather—just the kind that will rust wheat—it affects the apple. These fungus diseases are pretty much of the same nature. Last year apples were comparatively free from scab in our section, because we did not have that peculiar kind of weather that fosters it, but this year we had. The scab seems to affect the Flemish Beauty pear every year, no matter what kind of weather we have. I don't know how it is. I think the location has something to do with it. Where it is close and does not get a proper circulation of air, I think the scab will be much worse than where it is open.

Mr. SMITH: I have had gooseberries scalded by the sun and drop off really cooked in a very dry season, particularly where they have been somewhat affected by the fungus on the leaf; and the foliage was not very heavy.

The PRESIDENT: It rarely occurs except where the leaves have been stripped by the worm.

Mr. PATTISON: I grow a great many Flemish Beauty in the same district as Mr. Orr, and this year they were perfectly clean—with a few unimportant exceptions. I did not spray at all—never have sprayed. Has Prof. Craig had any experience in the treatment of tomato rot with the Bordeaux mixture?

Prof. CRAIG: I have not personally. I think it has been used, but I don't think it ever can be a practical remedy in growing tomatoes, because the rot appears at a time when the tomatoes have to be marketed, and the Bordeaux mixture would stain them so as to be unmarketable.

Mr. PATTISON: This year the rot began very soon after the tomatoes were formed with me. A young friend, who lives not far from me, claimed that he had completely checked the rot on his tomatoes with the mixture.

Mr. TURNER: I think you will find that manure induces the rot in tomatoes.

Mr. WHYTE: I grow over 40 varieties of gooseberries. Last year it was very difficult to keep back the mildew. This year I had no difficulty whatever with it. They received the same treatment as last year—half of them with copper carbonate and the other half with potassium sulphide.

Prof. CRAIG: While these diseases are of fungus origin, as Mr. Caston remarked, and their development may be assisted by certain climatic conditions—one of the prime helpers in this being great moisture of atmosphere—yet we cannot say that the climate causes them, although it may assist them.

Mr. CASTON: Scientific men tell us that the germs of these diseases are always present with us, but that some seasons are more favorable for their development. That is what I meant to say.

Mr. ORR: I was collecting fruit for the World's Fair for six to eight weeks, from Ancaster down to Niagara—all through the Niagara Peninsula—and I only met two specimens of good Flemish Beauty pears that I could send on to Chicago.

Prof. CRAIG: What were the conditions surrounding those specimens?

Mr. ORR: I don't know. They were grown half a mile from our place. One weighed about a pound, and the other about 15 ounces.

Mr. RACE: The Flemish Beauty in our locality has become positively useless.

Mr. A. H. PETTIT: A great many fruit-growers in our section think a dry season is more favorable to mildew than a wet one.

Prof. CRAIG: Powdery mildew is very common in a dry season.

Mr. HILBORN: I have found the best remedy to be to change the location—plant in a different part of the farm every season. It is always worse in the dry season with me.

Mr. BOULTER: This year was the worst for rot on tomatoes that we ever had. Hundreds of bushels had to be thrown away. It commenced in the end, and worked right down through. We did not think it safe to take any of these tomatoes for the factory. If they were put in crates, after a day or two the spot would work down through the tomato—black all the way through.

Prof. CRAIG: I do not know that I can state that it could be controlled commercially. I do know that it can be prevented in a small way, and has been done.

The Secretary moved the adjournment of the Convention until 7.30 p.m—it being now 5.30 p.m. Carried.

SECOND DAY.—EVENING SESSION.

The PRESIDENT: We will go on and take up a few questions. Sometimes it is very well to have an experience meeting, especially when it is not over large; and here is a question on the programme that will very likely draw out some valuable information, and we would like every one of you to have something to say on it. Suppose we take up No. 4:—"Give instance of the largest yield of apples from any one tree; giving variety of tree, soil and cultivation?" Who among you will venture a few remarks on that?

Mr. CASTON: Mr. Woolverton, I think, can lead us off.

LARGE YIELDS OF APPLES.

The SECRETARY: Mr. Bengough says he supposes this is the department for "fish stories" to come in. (Laughter) I hold in my hand one or two communications in answer to this question. I will start out by telling you my own experience. The largest yield that I know of in my orchard was from a large Rhode Island Greening tree, I should say eighty years of age, grown in deep sandy loam, where it spread to an astonishing size. In one season we gathered from that tree 15 barrels of Greening apples; and on another bearing season we gathered 20 barrels from that one tree. I don't know whether anyone present will be able to tell a bigger apple story than that; but if so, we would like to hear it. The Niagara district can beat any other part of the Province for a big yield. As to cultivation, this tree didn't have any. It was grown in grass, but the soil, being sandy loam, did not get bound and hard; otherwise it would have required treatment. Then it was good rich soil; and the great extent of foliage so perfectly shaded the ground beneath that the grass did not grow as it would otherwise. There is really no sod, although there was no cultivation.

Mr. WHYTE: My story is not so big as the Secretary's, for we are not expected to have as large ones near Ottawa: but I do know of a Duchess tree that for two years bore 30 bushels—about 10 barrels—each year. It did not get much cultivation. It was grown in an ordinary garden, but weeds were kept down below it.

Mr. TURNER: Our late director, Mr. John Croil, had three Fameuse trees in front of his house, which three years ago bore six barrels each.

Mr. J. W. SMITH (Peterboro'): If we told such stories here they would put us down for story-telling. I am not saying it is not correct, but I would like to get a few grafts off them. (Laughter.) I would graft them on the Tolman Sweets.

The PRESIDENT: What yield have you had out here on your Tolman Sweets?

J. W. SMITH: It is an apple that was not much taken in the market, but it takes better now. It is a grand tree to graft on—either it or the Ben Davis. I have had good luck in grafting on both of those.

JAS. TOOLE (Orillia): I took 22 barrels of Duchess off six trees; and last year I took 15 barrels of Snows off five trees; and nearly twenty years ago—it's a story I don't know as I dare tell—["Tell it!"]—at Frenchman's Bay I took 17 barrels of Fall Pippins off a single tree.

The PRESIDENT: I think we may dismiss the Secretary now, and let him go home. (Laughter.)

Mr. TOOLE: That was a very old tree—about 60 years old.

The PRESIDENT: Do you find the Duchess a profitable apple?

Mr. TOOLE: We can grow more Duchess in Orillia and neighborhood than anything else off the same number of trees.

The PRESIDENT: Mr. Dempsey, we would like to hear from you.

Mr. DEMPSEY: I have never had any of these great big yields yet. Seven or eight barrels is about the largest we had. I took seven barrels of Gravenstein off one tree last year.

Mr. CASTON: Last year I took 8 barrels of Alexanders off a tree that was planted about ten or eleven years.

The PRESIDENT: How does the Alexander stand out this way in the market or for home consumption?

Mr. CASTON: I think it will bear more for the time planted than almost any other tree. The apples are so large, they fill a barrel up very quickly.

Mr. BEALL: I would like to ask: how much money has any person made off one tree not more than twenty years of age? I ask this because it is not apples, but money, people want off trees. I would rather have two barrels at $4 a barrel than six barrels at $1.50 a barrel.

The PRESIDENT: Was a large percentage of those apples fit for market?

Mr. CASTON: In the case of the Duchess they were nearly all fit for market, and also the Alexander.

The PRESIDENT: Is the Duchess going to have a market?

Mr. J. W. SMITH: The Duchess is a fine apple in appearance, but it is not a marketable apple here, as far as I am concerned.

Mr. FISHER: At Orillia we like the Duchess for profit. This spring I sold 60 barrels off 75 trees planted seven years ago last spring. I sent them north, through the Muskoka District, where there was a good demand this year right through to North Bay.

The PRESIDENT: That is the best story we have had yet.

Mr. WHITE: What did you get a barrel for those apples?

Mr. FISHER: I realized $2 a barrel. Of course I paid for the barrels.

Mr. PATTERSON: A neighbor of mine claims that he got 18 bbls. of Greenings from one tree.

Mr. CASTON: I think we have heard from him already. (Laughter.)

J. M. SMITH: A good story can't be told too often. (Laughter.)

Mr. ORR. Mr. Burkholder, near Hamilton, has a tree that I heard yielded 25 barrels, and that he received $50 for the fruit; I think the variety was Tolman Sweet. He has one of the finest orchards I know of.

A BATCH OF QUESTIONS ANSWERED.

The following questions were on the programme:

(1) Is there an increase or decrease of orchards in Ontario?
(2) What change is observable in methods of cultivation?
(3) What variety is most profitable?
(4) Give instance of largest yield of any tree, naming variety, soil and cultivation.
(5) Name best varieties for export, one fall, one early winter and one late winter.
(6) What value have apples as food for stock?
(7) Why do we hear so much complaint about foreign canned goods?

The Secretary read the following replies:

MR. NICOL, of Cataraqui, wrote: In answer to the questions proposed I would state,

1st. During the past three years there have been only a few fruit trees planted in this district.

2nd. There has been no noticeable change in the methods of cultivation, only young orchards seem to be more neglected than formerly.

3rd. Red Astrachan, Fameuse or Snow, and Golden Russet.

4th. That largest from any one tree that I know of was from a Blenheim Orange tree belonging to E. Wright, of Waupoose Island. The quantity gathered from that tree in 1891 was 15 barrels of good fruit. The soil on which the tree grows is clay loam on limestone rock bottom, on grass land pastured with sheep.

5th. Blenheim Orange, Ontario and G. Russett.

6th. I think sweet apples are worth fully as much for cattle food as Swede turnips, but I find that sour apples fed even in small quantities have an injurious effect on dairy cows.

7th. I believe it is because of the use of copper for greening, and dissolution of lead compounds in long kept cans which become corroded by the acids in which the vegetables are preserved. I notice that there is in the Canadian market at present a large quantity of French canned vegetables, such as peas, beans and asparagus. In France canners of goods, for home consumption, are restricted, but for goods branded for exportation there is no restriction. I think the canning business should be protected so that poisonous foreign goods should not be in competition with properly preserved Canadian goods.

A. McD. Allan, of Toronto, wrote:

1. There has been an increase in orchard in the district, especially in Huron and Bruce and Grey, bordering on the water. And further there seems to be a disposition to further increase the area.

2. Orchardists are giving more attention to cultivation. We find the best results where orchards are cultivated. When they come into bearing that cultivation requires to be very light with regular manuring every year, and in light soils potash applied in liberal quantities. Cultivation to be kept up every season up to middle of August, when it should cease in order not to induce late growth. These are the points noticed by cultivators.

3. Duchess of Oldenburg, Gravenstein in Huron, and Colvert in northern sections; Ontario in West Huron; rest of county and Bruce, Baldwin, and part of Grey also; other part Ben Davis.

4. Alexander, about 20 years old, gave 13 bbls. this year near Goderich, light sandy loam, cultivated and manured. Baldwin last year in South Huron gave 9 bbls. in heavy elao soil, cultivated, all first class fruit; in orchard near this in vicinity of Zurich, in grass, gave 7½ barrels, not as good samples, same kind of soil. Trees, both about 18 years.

The President: What have you to say to this question: Is there an increase or decrease of orchards in Ontario during the past three years? We will speak of apple orchards first. That is a matter of deep interest, for we are aiming at an increase.

Mr. Orr: In our section there has been a decrease of apple orchards. Many have been taken out, and there are none being planted in our section.

The Secretary: It is the same in the vicinity of Grimsby, apple orchards are being dug out by the acre, and in their place small fruits—grapes, plums, peaches—are being planted.

Prof. Craig: It would be interesting to growers from the Ottawa district to know that there is a possibility of finding a market up at Grimsby and Essex, because I have a report that the area of orchards in Russell and Carleton has been very much increased in the last three years. Apples, small fruits, including raspberries and strawberries, have been largely increased.

Mr. Caston: The apple orchards in Simcoe County are certainly increasing, and we find more and more that it is better adapted to growing apples than any other fruit. I think it will come to this yet, that certain parts of Ontario which may be found adapted to the production of certain fruits will make a specialty of those fruits. Grapes and peaches will be grown in Grimsby and the Niagara peninsula and along the Lake Erie counties, while the apples will be grown further north, in what we might call the colder belt, and this will even up matters all round. As to a market for the Duchess, I could have sold ten times as many this year as I could get hold of. Of course the last crop was not large; but I can always sell all I can grow and a good many more. Very few people have an idea of the population that lies along the Canadian Pacific Railway, from north of Ottawa right out to the Rocky Mountains; while up in Nipissing and Algoma there is a large population engaged in lumbering, mining, railroading, etc.; and everything they use of that kind has to be shipped in there. That is where we find our markets, and there will be a great market there for years to come. I don't think they will ever be able to grow tree fruits there with any degree of success. I doubt if they will ever be able to grow anything better than the grape in Manitoba. I believe that will be a great market in the future.

Mr. Beall: I think there is no increase in my neighborhood to any extent. There are always a few trees being put in every year, of course.

Mr. Turner: The increase in Stormont county is very slight. They increase more in small fruits.

Mr. Dempsey: I am quite sure they are on the increase in our section. There is a good market for the Duchess. There is many a carload shipped out to Winnipeg from our section, and has been for years.

Mr. HILBORN: I think the apple is not increasing very rapidly in our section. They are going more into pears and peaches, but in some sections the apple is on the increase.

Mr. MCNEILL: I agree with Mr. Hilborn that in Essex apple orchardsare decreasing rather than increasing. In Kent probably a slight increase. In Lambton a considerable increase. The peach and pear orchards are increasing in Essex very rapidly.

The PRESIDENT: I notice that Mr. Allan in his paper reports that orchards are largely on the increase in the Huron district. I do not know whether I can corroborate that statement or not; but this I do know—as I have for the last four or five years been judge on the fruit lists in all the shows up in that tract– that the interest taken by the farmers in apple culture is very largely on the increase. They will gather around the fruit exhibit at these shows, and they manifest a deeper interest in the different varieties on exhibition; and on every hand you find that they are anxious for information with regard to the varieties and the value of the varieties from the marketable standpoint. Now, I think we may take for granted that that is the case all over the Province—that the farmers are becoming more and more interested in apple culture.

Mr. EDWARDS: There has been a slight increase in the county of Peterboro', but not very marked. I think there has been an increase of interest among a certain few of the farmers in the county, and there has been some small increase generally throughout Canada, but it has not been very marked during the past few years.

The PRESIDENT: You think that increase has been such as to justify the efforts of this Association?

Mr. EDWARDS: I think so, most decidedly. I may say this—and I say it in view of the fact that we have not had very many here at the meeting—that, notwithstanding that, the influence of this Society is spreading throughout the country generally; and I know that many a man who has not been here at any of our meetings at all, is influenced and helped by the work this Association is doing. I have had that stated to me more than once—that it was a good work, and not to give it up even if the farmers did not turn out in large numbers; that the interest was spreading, through the reports published in the newspapers and otherwise, and that the information given was proving of use.

The PRESIDENT: It is a very good sign at our fall fairs to find farmers coming in with their pockets full of apples, and enquiring from the fruit judge what these qualities are. It is an evidence that the interest is increasing. We find that all over.

Mr. D. W. DUMBLE: There is a vendor of fruit trees in the meeting, who will perhaps tell you how many trees, and what trees he has sold, and whether the sale is increasing or not.

Mr. TROTTER: I cannot say our sales are increasing very largely, but still we keep them up to a very fair proportion every year. This year we find quite a cry of "hard times." The farmers have been depending on their grain crops in this section, and of course prices are poor, and they seem to be very slow to take up fruit culture, although we are doing our best to encourage the growth of trees by putting the best trees in their hands. I think in the next ten years, probably, there will be a great change in this part of the country in fruit-raising. In several other sections where we have salesmen the sales are very good, especially in the Belleville district. In this district I cannot say the orchards are increasing very much. There are no large orchards being put in. They are principally of twenty-five to fifty trees. Fifty trees is considered a large orchard in this section. I notice the interest is on the increase, and I think in the course of a few years there will be quite a change.

Mr. CASTON: There is one other question here which ought to be discussed—perhaps not to-night: "How should apples be packed and shipped?" In many localities there are too many apples grown, or not enough; that is, there are too many grown for the local market, and not enough to encourage men to come in and buy for export, and the market gets glutted, and people say there is not enough money in apples.

Mr. EDWARDS: That is just how it is here exactly.

Mr. CASTON: There is nothing to hinder any farmer from packing and shipping his own. He needs to know how to put them up and how to ship them.

SPRAYING FRUIT TREES.

Mr. A. H. PETTIT: We had an interesting discussion to-day about the spraying of fruit trees to destroy the scab. Now, we had experiences, *pro* and *con*, and we want to convert every man to the theory and belief that if it is properly done, and at the proper time, it will accomplish the work. I have a resolution which I intend to move, and have held it till Prof. Saunders was here so as to get his views on the question:

"That in the opinion of this meeting it is desirable that our Director of 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 solutions recommended for the prevention of the scab in apples."

I would suggest it may be done in this way: Let them come with their proper mixtures; have it mixed before a meeting, say, of 25 or 50 fruit-growers; select half a dozen trees of different varieties of fruits; have practical tests made—have mixtures properly put up, and three of the fruit-growers will guarantee to give a repetition of that same spraying as often as directed; and then let us at the end of the year proclaim thas that has been a *bona fide* experiment, practical and thorough, and we will begin then to get down to business—we will all get to work, or else we will all condemn it. I think it would be a step in the right direction.

Mr. ORR: Is it your intention to confine that to apples?

Mr. PETTIT: I mean to experiment as widely as they would think practicable to undertake. Let the test be made on apples in one section, pears in another section, and include plums and anything else that we can and bring it before a meeting of fruit-growers so that they can watch the test through, and at the close of that test, if successful, say: "It has been thoroughly successful in our section of country." (Hear, hear, and applause.)

Mr. MCNEILL: I take pleasure in seconding that motion, particularly as I am satisfied of the efficacy of spraying. Although I called yesterday for those who had had opposite experiences, there was no response. Yet to-day we have had the most pronounced experiences in opposition to spraying. Now, this thing ought to be settled once and for ever, and if the professors can devise a plan for settling it, they will be doing a benefit to the country that can hardly be estimated in dollars and cents.

Mr. BOULTER: I think nothing has come before this meeting in comparison with this motion in importance. Something ought to be done if possible to obviate the serious loss to the fruit that comes from these pests.

Prof. SAUNDERS: I think probably there will be very little difficulty in carrying that out, but as it involves expenditure it would have to be placed before the Minister. I would be very glad to do my best to recommend it. I may say that my colleague, Mr. Craig, has carried on experiments in that way for two years in part of the Province of Quebec, and it would be quite in turn to do something for Ontario if the Ontario fruit-growers so desire. In this connection I might mention that I recently had a visit from a gentleman who has large peach orchards in South Australia, and he says that they can keep peach curl in almost entire subjection by spraying the trees in the spring, before the foliage starts, with the Bordeaux mixture and then giving them another spraying just as the young shoots are coming out. In that way they have almost perfect immunity from peach curl.

Mr. PETTIT: I have the greatest confidence in the work that is being done for us in the Experimental Farm, but I feel as though we want to draw them in closer connection with the fruit-growing interest. They are too great a distance from us. If they would come before a body of fruit-growers and have this thing practically demonstrated I believe we could convince the whole body of the effectiveness of the work, and the sooner we all become converts the better.

Mr. SMITH: I think this would be almost as valuable as the travelling dairy. (Laughter.)

Mr. ORR: I don't think I have heard any gentlemen express the difficulty with plums; the difficulty is with pears and apples.

Mr. PETTIT: Yes, I have heard complaints of that, and they have done different things without success.

Prof. SAUNDERS: Sometimes the difficulties are brought about by the differences in drugs used in spraying Sometimes the carbonate of copper would be of different strength when kept in powder form.

The motion was put and carried.

Prof. SAUNDERS: Let a copy be sent to the Minister of Agriculture.

Mr. EDWARDS: I would like to introduce to this meeting Mr. Kendry, the Mayor of Peterboro', who, unfortunately, was not able to be present at any previous meeting.

The PRESIDENT: We are glad to have the Mayor with us. Sorry he was not able to be with us before. I am also sorry there is not a larger number to hear him. We would like to have him come forward and say a few words to us.

Mayor KENDRY: I am very sorry I have not been able to be here before to receive you, but I trust that has been done by gentlemen of the town. I see our Police Magistrate (Mr. Dumble) here, and Mr. Edwards, and I know it has been done well. I was called away from town on business, and to-night I have had an engagement till the present time to try and arrange a union of Ashburnham and Peterboro', so that we hope the next time you come here, in place of coming to the town of Peterboro', you will come to the city of Peterboro'. (Applause.) I do not think I can say anything that would be of profit to you. I may say I am a judge of fruit, as far as the eating of it is concerned, but no further. (Laughter.) I thank you on behalf of the town for having done us the honor of this visit.

THIRD DAY.—MORNING SESSION.

THURSDAY, December 7, 1893.

At a meeting of the Directors of the Association, held this morning, it was resolved that during the coming year each Director be asked to undertake the work of forming horticultural societies affiliated with this Association, the expenses of such Directors to be paid, and the Secretary was instructed to furnish each Director with necessary information.

OPENING UP FOREIGN MARKETS.

Mr. ORR moved, seconded by MR. CASTON, the following resolution:

"That this Association memorialize the Dominion Government on the benefits likely to accrue to the fruit-growers of Canada and the public generally by the appropriation of a sum of money for the purpose of opening up the markets of Europe to the fruits and fruit products of Canada by a judicious placing of experimental consignments at advantageous points and by calling attention to our products by a system of travelling agents or by other methods that may recommend themselves."

Mr. Orr: It is not necessary to make any remarks on this subject. Our time is short The necessity of this motion must be apparent to all.

The PRESIDENT: I think that is a matter that will be very clearly seen by all present. We all know the advantages we have reaped as a Province from the introduction of cheese and other dairy products into the European markets, and we do not see

any reason why similar efforts should not be made to introduce our apples, as their superiority has been as readily acknowledged during the last three or four years as the superiority of our dairy products. This resolution may stir up our authorities to aid us in the introduction of these products.

Mr. A. H. PETTIT: This matter was referred to in my address. The action taken by our Government in the dairy interest has worked such great results that I could not see why they should not operate in the same way in the fruit interest, not only in fruits in their fresh state, but also in their manufactured form, if possible.

The PRESIDENT: The Government is going to take some steps for a display in one of the exhibitions on the Continent next year, and that will be an opportune time to introduce our fruits to the Continent.

Mr. PETTIT: We can scarcely wait till the year 1900 for the World's Fair to come to develop our fruits in the different markets of the world. It wants prompter action than that.

The PRESIDENT: But I understood action was to be taken next year.

Mr. PETTIT: Probably if this were placed before the Government strongly the Horticultural Department of our Experimental Farm would feel like taking the same interest in that branch of industry that our Dairying Department does at present in the dairy industry.

Prof. SAUNDERS: I might say in explanation that the Horticultural Department of the farm is entirely on a different footing, relatively, from the Dairying Department. The latter has a special vote of its own for carrying out dairy interests, which is administered by the Dairy Commissioner, directed by the Deputy-Minister. The farm work is carried on by a special vote directed by the Commissioner. The Dairy Commissioner is instructed to go all through the Dominion, giving our farmers such information as will enable them to manufacture uniform products and to make them of first-class quality throughout. Now, unless there can be a special vote got in that connection to help the fruit-growing interest it could not be managed out of the present vote which we receive for experimental farms, as that is entirely used. Indeed, every year we are more or less behind in our administration on account of the insufficiency of the vote to carry out the work we are at present doing. I would not say a word in opposition to the idea suggested in the resolution. It is a very good one, and the industry, I think, should be helped as much as possible; but, in order to carry out that idea, it will be necessary to make some representations to the Government to induce them to give a special grant to the farm to enable them to do it.

THE PRESIDENT: As I understand, this is the primary step to an end, and the next step will be for this Association to send a deputation down armed with this resolution, and ask for the necessary legislation.

The motion was carried unanimously.

The PRESIDENT: We are very sorry that Professor Saunders has to go to Ottawa on the next train going east, and he has a few words to say to us.

Prof. SAUNDERS. There is just one point I would like to mention in reference to the lack of uniformity that is prevailing to a great extent in the descriptions which are made of our fruits from time to time in the *Horticulturist* and in the other publications of this country. This lack seems to arise more or less from inattention or thoughtlessness on the part of the writers. We have an able and excellent example in the work of Mr. A. J. Downing; and anyone who studies that work will find that there is a uniformity of character in the descriptions; there is a regular succession of points, which he takes up in the same order in regard to any fruit, which enables any one who wants to study any phase of our apples to know at a glance just where he will get the particular point in regard to the fruit which he desires for comparison. For instance, in regard to

quality, it is always in the same place in the description ; and with Downing's work you can get the information you want in regard to the value of twenty or thirty apples in less than half the time that you can get it from the random descriptions that are being made now in the journals devoted to fruit culture by those who are describing fruits and describing them well. When there is no system in describing a fruit, very often some important points are overlooked. My object in bringing up this matter is, if the members think best, to get the endorsement of the Association to a regular order and method of describing fruit so that all the valuable points in connection with the fruit and the tree shall be covered in the description, and the latter as far as possible made uniform in our fruit literature. Now, Downing in describing fruits begins, taking the apple and pear, with the origin of the fruit, the character of its growth, the color of the wood, or other peculiarity, and its productiveness. The same would apply to the vine in describing the grape. If you want to know anything about the productiveness of the tree, you look in the first paragraph and you find it there, and it saves time—and time in these days is always a precious commodity, when we have so much to do. Then he takes the fruit, and begins with the size, dealing with the form, the color, the character of the stem and its cavity, the character of the calyx and its basin. Then the flesh is taken up, for its color, texture, juciness, sweetness or acidity, its flavor, and finishing up with the quality of the fruit,—whether it is first-class, medium, good or very good. The Secretary could easily put this in proper form in the *Horticulturist*, so that the same terms should be used as far as possible by all describers, so that they would have the same relative meaning in all sections of the country. In some senses it is a small matter, and yet it is one that will, I think, have a very important bearing on the progress of fruit culture and the intelligent appreciation of those people who are not able to give very much time to the whole subject. Downing finishes up his description by giving the period of ripening. Now, any one who wanted commercially to look over our fruits, in regard to the fruits that came in at particular seasons of the year, with a view of dealing commercially with our fruits, would only have to look at the bottom of the description to find when this fruit would be ready for market, if Downing's plan were followed. Otherwise you have to read the whole description, and that takes time. Then in plums and peaches the same order is followed. The character of the suture usually follows color, and whether the flesh is free or adheres to the stone is placed after the quality of the fruit. I would suggest that this matter be referred to the Secretary and somebody else, to think over the matter, and if there is not time to act on it at this session to bear it in mind and take it up at some future period, because I think it is a matter of considerable importance in connection with the progress of fruit culture.

Mr. McNEILL : I suggest that we adopt the form.

PROF. SAUNDERS : It would be a very good idea if the Association would adopt the form, and we would adopt the same form in the Experimental Farm, and it would ensure that descriptions would be complete, because every point would be taken up—at least every point would be suggested on the form.

The SECRETARY : I fully appreciate everything that has been said, and will take care of these notes of Prof. Saunders'. I would be in favor of a committee being appointed of himself and Prof. Craig to draft this for publication, so that we may have something permanent and something we can all use both in descriptions of fruit at the farm and in our Association, so that we can work together in harmony.

Prof. CRAIG : As a member of the Fruit Committee I have uniformly used Downing's plan in describing fruits.

Prof. SAUNDERS . I have in my hand a paper which was handed to me by Mr. Shutt, our chemist, which, if you wish, I will read to you.

NOTES ON THE CHEMISTRY OF THE COPPER SALT FUNGICIDES.

By Frank T. Shutt, M.A., F.C.S., F.I.C.,
Chief Chemist, Dominion Experimental Farms.

The preservation of orchards, small fruit plantations and vineyards from their minute and often microscopic foes is a matter of great importance to those engaged in the fruit industry of Canada, and a subject not without interest to all lovers of a garden.

The value of certain copper and arsenical compounds for destroying these insects and fungus pests is every year becoming better known, so that the practice of spraying is now no longer looked upon by fruit-growers as a scientific fad of doubtful efficacy, but rather as a sure and safe means for keeping both trees and fruit free from injurious attacks. Two years ago I wrote as follows, and the words will bear reiteration to-da

"Properly applied, *i e.*, at the right time and in the correct proportions, the copper fungicides have proved and are proving themselves to be of inestimable benefit in the orchard and in the vineyard. The increased value of the fruit has more than repaid, by a large margin, the outlay for spraying apparatus and materials and cost of application, and I believe the time has come when no fruit-grower can afford to ignore this useful means of preventing fungous diseases. Not the least important element in successful fruit-growing, now-a-days, is keeping in check fungous growths and destructive insects, and, for this purpose, our present hope lies in the application of arsenical and copper solutions. By the more extended use of them the hope is confidently entertained that the loss occasioned by injurious insects and fungi will be greatly lessened year by year throughout the Dominion."

The intelligent manufacture and application of these spraying solutions is better carried out if the fruit grower understands—at least in outline—the chemistry involved in their preparation. The object of the present notes therefore is to state, though very briefly, the reactions which take place in making the more popular solutions and mixtures containing copper salts, in use as fungicides.

The source of the copper (the compound used), in all these preparations is primarily copper sulphate or bluestone—a deep blue, crystalline salt, easily soluble in water, the chemical formula of which is $CuSO_4$, $5H_2O$.

Since the efficacy of copper sulphate as a fungicide has been well established—as illustrated by its beneficial action on seed wheat infected by smut spores—and since it is the basis of the copper in the spraying mixtures and a material easily and cheaply obtained, the question is often asked "Why cannot a simple solution of bluestone in water be used for spraying?" The answer may be very briefly stated. A solution of copper sulphate sufficiently strong to prevent the growth of fungus diseases would, so far as our present experience shows, prove injurious to foliage. The corrosive character of this chemical must by some chemical means—precipitation or neutralization—be rendered innocuous before it can be of practical value for spraying when the leaves are out. For the initial treatment of apple and pear spot, Mr. Craig, Horticulturist of the Central Experimental Farm, Ottawa, says:

"Before growth begins in spring, spray with a solution of copper sulphate 1 lb. to 50 gallons of water."

But he also states,

"On no account should this be applied after the foliage has appeared, as it will severely injure it."

And again, for certain diseases of the grape, e.g., downy mildew, black rot and anthracnose, the same authority says:

"Spray the canes with copper sulphate, 1 lb. to 50 gallons, before growth begins."

It is, therefore, evident that, save in exceptional cases, a solution of copper sulphate strong enough to be efficacious in destroying or preventing fungus diseases cannot safely be applied after the foliage has appeared. The solutions and mixtures about to be described allow the application of an adequate amount of copper, which at the same time is innocuous to foliage and effective as a fungicide.

Bordeaux Mixture.

This is perhaps the best known and the most highly valued and widely used of all the copper compound fungicides. Its formula, as now advocated, is as follows:

Copper sulphate (bluestone)	4 lb.
Lime	4 lb.
Water	50 gallons

Briefly, the directions for manufacture are:—The freshly burnt lime is allowed to slake and then well stirred with sufficient water to make a thin creamy mixture. This is now strained through coarse sacking into a barrel containing the dissolved copper sulphate and the whole stirred and made up with water to 50 gallons.

The lime in solution precipitates the copper from the solution of bluestone as an insoluble material (cupric hydrate), the sulphuric acid combining with the lime to form sulphate of lime, which on account of its slight solubility remains to a a very large extent in suspension. The reaction is represented by the following chemical equation.

$$\underset{\text{Copper sulphate.}}{CuSO_4, 5H_2O} + \underset{\text{Slaked lime.}}{Ca(OH)_2} = \underset{\text{Cupric hydrate.}}{Cu(OH)_2} + \underset{\text{Sulphate of lime.}}{CaSO_4} + 5H_2O$$

By reason of the slight solubility of lime—1 part in 750 parts of water— the fifty gallons cannot hold in solution at once the amount of lime necessary to precipitate or throw out of solution the 4 lb. of bluestone. Since, however, the sulphate of lime (see above) for the most part separates out as it is formed, the same water again takes up more lime, which further precipitates cupric hydrate. This reaction is continuous and rapid until all the copper is precipitated. Finally, we have insoluble cupric hydrate, lime (from the excess used) and sulphate of lime suspended in a liquid containing small quantities of the the two latter materials in solution. If sufficient lime has been added and the reaction is complete the liquid, after allowing the precipitate to settle, is colorless and should not give any brown precipitate if to a few drops a small quantity of a solution of ferrocyanide of potash be added—showing that all the copper has been converted into an insoluble form.

To precipitate a definite amount of copper sulphate, a definite amount of lime is necessary—at least 3.5 oz. of freshly burnt lime for each 1 lb. of bluestone. In practice, however, in order to ensure the complete precipitation of the copper, and since impurities always exist in the commercial article, an excess of lime is always used. No element of danger is in this way introduced, as the excess of lime is not injurious to foliage. It will not answer, as some have suggested, to use the supernatant lime water which can be poured off the undissolved lime—lime water in fact. Fifty gallons of such saturated lime water contain only sufficient lime to precipitate (practically) 2 lbs. of copper sulphate. As already remarked, it is owing to the sulphate of lime separating as it is formed, that fresh quantities of lime are dissolved, and can, therefore, react with the copper compound.

By the evaporation of the spraying liquid the copper is left upon the foliage as the hydrate.

Eau Celeste.

This fungicide is made by adding ammonia to a solution of copper sulphate.

The formula usually given for its preparation is:—

Copper sulphate	1 lb.
Strong ammonia	1½ pints
Water	22 gallons

The first action of the ammonia is to precipitate basic copper sulphate ($CuSO_4, 2Cu(OH)_2$) which, however, soon dissolves in the excess of ammonia present to form ammonium copper sulphate ($CuSO_4, 4NH_4OH$), a deep blue fluid. At the same time ammonium sulphate is produced and remains in solution.

The evaporation of the fluid leaves upon the foliage basic copper sulphate and ammonium sulphate.

Copper Carbonate.

If a solution of sodium carbonate (Na_2CO_3, $10H_2O$) be added to one of copper sulphate ($CuSO_4$, $5H_2O$), the copper is thrown down as a pale green precipitate. This is "basic carbonate of copper" (a compound containing both carbonate and hydrate of copper), and has the formula, $CuCO_3$, $Cu(OH)_2$. It dries to a light green amorphous powder. In the above re-action sodium sulphate (Na_2SO_4) is formed and remains in solution.

The precipitate of basic carbonate of copper may be washed by repeated decantation, and thus freed from the sodium sulphate. Remembering that the weight of basic carbonate formed is, approximately, half that of the copper sulphate used, the addition of the required amount of water makes the spraying mixture known as "copper carbonate in suspension," the formula of which, as recommended by Mr. Craig, is :

Basic carbonate of copper	5 ounces
Water	50 gallons

It is scarcely necessary to add that the form of copper salt left upon the foliage when dry is the basic carbonate ($CuCO$, $Cu(OH)_2$).

Ammoniacal Copper Carbonate.

This spraying fluid results from the solution of the precipitated basic carbonate of copper, just described, in ammonia, and subsequent dilution with the required amount of water. Two soluble compounds are formed, ammonio-cupric carbonate and ammonio-cupric hydrate, which on drying upon the foliage leave basic carbonate of copper and hydrate of copper, respectively. The formula recommended is :

Copper carbonate	5 ounces
Ammonia	2 quarts
Water	50 gallons

From the excellent results obtained by the use of this fungicide it may be inferred that this fluid presents the copper compounds in a form which is at once inimical to fungus life and non-injurious to foliage.

The fungicides, accordingly, fall into two classes. "Bordeaux mixture" and "copper carbonate in suspension." On the one hand, apply the copper in a more or less insoluble and precipitated form, while ammoniacal copper carbonate and Eau Celeste furnish it in solution. It is probable that the latter provides for a more equal distribution of the copper compounds on the leaves. From a chemical standpoint it might be inferred that the spraying fluids containing the copper in solution, if made according to correct formulæ and applied at the proper strength, would prove more efficacious than the fluids containing the precipitated copper, though a slight variation in the strength of the latter fluids would involve, in all probability, less risk of injury to foliage.

A part of this paper—that which refers to the chemistry of the Bordeaux mixture—was communicated to the Montreal Horticultural Society this year. The importance of the subject to fruit growers at the present time has induced me to complete the question of the chemistry of the copper fungicides and present the paper, thus extended, to this meeting.

RESOLUTION *re* FRANCO-CANADIAN TREATY.

Mr. McNeill : I have a motion here that may call for a little consideration.

Moved by A. McNeill, seconded by A. H. Pettit, that in view of the large amount of capital invested in the grape growing industry of this country, and the great possibility of its further development, this association is opposed to the ratification of the Franco-Canadian Treaty, the provisions of which will most seriously affect, if not entirely destroy, this flourishing industry.

Mr. McNeill : I ask your favorable consideration of this resolution, I think on very fair grounds. While we are all united on fruit-growing, it is possible that we are

not all equally interested in every department of it. For instance, at the present time I am not at all interested in apples, commercially; I am not interested in plums; but, nevertheless, I take a deep interest in these fruits, and in acting with you here would act as if I were personally interested in the growth and sale of this particular fruit. It is the only way we can act, and I believe each one of us should look at the interests of each other here as if they were his own. I trust you are going to look at the grape interest as if it was your own interest. The report given by Deputy-Minister James the other day rather astonished some of us. He reported that there were at least 2,236,000 grape vines in Ontario alone, and if I mistake not another 2,000,000 were coming into bearing, so that within a very short time we will have over 4,000,000 grape vines here in Ontario. When we talk of millions we are getting into exceedingly large numbers, and an industry of this kind calls for very careful consideration. You can easily see, putting it plainly, that the total grape industry is positively and practically overdone under those circumstances. If all the product of these four million vines were to be put on the market at once in Ontario it would simply swamp the market. There is not anything like one-half that put on at present, and the market is exceedingly low. The provisions of this treaty are such that if it should pass it will most seriously injure—it would actually destroy—a very large portion of the grape industry in this Province; only those districts most favored as to soil and market and climate would be able to grow grapes at all. Hundreds of acres of vineyards will be plowed up if this treaty should ever become a settled fact. Now, as we are here to look after the interests of the fruit-growers, I think it becomes us to take such steps as we can on this subject. It is not a political subject; it is purely and simply a fruit-growers' question, and as such I submit it to you. After giving the matter careful consideration and looking at the magnificence of this industry, I have come to the conclusion that it is necessary that we should use all our best endeavors to prevent the passage of this treaty, or at least to express our opinion upon it. I trust you will pass this resolution without a dissenting voice.

Mr. M. PETTIT: I think Mr. McNeill has pretty well covered the ground. There is no doubt that the ratifying of that treaty, or not doing so, is of the utmost importance to the grape growers of this Province. We all know that Montreal is the great outlet for the grape crop of Ontario, and hundreds of carloads of grapes that are shipped to Montreal are not used for dessert purposes. Well, from a prohibition standpoint, if our people in this Dominion will drink wine, why not grow the grapes in our own Province and manufacture pure native wine here, rather than import from a foreign land, paying thousands of dollars to support an industry in another country? I think that if this Association should remain in silence and not take steps to protect this very important industry it would fall far short of its duty. There is no question we have the soil and the climate and the people to manufacture all the wines, and as good wines as our people will ask for, and we are credibly informed that they can be laid down from the south of Europe—from France—so cheap that our manufacturers here cannot compete. Whether it is pure juice of the grape or not is another question; but if people drink wine, why not manufacture it ourselves—the pure article—in our own country? (Hear. hear.)

The PRESIDENT: The desirability of this resolution coming before this Association is this. We find that our Dominion authorities, since they have found out what a large interest this proposed French treaty is going to seriously effect, are disposed not to ratify it. It was not known before that the grape-growing interest of this Province especially, was anything like as large as it really is. We believe a resolution of this kind, going from this Association, will largely strengthen the hands of the Dominion authorities in their disposition not to ratify this treaty.

Mr. CASTON: Of course we should look at these things in a broad sense—not in a selfish light at all. Are there any advantages to be derived to the country at large from this French treaty that would compensate for the loss that we would sustain by their wines coming in competition with ours? Those who were at Brantford last year can bear testimony to the great excellence of the product of Canadian wine there. I don't think we could get a better or healthier product elsewhere. People will use it.

The PRESIDENT: It is not a question for us to consider as to whether wine is a good article or not, from a temperance standpoint. We know that there is a great deal of

wine consumed among our French neighbors in the Province of Quebec, and that wine is largely manufactured now from the grapes grown in Western Ontario. We have no more right to consider the matter of the wine than the Farmers' Institute has to consider the matter of the ale made from barley. We, as an Association, are interested in the production of fruit, and grape-growing is one of the largest branches of fruit production at the present time in the Province of Ontario. We want to increase it, and we cannot say whether you are to eat the grape or drink the juice of the grape; and we believe if wine is made from the grapes, it is better to have that pure wine than to have the spurious article brought in from France to supply the French appetite. That is the whole subject in a nutshell. Prof. Saunders, have you a word to say on this matter?

Prof. SAUNDERS: I don't know that I have anything special. I fully realize the difficulty that the fruit-growers of this country would be in in competing with wine made in France. In going through the wine-making districts of France some six years ago, I ascertained that the ordinary price of labor in the wine district for good workmen was about two francs a day—about forty cents a day; and as we know, the cost of transportation is so little it is scarcely likely that our people here could compete with wine-makers there on account of that great difference in the cost of labor. Whether we can produce as many grapes to the acre here or not, is also a question that perhaps would elicit some difference of opinion. The regular plan of growing there is the stake system—about four feet high, about two feet apart in the rows. It is just possible that they may have the better of us somewhat in their climate, and be able to produce more grapes per acre. They certainly have a great advantage in the matter of cost of manufacture, on account of the cheapness of labor; and that is a point that wine growers of this country could not possibly get over. Of course I can say nothing on the merits of the treaty; I am not sufficiently conversant with it in a general way.

The PRESIDENT: We do not wish to rush this thing through without giving everybody an opportunity to say a word. It is a matter that touches the temperance question; also the question of the tariff; so for that reason we do not want to rush it.

Mr. HILBORN: In looking at it from a temperance standpoint, I think we should try to keep out these cheap wines. I do not see any other view to take in the matter. We do not want these cheap wines here. If we have any wines at all we might just as well have our own wines, even if they do cost more.

The resolution was then put and carried.

Mr. TROTTER: There are two gentlemen here who have been engaged in raising plums and cherries for some time in this locality, and I think successfully.

The PRESIDENT: We would like very much to hear from them. We have had nothing about cherries and plums from this quarter.

Mr. ROBERT FIFE: That you may not go away with the impression that we cannot grow cherries and plums around Peterboro', I will give you a short statement. It is eight years since I planted my first plums—about forty Imperial Gage—and three years ago I had my first crop, two years ago my second, and a year ago last spring there was none. This last season I picked about one hundred and sixty baskets. Later on I planted other varieties—altogether about one hundred and twenty trees. There are quite a number not bearing. I have had quite a success in cherries. I had about twenty-five baskets of various kinds this last season—eight or nine different kinds—some that are called tender, and yet they succeed very well. I planted Montmorency, Louis Phillippe, and Governor Wood. The latter turned out very good.

The PRESIDENT: Did the Imperial Gage have black knot with you?

Mr. FIFE: No, not very much. I have not been troubled very much with black knot. There was a little on my cherry trees, but I guard against it as much as I can. Where I live there are people growing a tree or two in their gardens, and they don't keep it off, and no doubt it inoculates others.

Mr. BOULTER: How do you keep it off?

Mr. FIFE: I take the surest way—I cut it off and burn it.

The PRESIDENT: Did you ever try spirits of turpentine?

Mr. FIFE: Yes, but I could not say it checked it. I saved one fine tree by using coal tar, and it is doing better now than it did before. The Pond's Seedling plum I find is a fine bearer and grows well. It is thin, but you cannot expect to grow heavy crops on account of the size of the plum. It does not rot as badly as some others. I think the Imperial Gage would succeed best in this locality, with a man that was very attentive. They are like many other things—if you don't feed them you are not going to have much.

Mr. BOULTER: Have you tried the blue Damson plum?

Mr. FIFE: No. I have tried the Shropshire Damson. It does well.

REPORT OF COMMITTEE ON EXPERIMENTAL STATIONS.

Prof. CRAIG: I wish to make a verbal report from the Committee on Experimental Stations. The Committee met this morning, and considered the question very carefully, and have formulated in part a scheme for carrying out the work, but have not had time to bring it to such a stage of completion as to allow it to be presented to the meeting at this time; but I may say that they are a unit on the manner in which the work may be carried out, and would ask the indulgence of the Directors of this Association in the matter of time for further preparation and formulation of this scheme, which will be done by correspondence as quickly as possible. Their idea is to formulate a scheme as far as possible and submit a copy of it to each director for their approval and sanction, and for the directors to take such action afterwards as in their wisdom they see fit. If you approve of that, it would be necessary to continue the work of the Committee till such time as the final report is brought in.

The PRESIDENT: I think it would be as well for this Committee appointed last night for that purpose to be made a Standing Committee till they are able to report.

The SECRETARY moved that this report be received, and that the Committee continue their work.

Mr. BEALL seconded the motion, which was carried.

Mr. M. PETTIT: I would move the appointment of a deputation to urge the necessity of these resolutions we have just passed concerning the French Treaty, and if necessary interview the Government in reference to them; and I would suggest Mr. McNeill, Mr. A. H. Pettit, and Mr. Boulter, as that committee.

Mr. TURNER seconded the motion, which was carried.

PETERBOROUGH AS A FRUIT-GROWING COUNTY.

BY E. B. EDWARDS, PETERBOROUGH.

This County, situated as it is between 44 and 45 degrees of latitude, and at a distance from and considerably above the level of Lake Ontario, has a severe winter climate, the thermometer frequently reaching from ten to twenty below zero, and rarely from twenty to thirty below. The air is, however, usually dry, especially with a low thermometer, and the winter is generally uniform, while the snow commonly covers the ground to a depth of from one to two feet, from December until the middle or latter part of March. The summer weather does not differ materially from that of other parts of Ontario, so far as its effect upon fruit-growing is concerned. The effect of the severe cold is to destroy the more tender fruit trees such as the peach and some varieties of cherries, plums, etc. But apples of nearly all the best varieties, many kinds of plums, pears, cherries of the Morello variety, grapes of some early varieties, raspberries, gooseberries, strawberries and currants will grow in this climate. Grapes, of course, require to be laid down in winter, and raspberries, the blackcaps especially, are generally laid down, and strawberries are also usually covered.

Granted that the fruits I have named will grow here, if I am asked the question "Is Peterborough a fruit growing county?" I am compelled to say, "It is not." If I am asked the reason why, I can give no better reason than to put it down to want of knowledge in the first place, and want of enterprise in the second.

In all the townships of this large county there are, according to the municip l statistics, only 1,900 acres devoted to the orchard and garden. In North Monaghan, with a total of nearly 14,000 acres there are 162 acres of orchard, or one in 86, the best showing as to percentage in the county. Douro, with 38,000 acres, has 285 acres of orchard, or 1 in 135 ; Smith, with a total of 57,000 acres, has 401 acres of orchard, or 1 in 144 ; Otonabee, with 64,000 acres, has 400 of orchard, or 1 in 161 ; Asphodel has 209 acres of orchard, being 1 in 180 ; Ennismore, 86 acres, or one in 199 ; Dummer 205 acres, or one in 321. The average of these, the seven best townships in the county is 1 acre of orchard and garden to each 169 acres The other townships have such a small proportion of orchard that they may be quite left out of consideration, and in fact it would be unfair to take them into consideration, as they do not compare with the other townships in the quantity of arable land. Pursuing the investigation a little further, we find that Asphodel has 21 farmers who have 2 acres and upwards of orchard, Monaghan, 47, Otonabee, 76, Smith 70, Douro 19, Ennismore 1, and Dummer 28, or 262 owners in the 7 townships have 2 acres each and upwards. The number who have more than two or three acres is very small, while probably not a half a dozen in the whole county have as much as ten acres each.

Taking the adjoining counties for the sake of comparison, the county of Northumberland has 6,858 acres of orchard, being an average of one acre in every 63 acres for its 9 townships. The townships of Cramahe is the best, with 1,245 acres of orchard, or 1 in 37 of its total acreage ; Haldimand 1,240, or 1 in 61 ; Brighton 1,012, or 1 in 48 ; Hamilton 886, or 1 in 69 ; Murray 798, or 1 in 60 ; Percy 740, or 1 in 72 ; Seymour 633, or 1 in 98 ; Alnwick 158, or 1 in 105, and South Monaghan 146 or 1 in 125.

In the county of Durham, with 6 townships, there are 3,794 acres of orchard, or 1 in 57 of the total acreage. The township of Darlington has 1,183 acres of orchard, or 1 in 57 ; Clarke 801, or 1 in 85 ; Hope 725, or 1 in 88 ; Cavan 467, or 1 in 135 ; Manvers 330, or 1 in 211 ; and Cartwright 288, or 1 in 128.

In the county of Victoria the showing is not so good, there being only 1,525 acres of orchard, or 1 in 276 of the total acreage of the seven townships which make any returns of orchards. The township of Ops has 358 acres of orchard, Mariposa 340, Fenelon 259, Verulam 205, Emily 152, Eldon 121, and Somerville 90. In the best township the percentage is 1 to 156, and in the poorest of the seven one to 680 of the total acreage.

It will thus be seen that Northumberland has three and a half times the acreage in orchard that Peterborough has, and Durham over twice that of Peterborough, Victoria on the other hand being 375 less than Peterborough.

As to the extent to which the different fruits are cultivated : Currants, gooseberries, raspberries and strawberries are generally grown by each individual for home use, a few market gardeners growing them for the local market, but there are considerable quantities brought in for sale from outside places. They grow as freely and as well here as elsewhere. Grapes are not generally grown. The local market is largely supplied from the Niagara district. A few small vineyards exist, chiefly in the neighborhood of the county town. As a rule it is hard for local men to compete against the growers of more favored localities. Having regard to the question of climate, the competition from outside and the constant care required, it does not strike me that farmers in this county can successfully grow grapes for sale. But there is nothing to prevent any farmer having half a dozen vines for home use, of such varieties as Niagara, Brighton and Agawam. Cherries are little grown in this county, the Heart cherries not standing the climate. Plums are not grown to any great extent, but in the adjoining township of South Monaghan they are largely grown, the conditions being exceedingly favorable, and this township largely supplies the local market. Pears grow fairly well here, such kinds as Flemish Beauty, Bartlett, Clapp's Favorite, Lawrence, etc., generally succeeding, but of late years there has been serious trouble with the blight. There are no large pear orchards.

Whatever may be said of other fruits, it is quite clear that Peterboro' can grow apples as well as any other place in the world, and it is in this direction that there is room for systematic development. It is not necessary to seek for Russian or iron-clad varieties to stand the climate. The best standard varieties can, with a few exceptions, be grown here, and there are at all events varieties sufficient to form a first-class commercial orchard. And yet the great difficulty has been that people have put in too many poor varieties, too many early kinds, and too many kinds in any case. The result is that, so far as I am aware, there is not in the county a single orchard which can be said to be a satisfactory commercial orchard. There is consequently nothing to attract the best buyers or to make it worth while for the owner to ship his own fruit.

The Northern Spy is perhaps the standard apple in this section, and one that attains here a fine growth and flavor. The Duchess is also a great favorite, and is very fine in coloring and flavor for cooking purposes. The Fameuse or Snow succeeds fairly well, being fine in size, color and flavor, but it is inclined to spot badly some years. The Russet also succeeds well. With the writer the Blenheim Orange is in all respects the most satisfactory apple, the tree being vigorous and healthy, a regular bearer, and the fruit being largely first-class. Another satisfactory apple is the Canada Red, which appears to me to resemble the Pomme de fer of Quebec. It is generally free from spots or worm holes and a good keeper. The Rhode Island Greening is not in general very successful in this neighborhood, although I have a number of trees of this variety 25 years old. The King of Tomkins County attains a fine size and coloring here, but the tree does not bear freely nor regularly. The Ontario has not been sufficiently tried here. An objection is made that the tree is not a good grower. Wealthy promises to be very successful in this section, Pewaukee and Mann will be very useful on account of their keeping qualities and hardy growth. I have not pretended to exhaust the list, but each grower seems to have his favorite variety, and in any case there are, as I have said, varieties enough that can be successfully grown to satisfy the wants of all.

To sum up, I desire to emphasize the following points:

1. Peterborough county is well adapted to growing apples of the best varieties and possessing the best keeping qualities, the highest flavor and the richest coloring.

2. It will pay to grow winter apples for export, and the returns will average at least twice the returns of any grain crop that can be raised on the farm, and with less labor.

3. I would not encourage the average farmer in this county to grow for sale any other kinds of fruit, or to grow for sale summer or fall apples.

5. A decided advance is necessary before our county can be considered a fruit growing county. How is this to be accomplished? Let me suggest a way. I would like to see 200 progressive men in this county who have suitable land, resolve to have a commercial orchard of ten acres each. To accomplish this successfully I would recommend them to combine to purchase trees from a reliable nurseryman, getting the best stock on the most favorable terms, and planting a limited number of varieties that are found to succeed best in their respective neighborhoods, regard also being had to the prospective market. I would recommend the planting of say 100 trees each the first year, 150 to 200 the second year, and the balance the third year, the whole ten acres being thoroughly and carefully worked each year with a view to its future use. The cost for trees and planting them need not exceed $8 to $10 an acre, even if men have to be hired to plant them. For a number of years hoed crops could be grown to advantage in the land, giving a present return for cultivation. The cash outlay for ten acres would be from $80 to $100. I think I am well within bounds to say that in ten years these ten acres will have increased in value by at least $1,000. I think I am also within bounds to say that in 15 years they will be bringing an interest on a valuation of $5,000 for the ten acres, over and above all expenses for labor. This would only a little more than double our present acreage in orchard. But the new orchards would easily be worth four times our present orchards in producing power, and at least a million dollars would be added to the value of the farms on which they would be growing. If we cannot get 200 men we must be content with fewer, but there is no reason why the number should not be doubled or quadrupled.

The PRESIDENT: I consider this a very valuable paper. It gives an amount of reliable data rarely obtained in such a concise way.

Mr. CASTON: I was going to ask Mr. Edwards where he got his figures.

Mr. EDWARDS: From the assessment roll. I would not recommend farmers to give up their farming and go in for fruit raising altogether, because in most cases the farmers in this neighborhood, I know, are not posted in the work of looking after an orchard; but it strikes me that if they would have a definite object before them, which would be within moderation, and go at it deliberately and slowly, they would soon have an orchard that would be worth while, and get over one of the difficulties that exist at present—that we do not attract buyers to come in here and take our apples away. Our local market is overcrowded; we have not sufficient to supply the foreign market satisfactorily, and the trouble is, we are just treading on each other's toes here in the town, and farmers, finding that they cannot sell apples, decide to sacrifice them at any price. Perhaps they are shaken down from the trees and brought into the local market. The result is that they do not bring their fair value, and there is no one to come in and buy what they have worth while.

Mr. CASTON: This is a very valuable paper, and suggests many lines of thought on the apple industry. I think there is nothing on which farmers need so much light as on the cultivation of orchards. They do not give them proper care. They need to realize that the orchard will pay them more, acre for acre, than anything they can produce on the farm even when they get $1 to $1.25 a bushel for wheat. But how are we to get that information to them? They do not attend our meetings, or the Farmers' Institute meetings as they ought, they do not take the *Horticulturist*, and a good many do not take the agricultural papers. There are many other parts of the country the same as here—they grow too much for the local market, yet not enough for export. There is no apple that will earn so much money as the Wealthy, if picked early—by the last week of September—and you have a market that will take them then. Then we have the Pewaukee. I believe a great deal in the importance of this top-grafting to grow some of our commercial apples for markets abroad. In any county of Ontario, except in Algoma or Muskoka, we can grow any apple that can be produced in the Niagara district or anywhere else, by simply top-grafting them on good hardy stock. I have a theory that it is nearly always the trunk of the tree that peels, sometimes from sun-scald, bursting of the bark, or disease. In 1884 immense numbers of trees were lost by being frozen to death in the crotches of the branches. Now, we find certain varieties that have been perfectly hardy for years even in localities where the temperature goes down to 25° and 30° below zero. Then if we take the trunk of that tree and get above the point of attack, and introduce the varieties that we want to grow in the limbs, we will succeed. I have proved that from my own experience. There is not a King of Tomkins or a Rhode Island Greening living that was planted in the usual way 25 or 30 years ago, but I have them growing grafted to Siberian trees, and I find they produce more than they do growing on the original tree, and far finer specimens. It is important, in planting out new orchards, to select some of those hardy standard varieties, and as soon as they get large enough graft some of our good apples on them. I would be disposed to regard the Wealthy first as a winter apple; but now I cannot do so—it is a fall apple.

Mr. A. H. PETTIT: I have been quite interested in Mr. Caston's theory of top-grafting, but I do not think his premises are altogether sound. Taking for instance a Tolman Sweet, and graft the Duchess or some other apple on that, and I have no doubt that for a few years, with the cut-back that tree has received, and with the top-graft, it will soon begin to bear, and bear quite profitably; but I believe the graft at the top will be no better than the tree that was originally grown, for this reason: I have in my orchard grafts on seedlings that were grown for 25 or 30 years, and I do not see that those trees grow a bit better than other trees planted from the same varieties, grown on their own stock. You graft the Northern Spy on the Tolman Sweet. The Northern Spy is a rapid and strong grower; the Tolman Sweet is not so much so. The trunk on the Northern Spy will be at least one-third larger in circumference within two feet from the ground than the Tolman Sweet, and *vice versa*. I think there are some matters that are not fully matured on that theory yet.

Mr. CASTON: The great trouble is, people don't begin soon enough. You want to begin on a tree while it is young; and I know specimens in my own locality that have been grafted 10 or 15 years—King of Tomkins grafted on Talman Sweets. In about three graftings you want to complete the top. I do not know of any stock better for grafting on than the Haas.

Mr. PETTIT: Do you graft so as to throw the tree into bearing?

Mr. CASTON: No, simply to get a hardy stock.

Mr. CASTON: It is extra hardy in our locality.

Mr. BOULTER: It is certainly gratifying to me to hear from Mr. Edwards' paper that this locality produces as much fruit as it does. It is encouraging to the Association to know that you have been so successful.

NECESSITY FOR A CHANGE IN OUR METHODS OF OBTAINING AND INTRODUCING NEW VARIETIES OF FRUIT.

Mr. THOMAS BEALL, of Lindsay, read the following paper:

New varieties of fruits are obtained in different ways. Mostly, however, from accidental seedlings of supposed superior merit which are often found in localities where our staple fruits are grown. The merits of such seedlings are first decided on by the individual taste and knowledge of the finder. For many years past the first move towards bringing such varieties to public notice has generally been to bring samples to the notice of the Fruit-Growers' Association, where it was subjected to the scrutiny of a committee, composed mostly of experts, who reported thereon at the next meeting of the Association. These reports have, until recent years, been very interesting papers, inasmuch as they bore evidence of careful scrutiny, considerable knowledge of the subject, and commendable courage in their outspoken criticism. For while commending what was commendable they courteously put an extinguisher on the many varieties that were without merit.

Of late, these committee reports are of a very different character. They are simply a list of whatever there may be on exhibition. There is nothing specially commended and nothing disapproved of. Perhaps these committees recognize the fact that the result to the public will be as formerly, viz.:—That they will assist in making a show in the annual report as well as the former, and, that as the Association takes no means whatever to preserve any record (in convenient shape) of the excellencies of any varieties, all would go down to oblivion together.

Perhaps there is no branch of the business of fruit-growing which interests the great majority of fruit growers more than that of "new varieties." For whenever a new variety, or what purports to be a new variety, is brought to their notice, especially when sufficiently puffed by nurserymen's agents with the assistance of gorgeously colored prints, and, provided the prices named are high enough, the sales made are generally of sufficient extent and magnitude to amply recoup the enterprising nurseryman.

A retired nurseryman of Eastern Ontario, well known to many persons in this assembly, and much respected by all who do know him, says that more money is paid away every year by the people of this province for high-priced worthless nursery stock than would be sufficient to pay the interest on our national indebtedness, and I believe his statement is true.

A nurseryman's catalogue was lately received by me which seems to "cap the climax" of this mode of advertising. A new apple called "Springdale" is introduced, and, *as advertised*, seems to be the most useful apple yet produced in any country. It is said to be of large size, measuring between four and five inches in diameter; beautiful in color, of fine flavor; a winter variety that retains all its good qualities until the following spring, even after being used to fill up the mud holes and ruts on the farm during winter. All these and other excellent qualities are vouched for by a certificate from the 'Hon. W. G. Vincenheller, Arkansas State Commissioner of Agriculture," who, after

certifying to many of its good qualities says: "Freezing does not injure the fruit; ate them last spring, after they had been run over by waggons and left all winter half buried in the ruts, and yet still sound and of fine flavor." It seems almost too absurd to think Canadians can be gulled by such advertisements; but such trash would not be circulated if it did not pay.

Much valuable time and a great deal of money has been spent in endeavoring to obtain from North-western Europe varieties of winter apples superior to our own for foreign shipment. For some years past our reports and our journal have been crowded with descriptions and illustrations of new Russian varieties of fruits of all kinds, but as far as I can learn no winter apple has yet been found to equal the varieties already grown here. And the fact that none of our best winter varieties have been obtained from more northern or colder countries than this should have been sufficient long ago to have caused a discontinuance of these costly experiments in pomological research.

On the pages of our *Horticultural Journal* there may be found strong commendations of varieties which a practical public had long before found unsuited to the peculiarities of our climate. The first article in the November number is an example. Here the McIntosh Red apple is described as "a seedling of great value," a "winter variety," surpassing the Fameuse in "coloring, size and quality," and also as being a variety underrated by the committee on apples because of its being a "new" variety. To all of which is added a certificate of character from Dr. Hoskins, of Vermont, who is (the writer says) "the best authority we have on hardy apples," stating it to be "the best and most beautiful apple of its season." Now, it is not a very "new" variety. It was described in Dowing some twenty years ago. Ten years ago the editor of the *Canadian Horticulturist* said of it: "It is known in Western Ontario, but the fruit is so very subject to the black scab that it cannot be profitably grown at present." In 1884 Mr. McIntosh, who is a nurseryman, said he had been propagating from the original tree for fifty years. It can hardly be said to be of "great value," because of the two serious blemishes in its character, also referred to by the writer of the article in question; viz.: Its great liability to "scab" and the unusual tenderness of its fruit buds. It has been tested largely throughout this Province during the past twenty years, yet none of the four or five hundred fruit-growers to whom application was made by the committee on apples for lists of varieties most suitable for cultivation in this Province recommended this variety.

During the past two years a few hybridized varieties have been introduced, having so many of the necessary qualities requisite in fruits for commercial orchards that little doubt exists but this method of obtaining new varieties excels all others in the certainty of its results. If this method of procuring new varieties is so very good it may well be asked why it is that so little is heard of hybridizing or cross-fertilization lately. I believe the chief cause is that, while a number of nurserymen have made large profits and the whole Province has been greatly enriched by growing some of these varieties, the originators—those who have spent many years in the production and development of these varieties—have received no reward therefor, and but little encouragement either from the public or from this Association. No doubt a few persons may continue to experiment in this most attractive branch of horticultural science, but since it is so well known that no pecuniary reward may result to the originator of a valuable new variety we may not hope for much of that energetic, persistent and continuous effort which ensures success.

I have endeavored to show some of the causes of want of success in introducing new varieties, which, briefly, may be summed up thus:

1. A great many of the new varieties which have been brought to the notice of this Association during the past twenty years, if we are to believe the committees' reports (and there is no cause to doubt their accuracy), possessed qualities which might have resulted ere this in displacing some of those now on our list, but which, through the neglect of this Association to keep a convenient record of such varieties, are now forgotten.

2. Nurserymen are always ready to acquire new varieties of anything in their line, but nurserymen are mortal, and therefore work for their own personal gain. The fewer

the number of new plants the better for them, but of these they require absolute control. So far, all is well. But, as already shown, the profit to them is often in proportion to the exaggeration used, hence no dependence may be placed on their catalogues.

3. Bringing varieties to public notice through the columns of the *Horticulturist* which are not equal, and often inferior, to varieties on the authorized list of this Association, is very misleading and annoying to the public, and therefore of great injury to the Fruit-Growers' Association. It should be thoroughly understood that no new variety of fruit can obtain a prominent place in public estimation until the fact is established beyond doubt that it is superior to some one, at least, of the established varieties as given for the various districts of Ontario.

4. The fact that nothing has been done, or is doing, by this Association towards securing suitable compensation for successful results in hybridization is a reproach to this Association, and is perhaps the chief cause of the decreased interest in this, the most important branch of practical pomology. The following sentence from page 121 of Annual Report of 1892 is worth quoting in this connection: "But if students in this branch of science were assured that extraordinary success would meet with corresponding reward, men in early life having the necessary educational training would engage in this pursuit, and pomology and horticulture would soon be elevated in our country to that position in the scale of natural science which its importance deserves."

Perhaps it may not be out of place here to suggest a remedy for this state of affairs for the future, and possibly regain somewhat from the past.

A committee might be appointed, which should be permanent in its character; viz.: It should hold its position from year to year, or until changed by the Association, and should be in addition to the usual fruit committees. This committee should take cognizance of all matters relating to new varieties of fruits, such as to revise and condense after publication all reports of committees on new fruits; revise and condense all lists of fruits from year to year; summarize all the work of the Association for the past and preceding years relating to new fruits; originate or take into consideration any scheme which may have originated elsewhere for the better conduct of this branch of the business of this Association, and report at every annual meeting. This committee, for the better prosecution of their work, should consist of three persons only, who, in addition to having some knowledge of fruits, should have a fair knowledge of public business. And, also, it should have the power to appoint from time to time sub-committees of experts for each kind of fruit, who would report to the permanent committee as may be required.

Mr. PATTISON: I hardly think it advisable that rewards should be offered to introducers of new fruit. I think they stand very much in the position of inventors who patent articles and thus obtain the right over that article. It is found that although no reward is given for new patents the market, as anyone can ascertain by examining the records, is simply flooded with new patents for every imaginable kind of thing, the great majority of which are worthless and die a natural death. I think there are plenty men who will undertake hybridizing and offering new fruits from simply the love of the occupation. Then, again, if the new fruit is good and properly introduced there is no reason why the producer should lose control over it until he makes a good bargain with some nursery—they are always ready to make a bargain.

Mr. EDWARDS: I do not agree with that last suggestion. I think Mr. Beall's view is thoroughly good, because the policy of this Association and of the fruit-growers of Ontario has always been a liberal one. It has been in the direction of spreading knowledge, on every new point, through the whole country, and it is in that direction I think, a notable success should be rewarded—not everything, but where there is a decided success the Government should assume it and spread it throughout the country. Now, you cannot protect trees and things of that sort as you can patents, because every tree that goes out into the country produces its own scions, which may be budded on every tree in the orchard.

The SECRETARY: Mr. Beall has unjustly criticized an article in the November *Horticulturist* about the MacIntosh Red. If I remember aright, it was there clearly stated that on account of its tendency to spot it was ruled out. Very fine samples of that apple were shown at the World's Fair at Chicago from the Province of Quebec.

Mr. PATTISON: The article is here; the tendency to spot was mentioned. It reads as follows: "How unfortunate that it has two serious faults; one, in that it scabs almost as badly as the Fameuse, and another in the fact that, while its wood is as hardy as the Fameuse or Wealthy, its fruit buds are more tender, so that in cold sections it becomes a shy bearer"

ASSESSMENT OF ORCHARDS.

Mr. EDWARDS: With the consent of the other members of the Legislative Committee, I would refer to the question of municipal assessment, so far as it relates to fruit-growers. I think that it would not be undesirable that some representation should be made to the Government with a view of authorizing, under the Assessment Act, the assessment of those parts of the farm that are devoted to the orchard and vineyard, in the same way that the rest of the farm is assessed—that is, acre for acre—instead of increasing the assessment where a man begins to increase his orchard. I think the increase of orchards should be encouraged. At the present time there is no provision in the Assessment Act to assess orchards otherwise than their full value, whatever the assessor may think that to be. I therefore move that a committee, consisting of Dr. Beadle and Mr. Wellington, with power to add to their numbers, make such representation to the Government as they may deem desirable with reference to the assessment of orchards and vineyards.

Mr. TURNER seconded the motion.

The SECRETARY: You might also add Mr. Allan to that committee; he is also in Toronto.

Mr. EDWARDS: Yes, I will add Mr. Allan.

Mr. PATTISON: Would it be just to the other farmers if, by planting an orchard on a piece of land, you raise the value of that piece?

Mr. EDWARDS: I think it would.

The PRESIDENT: It is a matter with many sides to it. We all know now that our assessment law is the most complex and complicated in the world.

The SECRETARY: In some cases property is lessened in value by putting an orchard on it, at least in the owner's opinion, because they are digging them out, and digging the roots out is no small job.

Mr. A. H. PETTIT: I don't think many orchards are being taken out in our country or any other country because we don't want them, but rather so as to plant something else that there is more money in.

Mr. CASTON: It would still be an orchard, all the same.

The PRESIDENT: What is your pleasure in the matter? There will be no expense.

Mr. A. H. PETTIT: I would move that Mr. Edwards be added to that committee, as one of the legal profession there, to unravel the knots. (Laughter.)

Mr. EDWARDS: The idea was that we should have men resident in Toronto.

The PRESIDENT: Is it a fact that the assessment has been increased in any three or four or five acres that have been planted as orchard?

Mr. EDWARDS: I do not think it is, but the assessment law recognizes simply the assessment of all land according to its actual value.

The PRESIDENT: I do not know any case where an addition has been made to the assessment in consequence of a farm having one or two or more acres of orchard upon it.

Mr. MCNEILL: I was a member of a township council some years ago when that very point came up. The Chappel farm, on the Sandwich River, was assessed at $75 an acre because it was one continuous orchard for some distance back. Fine, enterprising fellows had hold of it. There was a slovenly Frenchman right next to him, and he got off at $40 an acre, and the matter came up before us. What could we do?

The Frenchman's farm was not worth more than $40 an acre; the front of it had all been given away for gravel; and here was this farm in orchard assessed at $75, and well worth it. Still he grumbled, because he had improved his farm and the other man had made a wreck of his farm, that he should suffer for his neighbor. The other man's was costing the community just as much as his was, and he argued in that way.

Mr. ORR: I know I am paying twice as much as I was sixteen years ago.

Mr. DEMPSEY: I have a couple of acres of orchard assessed at about $100 an acre in the County of Prince Edward. If the farmers alongside were assessed at the same rate they would pay immense taxes. If my two acres had no orchard on it it would be assessed for $30 an acre.

The motion was then put and carried.

SOME DESIRABLE ORNAMENTAL TREES, SHRUBS, AND PLANTS, FOR PLANTING IN ONTARIO.

BY PROF SAUNDERS, DIRECTOR DOMINION EXPERIMENTAL FARM, OTTAWA.

The love of plants, shrubs and trees is a general characterstic of civilized man, and there are few people who do not feel pleasurable impulses when they look upon beautiful shrubs and trees in the full beauty of their leafage.

Nature has indeed been prodigal in her generosity in the many beautiful forms which these noble objects present as found growing wild under varying conditions of climate and soil the world over. Man has long exercised his skill and energy in the production and cultivation of new forms originated by cross fertilization in which he appears as an original worker. He has also assisted nature by preserving the many singular and beautiful variations which occur as "sports" in plants and trees. Nearly all the modifications in the forms and coloring of the foliage of plants, shrubs and trees have occurred through these mysterious workings of nature, and under man's watchful care these treasures have been preserved and multiplied, and many new and beautiful forms thus made generally accessible.

For example we have many variations which have occurred in the common arbor-vitæ popularly known as cedar. In addition to the ordinary bushy form so beautiful in the woods of Eastern Canada, there is a stately pyramidal form in which the tree assumes the distinctness of outline and regularity of form of a pyramid of green without any pruning or shaping by the hand of man. As a strongly contrasting form there is the variety known as Little Gem, so dwarf in habit that it rarely grows much over an inch a year and seldom attains much more than a foot in height. It is indeed a little gem with its dense green foliage and slowly spreading form, for which almost every garden however small could find a suitable corner.

Representing the sports of this tree which are intermediate in character we have the dense rotund low growing form of globosa and Hoveyi with many others, some of which have the foliage beautifully arranged in regular laminated plate-like masses. Among the variations in form and character of the foliage are the Heathleaved and the Tom Thumb in which the foliage is much more finely divided, and among variations in color may be mentioned the Victoria with its silver tipped leaves also Aurea, Meehani and Douglas' golden with their various shades of golden yellow. All these have occurred as natural variations or sports, and man's agency has been of use in recognizing the value of these sports when produced and in preserving and propagating them.

It is astonishing what a volume of varied work is continually carried on in every direction in nature's laboratories, and the variety of products which result therefrom are most numerous and interesting.

The subject assigned to me as the basis for some remarks on this occasion is "Some desirable ornamental trees, shrubs and plants for cultivation in Ontario." Ontario is a large province, varying much in different sections in its climate, and as most of you will

naturally be more interested in those trees and shrubs which from their hardiness are more particularly adapted for growing in eastern Ontario, I shall with your permission confine my remarks on this occasion mainly to such varieties as can be successfully grown within this area. With this material limitation the subject is still a very large one. The climate at Ottawa is probably more severe in winter than the climate of this district, yet we now have on the Experimental Farm there in trees and shrubs alone nearly 600 distinct varieties, to which may be added about 150 hardy sorts of roses and many additional sorts are being added to both of these groups every year. The varieties of perennial plants of all classes would easily add 1,000 more to this already long list.

From this multiplicity of material I can only refer in the limits of such an address as this to some of the more strikingly beautiful and attractive things.

A question is frequently put to me by novices in this department—and the well-informed members of this Association will, I know, pardon me for referring to it—whether such and such a shrub is a flowering shrub. All shrubs are flowering shrubs, and all trees also which are hardy in this climate. In many instances, however, the flowers are small and inconspicuous and are not generally noticed. Some which are unattractive in flower are conspicuous in fruit, while others which make little show either in flower or fruit make amends for all other deficiencies in the beauties connected with their foliage and form.

Taking the subjects in the order in which they are placed on this occasion, trees will first claim our attention.

At the outset permit me to offer a word of caution and to enter a much-needed protest. Enthusiasm in anything, however good, will often carry one to extremes and this is very frequently the case with tree planting for ornamental purposes. When our minds become awakened to the beauties and pleasures connected with this form of ornamentation, we want to crowd as many beautiful things as possible into the small space at our disposal.

In the planting of trees on any piece of ground due regard should be had to the placing of the different species so that the larger growing sorts which require many years of growth before displaying their full beauty should not have that beauty disfigured and marred by being so crowded that their graceful outlines cannot be seen and where the limbs soon begin to die from overshading. This can easily be avoided by planting the area surrounding such trees on the space which as growth progresses they are designed to occupy with such shrubs and dwarf forms of trees as will admit of being transplanted without injury to other quarters as the need arises for such removal. It is far better to have a few well grown shapely trees on a limited lawn or garden plot, whose gracefulness and beauty will be a constant source of pleasure to the owner and his friends, than to have ten times that number of different sorts, so crowded together that none can get the requisite sunlight and air for healthy development. Under such circumstances and burdened with the idea that it is almost a sacrilege to cut down a single specimen from among those which have had years of care, in order to give space for the admission of sunlight and air, we find the owner endeavoring to effect all sorts of compromises—taking the head off one specimen, lopping the arms off another and trimming up the lower branches of others until they are made to resemble the tiny trees in a Noah's Ark—a bunch of green on a piece of stick. By such management they all become disfigured and bereft of that beauty and grace with which nature has endowed them.

Evergreens.

Some of the more desirable forms of arbor-vitæ have already been referred to and no collection would be complete without some of these.

Among the pines there are many beautiful sorts. One of the best is our native white pine, *Pinus strobus*, which should be planted of small size in order to produce the best results. Whan allowed sufficient space to develop they make handsome specimens, and they preserve their bright green color all the year round.

The Swiss or stone pine, *Pinus cembra*, is a slow grower, upright in habit, which makes a striking object and will content itself with a limited space for many years.

The Scotch pine, *Pinus sylvestris*, is a more upright grower with long dense foliage of a bright lively green in summer and of a good color in the winter

The Austrian pine, *Pinus Australis*, is a medium grower also with long and dense foliage. It is a little more stiff in habit than the Scotch pine.

The yellow or bull pine, *Pinus ponderosa*, has very long foliage and a striking and distinct habit of growth. This tree deserves to be better known and more extensively planted.

The red or pitch pine, *Pinus resinosa*, has a more graceful and less rigid habit than the Scotch or Austrian.

The dwarf pine, *Pinus mughus*, and its somewhat larger growing relative, *Pinus Montana*, require but a limited space for their growth, and both make handsome specimens. They should be allowed to branch from the ground, and in a few years they become large globular masses of green of a most agreeable shade of color.

Among the spruces the common white and black spruces, *Picea alba* and *nigra* are well known, but their full beauty and symmetry are not often seen in the struggle for existence which they maintain in their native haunts. If you desire to get compact specimens of full symmetry begin with a tree not more than two feet in height and give space sufficient to admit of the young tree being bathed in sunshine and air, and nature will do the rest and in a very few years a specimen tree will be produced which will charm the beholder.

The balsam spruce, *Abies balsamea*, has rather too open and spreading a habit to make it very desirable as a single specimen, but in a suitable group with more compact growing sorts it may well find a place.

The hemlock spruce, *Abies Canadensis*, is one of the most beautiful and graceful of all evergreens and should not be overlooked. It is, however, difficult to transplant and for this reason is not always successful.

Among the spruces none is so striking and beautiful as the Colorado blue spruce, *Picea pungens*, and more especially those specimens with a distinct steely blue color to the foliage. This color varies in its intensity from a faint hue to one of a very decided and striking character. The blue color is most pronounced in the new growth in the spring, and as the summer advances it becomes softened and mellowed to a pale bluish green which contrasts strongly with the bright new growth when it pushes out the following season.

In connection with evergreens, I would say we have grown several of the Japanese Retinosporas at Ottawa without protection. The *R. filifera* is one of the hardiest and has never been injured by the coldest weather. The *R. Leptoclada* bears some resemblence to the arbor vitæ and is also hardy, but the most striking and beautiful of all the forms is *R. plumosa*. This has a delicate foliage, finely cut, and of a very feathery texture; and although not quite so hardy as *R. filifera*, has stood fairly well for the last four years. A modification of this form, known as the golden variety of Plumosa, also does fairly well with us, and seems about equally hardy with that of the green form. Among the evergreen low growing shrubs—may be mentioned one of the Daphnes, which is very handsome and attractive, and has proven hardy in Ottawa. I refer to the *Daphne cneorum*. It grows about six or eight inches high, and has clusters of flowers which are delightfully fragrant, and the plant blooms for the greater part of the first months in the spring, and usually again in the autumn. We have had some difficulty in establishing some of the plants, and where the most pains were taken there has apparently been the least success, but one plant which was left in a very poor piece of sandy ground and never had any attention, has done remarkably well and made most vigorous growth. I believe it requires a light sandy soil to grow it successfully; but it is one of the best and most desirable forms of low-growing woody shrub that I know of.

Deciduous Trees.

Among the desirable deciduous trees there are many deserving of mention. The various forms of maple are very beautiful. The red and sugar need no comment, as they are known to all. They are very desirable as street trees and shade trees wherever there is room to grow them. A great many people, however, plant a form of the maple known as the silver maple (*Acer dasycarpum*) to a greater extent than is desirable, because it is soft and brittle in its wood, and when we have storms in winter and the branches get coated with ice these trees are almost always disfigured by the breaking of a large number of their limbs. Many call this the soft maple, and confound it with the

ordinary soft or red maple, which is a very much better tree, being tough, strong and durable. The form of weeping maple which is often planted as an ornamental tree, the *A. dasycarpum Weiri* of the catalogues, is a variety of this brittle western maple, which, although a very desirable tree, and very beautiful, when sound and perfect, is very liable to be injured and torn to pieces by winds and storms of the character to which I have referred. The Norway maple although well known in some sections, is I find, scarcely known at all in other districts. It is a very desirable tree, very handsome in its growth and vigorous. It retains its foliage generally ten days to a fortnight longer in the autumn than any of our native species, and although it does not assume the beautiful colors which our red maple does, its handsome shades of brown and yellow, contrasting with the shades of the other species, lend a charm and variety to the autumn landscape. Another very pretty form, which in the woods is rather a striking looking tree, is what is called the Mountain maple, (*Acer spicatum*.) This is rather a large bush, or sometimes a small tree, Still it is worthy to be mentioned and to be included in a collection of trees of this character. There is a variety of the Norway maple, which is also desirable, although not so hardy as the ordinary Norway maple, and that is the form known as *A. Schweidleri*. This produces deep colored foliage in the spring. The foliage is sometimes darker than the purple in the purple beech, although it is of a somewhat different shade of color. It retains this handsome purple color until the growth is pretty well advanced in the summer, when the color gradually fades almost to a plain green. Another form of maple which is deserving of cultivation to a far greater extent than it gets is the Pennsylvania maple (*Acer Pennsylvanium.*) This makes a handsome small tree, and the bark is so beautifully striped with white bars as to make it strikingly ornamental not only in the summer but also during the winter months. Passing to the chestnuts, we do not find in Ottawa that the common form of European horse chestnut, *Æsculus hippocastanum*, succeeds well. It lives and struggles along, but makes very little growth and is very unsatisfactory; but that near relative of this species, known as the Buckeye, which grows wild in Ohio, known as *Æsculus flava*, is a very useful ornamental tree which passes with the uninitiated very frequently as a horse-chestnut, but when examined it is found to differ both in its leaves and fruit. There are several species of alder which make very pretty trees if uninjured, but unfortunately we have had introduced into this country an insect which preys on the alder. In Europe it is a small moth, which in the larval state works between the tissues of the leaves and makes large black or brown patches on the leaf, which causes the tree to look very unsightly. Hence, unless we can devise some means of reaching this little insect the alder trees are not desirable. To destroy this pest is exceedingly difficult, as it lodges itself between the upper and lower tissues of the leaves, and feeds inside on the soft tissues of which the leaf is formed. There is one sort of alder which seems to escape almost entirely the attacks of this insect, and I think that is partly due to the fact that the leaf is so finely cut that it does not give the opportunity to the insect to find a home sufficiently large to admit of its coming to maturity. I refer to the imperial cut-leafed alder (*Alnus glutinosa laciniata*), the leaves are of a beautiful shade of green, and are finely cut. Among the birches we have several remarkably handsome and beautiful trees—particularly the canoe, the yellow and the red birches. There are, however, none which attract so much attention for ornamental planting as that variety of the white birch of Europe known as the cut-leaf birch (*Betula alba laciniata*). This tree has proven hardy as far north as Brandon, Manitoba, where we have on the experimental farms one or two very nice trees growing thriftily. Very few of the deciduous trees which are common and hardy here will endure the climate there; but this is an exception, and is becoming a very popular ornamental tree for planting in that province. About Ottawa it thrives remarkably well. We have many of them on the experimental farm, and every year adds to their beauty and grace, and their long, pendulous branches sweep the ground with the movements of the wind in the summer time. The hickories are all very beautiful trees and compact in their growth. Among these, however, there are none better or more attractive than the ordinary soft-shelled hickory. Among the deciduous trees there is one of recent introduction to which I would like to call you special notice. This is from Japan, and is believed to belong to the family of magnolias. It is known as *Cercidiphyllum Japonicum*.

Coming from Japan it was not expected it would stand in such a climate as we have at Ottawa; but after five years' trial, in which it has never killed back an inch, to my knowledge at any time, I think we may fairly pronounce it to be hardy there. This is a rapid-growing tree, with heart shaped leaves which are dark-green above and silvery green beneath. The leaf stalks are dark red and there is a tint of the same color in the veins in the leaf, which, contrasting with the dark brown of the young shoots gives the tree a very attractive appearance. Another tree, a native of America, which has its habitat in the more southern portions of this country, is also deserving of mention, as it has proved hardy in Ottawa after four years' trial. I refer to the yellow-wood *Cladrastis tinctoria.* It is a small-sized, round-headed tree, and has handsome compound leaves and sweet-scented flowers in June. The tree has not flowered with us yet, but it has made a regular and fair growth, and has not, to my knowledge, been injured by the winter. The beeches are more difficult to grow than most other classes of trees, and their growth is slow. The European beech seems to be fairly hardy. So also is the purple variety of this tree, commonly known as the purple beech. The Kentucky coffee tree (*Gymnocladus Canadensis*) sometimes supposed to be tender, but has also proven quite hardy in Ottawa. There are two large and handsome trees growing in front of Rideau Hall which must be forty or fifty years of age. We have found young trees planted on the experimental farm also to be hardy, and these trees have also been tested at different points in Ontario, and they have proven hardy wherever planted. Although of somewhat irregular growth when young, it becomes a tree of good shape in time. It has blunt shoots, with the extremities somewhat swollen, large compound leaves, and a rough bark. The Butternut (*Juglans cinerea*) is found native over a very large portion of Ontario. It is met with also in some parts of Quebec and extends down to the Maritime Provinces. The black walnut, (*Juglans nigra*) does not grow native over all of this territory, but we find as a rule it can be grown wherever planted, and is a hardy and very useful tree. So also with the Japan walnut—the *J. Sieboldiani*—which is a rapid-growing and handsome tree, and appears to be equally hardy with the black walnut or the butternut with us.

MR. SMITH: Does the black walnut grow at Ottawa?

PROF. SAUNDERS; Yes, we have trees growing at the Experimental Farm five or six years old which have been grown there from the nuts, and they are quite hardy. I desire to call your attention to a tree which grows not only in the northern parts of Ontario but all through the north-west; that is the Negundo tree, *Acer Negundo* or box elder, and sometimes known as the Manitoba maple. It is a tree which resembles the maple very much. Sugar can be made from its sap in the same way that we make it from the hard maple, and this sugar is of very fine quality. In connection with our work at the experimental farms we have during the last three years distributed about five tons of the seed of this tree, this seed has been collected in the valleys and among the bluffs in Manitoba and the North-west Territories. Having called attention repeatedly to the value of this tree for that section of country, many people have the idea that it is a very desirable tree to plant down here. It is nothing of the sort. We have so many trees here which are very much better and more valuable that it is not desirable in my opinion, to undertake to introduce that tree for any general planting in the east. It sometimes makes a pretty specimen while young and thrifty, but it is not so handsome or shapely as our native maples. I mention this in this connection because every year I get scores of letters asking for seed of this particular tree, from people who reside in districts where all the better classes of trees can be grown. This tree would not be grown so much in Manitoba if we could grow there the hard or the soft maple or the Norway maple; but as it is one of the fastest growing trees for that section and is quite hardy, it is exceedingly valuable both for shelter and ornament. Among the small trees, or large shrubs, may be mentioned the hop tree, or wafer ash, which is covered late in the summer with bunches of seed vessels about the size of an ordinary wafer, and very much like a wafer in form. There are several species of mountain ash which also do remarkably well all through the northern and eastern parts of Ontario, the common European form (*Pyrus aucuparia*) also what is known as the American mountain ash (*Pyrus Americana*) and the oak-leaved form of the European mountain ash (*Pyrus aucuparia var. quercifolia.*) These are handsome and desirable trees, and grow well, and

are hardy all through this Territory to which I have referred; it seems to me, from what I have seen of these trees, that they fruit more abundantly in the colder portions of this Province than they do in the warmer sections. In some localities, during the early part of the winter, before the birds have got at them and thinned them out, the trees are sometimes covered with scarlet clusters of fruit. Among the oaks we have a number of varieties worthy of notice. One of the most desirable forms is what is known as the mossy cup oak (*Quercus macrocarpa.*) That is a species very widely distributed, growing not only through all the eastern parts of this country, but growing west, away up into Manitoba, and almost into the territories. The red and white oaks also deserve a place on large grounds. Another curious and interesting tree from Japan, which has been found hardy at Ottawa, is the salisburia or maiden hair tree (*Salisburia adiantifolia*). This was not expected to be hardy there, but it was tried with a number of other sorts, many of which have failed, and we have found it to be quite hardy, and it makes fair growth from year to year. I speak now, from four years' trial. We have trees that have stood four winters.

Mr. SMITH: Does not that bear some kind of a fruit or nut?

Prof. SAUNDERS: It does bear a nut of beautiful white silvery character on the outside, not so large as our native chestnut, but smoother and flatter in its form. I know of no instance where it has seeded very far north of Washington.

Mr. SMITH: I have one seven or eight years old, and have been looking for seed for some time.

Prof. SAUNDERS: There are some varieties of willow and poplar, especially some of those which have been imported from Russia, which are proving valuable as trees both ornamental and useful. They are all very rapid growers. The Basswood (*Tilia Americana,*) is also a native with us, and grows well as an ornamental tree. So does the European basswood, *T. Europæa*, which makes a smaller tree, more compact and pyramidal in form. All varieties of elm seem to succeed, and of these there are a large number, varying in form and color of leaf and bark; but it is scarcely necessary at this time to refer to them, other than in a very general way.

SHRUBS.

Coming to the question of shrubs, I would call your attention first to the FalseIndigo, (*Amorpha fragrans.*) I have a specimen mounted here to show you what it looks like when in flower. The flowers are deep blue, arranged along spikes. The shrub is about four or five feet high, and is well covered with these spikes of flowers early in the spring. Among the earlier blooming shrubs is the flowering almond (*Amygdalus nana*); although not perfectly hardy at Ottawa, we find it to winter fairly well; it generally gives a pretty good supply of flowers. *Prunus triloba* is also very handsome, only the flowers are larger. Among the barberries we have a number of species, among the more striking of which is the *Berberis Thunbergii.* In the autumn there is no bush that I know of that puts on a more brilliant hue in its foliage—not even the red maple—than is shown in this shrub. The Siberian Pea (*Caragna arborescens*), of which here is an example in flower, is another of the very useful shrubs which have been introduced within late years that has proven exceedingly hardy—so hardy that on the plains of the North-West, where there is no protection whatever from the full sweep of the winds in winter, this shrub stands even better than any of the native species. So useful does this promise to be that a large number of these plants have been distributed from the Experimental Farm for test all through the North-West Territories. We have also sent there a considerable quantity of seed for sowing, which has been brought out from Europe. These yellow flowers that you see here appear in May, at a time when few of the flowering shrubs are in bloom, and the bush, from the compound character of its leaves, and its general aspect, is very valuable and beautiful. There are several other species belonging to this same genus which promise to be almost equally hardy and useful, varying in size and character of shrub and flower; but we do not yet know enough of them to be able to speak with the same certainty that we can of this particular form. Another very handsome native shrub is what is known as the New Jersey Tea

Ceanothus Americana). This has spreading panicles and white flowers in June, that are very thickly clustered over the whole bush. As you find it growing in nature it presents more or less of a loose, straggling habit; when cultivated in the shrubbery border we find it assumes a very beautiful form, and is one of the most attractive of the low growing shrubs. The Button Bush (*Cephalanthus occidentalis*), which is found common in many sections, is also a very desirable shrub for general cultivation, and its curious globular flowers, coming in late in July, when most other flowering shrubs have done flowering, makes it an attractive object in the shrubbery. The Sweet Pepper Bush (*Clethra alnifolia*,) is another attractive shrub and an excellent bee plant. The various species of Dogwoods also claim recognition here, especially the Siberian Dogwood, *Cornus Siberica* and *C. Sanguinea*, of Europe. We have also some very handsome variegated forms of foliage among these Dogwoods which are well worthy of cultivation, especially the variegated *Cornus mascula* or Cornelian Cherry, as it is called in Europe. This list would be incomplete without some of the forms of Deutzia, of which we have several, which are half hardy in Ottawa. One of these, *Deutzia gracilis*, is hardy with us, probably for the reason that it is low growing and is thus covered with snow, which keeps it warm in winter, so that it comes out in the spring in good condition and flowers freely. The *Deutzia crenata*, kills partly back every winter; there is usually sufficient wood left alive to give a few flowers to start again, and we have found the Silver Bush Berry, *elæagnus argentea*, from the North-West exceedingly hardy and useful. The Forsytheas we cannot do very much with. They are handsome in their foliage—but rarely flower with us. The wood does not kill off, but the flower buds are killed almost every winter, except those branches that lie on the ground and are covered with snow.

Dr. BEADLE: It is often killed back in the Niagara District.

Prof. SAUNDERS: Of all the shrubs under cultivation, probably there is none that has attracted so much attention and given so much satisfaction as the Japanese Hydrangea, known as Hydrangea Paniculata Grandiflora, which was distributed by this Association years ago. This shrub is a charming one. It is perfectly hardy in Ottawa, and I have seen it growing as far north as Sault Ste. Marie in a garden that I visited there several years ago; I think it is hardy in almost all the settled parts of Ontario. It is a rapid grower, and produces at its tips every year large clusters of whitish flowers; they remain a long time open—three or four weeks a single flower spike will last—towards the end of this period they get dingy and pinkish in color; but for the first two or three weeks they are exceedingly handsome and attractive, and awaken more attention in the collection at the Experimental Farm from visitors than any other shrub that we grow. Quite unexpectedly we have found the tree Peony to be quite a success in Ottawa—the *Peonia Moutan*. It has lived for several years, and made very good growth, and, as far as we can judge, is quite hardy.

Dr. BEADLE: Because the snow covers it. It needs protection in the Niagara district.

Prof. SAUNDERS: Does it? Well, our bushes are now about two feet high, and they seem to pass the winters very well. Probably our snow saves it.

Dr. BEADLE: It may be that the freezing and thawing that it goes through so many times in winter in the west is the cause of injury there.

Prof. SAUNDERS: That is quite possible. We have winter, when it sets in, good and steady, and we like it much better than so many changes. The different species of Philadelphus, known also as Mock Orange, or Sweet Syringa, are very hardy and very floriferous. Among the plants belonging to the Sumach family we also have the Aromatic Sumach (*Rhus aromatica*), which is a hardy and valuable shrub, and the common form known as *R. glabra*, and the cut-leaf form, of the same species (*R. glabra laciniata*). I must not omit to refer to a few of the Spireas, which are among the best of all the hardy shrubs. The *Spiræa Van Houtii* and the round-leafed Spiræa (*Spiræa rotundifolia*), are two special favorites that I think should be in every collection. The mounted specimen shown here is covered with a mass of these small white flowers so thickly that you can see them when in flower from a long distance. The color of the flowers gives a character to the whole

bush; and the same with the *S. Van Houtii*, which is even more floriferous. Among the other sorts that should be named is *S. Bumalda*, a very handsome Spiræa, with leaves more or less variegated, which bears flat clusters of pale purple flowers later in the season. We have also *S. Prunifolia* in spring, which produces clusters of little white daisy-like flowers, and is very attractive and pretty; this, however, is not so hardy. The *S. Callosa* and the golden form of the *Spiræa opulifolia*—the cranberry-leafed Spiræa—are good forms with us, especially the latter. Among our sample hedges, of which there are more than thirty under trial, this sends out such a profusion of golden foliage that the bright color can be seen for a long distance. As a single bush it is very fine, too. We have another Spiræa known as the willow-leafed spiræa, *S. Salicifolia*, and one also known as *S. tomentosa*, or the hairy spiræa. These are among the more distinct forms of Spiræa that carry you through the season, beginning with the plum-leafed spiræa, which is the earliest, and following with the others in succession, you have spiræas in bloom during a period covering two months in all. The lilacs must have a word said in their favor. The old fashioned lilac has been improved so much in late years by careful selections of the plants and by the cross fertilizing which has been carried on in Europe by different experts, that we have now quite a large list of valuable varieties covering all shades of color, from white to deep purple.

Dr. BEADLE: And double, too.

Prof. SAUNDERS: Yes, double also. The Princess Alexandra is probably one of the best of the new white forms. It is very desirable, and should be better known. Charles X., we find in our experience at Ottawa, to be one of the most prolific in flowers. Indeed, the bushes, which are comparatively small, are very often half covered with flowers in the blooming season. *S. Josikœa* is a very distinct form of lilac, different in character from the old ones, with a very glossy, laurel-like leaf, and purple flowers, which are several weeks later than the ordinary lilac. The forms of the Persian lilac—the white and the purple—are both more or less tender with us, sometimes killing back considerably; but they usually give us a tolerably good quantity of flowers notwithstanding. There are two or three of the Viburnums which are exceedingly good; *V. Lantana*, which has large and handsome foliage, and large bunches of flowers, suceeded by scarlet berries, which turn almost black later, and are quite conspicuous. The last group of shrubs I shall refer to is the Wigelias. These are not entirely hardy at Ottawa. They usually kill down about half their length--some times only a quarter; but, by judicious pruning, good flowers are produced in abundance, and the shrubs are very handsome. I will call your attention now to the remainder of those I have here: *Corchorus Japonica*, *Caragana Pendula* (Siberian Pea), *Cytisus Laburnum*, *Exochorda Grandiflora*, *Genista Siberica*, *Philadelphus Speciosissimus*, *Rhododendron Vixosum*, *Rosa Spinosissima*, *Rosa Cinnamonea*, *var. Siberica*, *Viburnum Opulus*, *Weigela Amabilis Rosea*, *Weigela Sieboldii Variegata*, etc. I have not said anything about roses—the cultivated forms—as these would occupy an evening by themselves to discuss.

I have now brought under your notice some of the choicest forms of hardy trees and shrubs, enough, I trust, to afford material for satisfying the most fastidious taste, and enough also to furnish material suitable for all conditions as to space, and which, with judicious selection, may be made to furnish a succession of bloom throughout the growing season.

Dr. BEADLE: Do you find the *Daphne Mesereum* hardy?

Prof. SAUNDERS: Not entirely hardy.

Mr. WHITE (Ottawa): We have two or three plants of it that have grown wild and flowered every year for the last ten years.

Prof. SAUNDERS: These things usually gain in hardiness as they endure the climate for a time. We usually find a shrub that is moderately tender to begin with, that will develop a hardiness of constitution that will enable it to stand what would have killed it at the outset.

Dr. BEADLE: In regard to the walnut, Mr. Joly, formerly Premier of Quebec, has a large black walnut grove down in Quebec, still further north.

Prof. SAUNDERS: Yes, he exhibited some of the timber at Chicago this year.

Mr. WHITE: I had one of the first cases of walnut tree fruiting this summer. I am sorry to say the boys stole the nuts; they were a novelty. Very few people have any idea how beautiful the spiked maple is. The trees are very handsome.

The PRESIDENT: Where can they be procured?

Mr. WHITE: They grow wild in the woods.

Prof. SAUNDERS: The Ginala I should have mentioned when I was on my feet. It is hardy from the Atlantic out north to the Pacific. We have grown it on the Indian Head farm for several years.

Mr. SMITH: Have you ever had any Japanese maples?

Prof. SAUNDERS: Yes, we have tried them. I tried a number of different forms in London when I lived there, but they all killed out. We have them in Ottawa, but we keep them in the greenhouse or in the cold cellar in the winter time.

Mr. SMITH: I saw them in Rochester, and Mr. Barry told me that for the first two or three years they had to protect them, but afterwards they could stand the climate.

Prof. SAUNDERS: They would there, but they would not stand our climate.

Mr. CASTON: What about the Catalpa that was issued by the Association a few years ago?

Prof. SAUNDERS: We have three varieties of Catalpa: Speciosa, Tees' Hybrid, and Kempferi. We have trees bearing seed this year in abundance, and anybody can have two or three pods by dropping me a card at any time, as we have collected quite a quantity of them. I think the Speciosa is the hardiest of the three forms, although the Tees' Hybrid, taking it all in all, is quite as hardy. We have trees that have been out four years that have not killed back to any extent; and we find an occasional tree in this forest-planted group that does not kill back, while all the neighboring trees are killed down to the snow line. It may all depend on where the seed was grown that produced that particular tree; but we are not able to trace that back, because we bought the trees from nurserymen and don't know anything about where the trees were grown.

Mr. TURNER: We have a black walnut fruiting in Cornwall that is subject to a large black caterpillar. I would like to know the remedy.

Prof. SAUNDERS: The remedy for all these caterpillars is very simple if you have a spraying apparatus or a pump to spray them with the Paris green and water. That is a species of *Detana* that you refer to—produces a very handsome moth. We have them at Ottawa, and if we didn't look after them once in a while we should find the trees all defoliated, because they eat the foliage very fast; but by spraying with Paris green you can kill them in a very few hours—the whole of them.

Mr. TURNER: Can you grow *Catalpa Speciosa* in Ottawa?

Prof. SAUNDERS: Yes; six or seven years ago I put out a row of trees, and to-day there are about two standing, while the rest are killed out. Another tree has blossomed for the last two or three years very freely.

Mr. CASTON: It makes a rapid growth in our section, but kills back in the winter.

Prof. CRAIG: I would like to call attention to a very important fact in this ornamental shrub matter. I have a great many letters during the year asking where the many varieties of these shrubs can be procured. A number of those that have been enquired about have been already mentioned here this evening, and I am at a loss frequently to know just where to direct the parties, because I have not found, in many of the catalogues of our Canadian nurserymen, lists of other than the very commonest shrubs that have been mentioned. Now, I think that a more general interest in their propagation should be taken by Canadian nurserymen, and that Canadian planters should not be obliged to send to the United States for these desirable ornaments. A very easy method of propagating, that we have practised at the farm, is by taking hardwood cuttings after the growth is ripe in the fall, and setting out just as currant cuttings are set, in a

trench that you may make with a spade in the ground. All that you have to do is to protect them with a little straw or mulch material. The next spring the straw is taken off, and perhaps 40 to 60 per cent. of these will grow—Sibirica, Weigela, Cordesirable varieties which are mentioned can be easily and readily grown in this way. chorus, Syringa (or Mock Orange), the Deutzias, and Jersey Tea—in fact most of the Another shrub, and the most valuable probably, mentioned this evening—the Hydrangea —is most profitably produced from green wood cuttings, just as you slip a geranium, and can be set in a cold frame or in a box set in a shady place, the cutting being three or four inches in length, with the two lower leaves taken off and inserted down to the two upper leaves; you will find it will root very quickly in this manner.

Mr. CASTON: There is a shrub growing wild north of Lake Superior. You come across it at Port Arthur, among the rocks. It is very much like the Snow-berry in habit, grows about the same size—five or six feet high—and it is useful as well as ornamental, for it produces a very rich fruit—the plant is bent over with the weight of the fruit.

Prof. SAUNDERS: There is no doubt it is one of the dwarf forms of the June Berry.

Mr. CASTON: But it was along about the 11th or 12th of July.

Prof. SAUNDERS: You would not expect it in June in your country? It belongs to the same family as the Saskatoon Berry of the North-West.

STANDING COMMITTEE ON NEW FRUITS.

The SECRETARY: I think it would be well to appoint a committee in the line of Mr. Beall's paper, whose names would be published as a committee on new fruits, to whom any new fruits during the year might be sent for their opinion, and that this committee should be expected to report to us, through the chairman, at the next meeting. I would move that the Committee be A. McD. Allan, D. W. Beadle and John Craig.

Mr. BEALL: That Committee, I think, should also revise all present lists.

The SECRETARY: Yes, I think that should be among their duties.

Mr. EDWARDS seconded the motion, which was carried.

VOTES OF THANKS.

Mr. MCNEILL: I take great pleasure in moving that the thanks of this Association be tendered to the Mayor and Corporation of Peterborough for their kindness in granting us accommodation and entertainment, and that the Secretary present this resolution to the proper parties.

Mr. M. PETTIT seconded the motion, which was carried.

Mr. BOULTER moved a vote of thanks to the press. Mr. CASTON seconded.

The PRESIDENT: We have been more carefully looked after by the papers here than any place I have visited. Both reporters have been constantly with us.

The motion was carried.

The PRESIDENT: I think we are very much indebted as an Association to Mr. Edwards.

The SECRETARY: I was going to say that we should express to Mr. Edwards, as President, and to the Peterborough Horticultural Society, our thanks for their kind invitation here and courteous attention to us while we have been here.

Dr. BEADLE: I want to second that motion. I should take up too much time if I began to speak on the subject.

The motion was carried amid applause.

Mr. EDWARDS: I think we who live here should give the Association not only thanks, but some more heartfelt recognition of your kindness in coming here to give us information and to help us in the work we are trying to do. I must say that I look upon it as a great compliment on the part of the Association to come here, and we are the ones who are indebted, and not you.

The PRESIDENT: Now, gentlemen, the work of this Convention for this year is done. We have not had as large an attendance as we would like to have had, but we have got through a great deal of very valuable work, I think. This work will all tell in the long run, because it will appear in the Report, and though it may not have been immediately felt just about here in this locality I think it will be felt in a very much wider field than this. Nothing more being before the chair, I will declare this annual meeting closed.

The Convention adjourned at 12.30.

APPENDIX I.

INSECTS INJURIOUS TO PLANTS.

CONTRIBUTED BY THE SECRETARY.

The title of this paper, as I first wrote it down, was misleading. It was "Insects Injurious to the Fruit-Grower." A lady seeing it remarked, "Your subject seems to be rather a limited one; with how many insects is the fruit-grower affected?"

In a way, surely the fruit-grower is affected by all those insects which injure his fruit—his pockets certainly suffer to an immeasurable extent. It has been computed that hundreds of thousands of dollars are annually lost to our fruit-growers, through the injuries caused by our insect enemies.

I am well aware that in treating upon insects I am treading upon well-worn ground, and I can scarcely be expected to bring before you any new discoveries. The pathways are well worn by such masters of entomology as Riley, Packard, Saunders, Harris, Ormerod, Pettit, and numerous others. Mr. Packard's work is too general for the use of the fruit-grower; Harris' is most interesting, but not arranged well enough, nor is it sufficiently complete to meet the needs of the practical fruit-grower; Riley's work for the United States, and Miss Ormerod's for England are invaluable, but it remained for our own Professor Saunders to write a book, under the title of the above heading, exactly suited to the needs of Canadian fruit-growers, arranging it for practical purposes under such heads as "insects injurious to the apple," "to the pear," "to the peach," "to the grape," etc., classifying the different insets under each head according to the part which they affect, whether the root, bark, leaves or fruit. This has proved a most convenient arrangement. I would suggest to some of our amateur collectors that they might make for themselves a most interesting collection on this same basis. This would not be so scientific an arrangement from an entomological point of view, but it would he be exactly right in the eyes of the professional horticulturist.

It would obviously be absurd for me to attempt to cover in a paper like this even a general survey of the ground so well gone over by Professor Saunders; I shall only attempt to give you some idea of the more well-known injurious insects which just now are great obstacles in the way of success in making the garden and orchard profitable throughout the fair Province of Ontario.

THE CODLING MOTH AND THE CURCULIO.

At the very head of our enemies in the insect-world is the Codling-Moth, (*Carpocapsa pomonella*). Like other insects, it is increasing with the increasing supply of apples for it to feed upon, until of late years it has threatened the total destruction of our apple crops. A few years ago, before the practice of spraying with arsenites came into use, the pest became so serious that one third of the crop had to be thrown out as seconds, purely on account of its ravages. If these insects were content to feed upon the poorest of the fruit we would not grumble, as they would do us a good turn by thinning out our fruit, but, unfortunately, they choose the fairest and best, thus directly robbing us of our hard-earned profits.

Many and very ingenious devices have been tried to keep these insects under control, as, for instance, trapping the moths with botttles of sweetened water; by twisting hay bands about the trunks of the trees, into which the larvæ would crawl to pupate, and then wringing these bands through a wringer to destroy the cocoons; by keeping sheep and pigs in the orchard to eat the infested fruit, worms and all, as it falls to the ground, but every one of these devices has served only to check, not rid us of the evil.

Can the fruit-growers be blamed then because, when the use of arsenites sprayed on the trees and fruit was found to be a success, they adopted it almost universally? I speak of this because objection has been made on scientific grounds to the use of arsenites, since by the use of them not only the injurious, but also the useful insects are often destroyed, and, among the latter, many parasites whose friendly office might in the end keep these enemies in check without the expense and trouble of applying poisons. The true principle, they say, is to favor the increase of these parasites and introduce other insect friends and thus cope with our foes in a manner which can be approved of on scientific grounds.

Possibly such a course would be the wiser one in the end, but "a bird in the hand is worth two in the bush," and I fear the fruit-growers have no patience to sacrifice a present advantage for an ulterior good.

There are two broods of this moth—the first is on the wing about the time of the opening of the apple blossoms, when each female deposits her tiny eggs singly in the calyx-end of the apple; and, as each moth deposits on an average about fifty eggs, it is easy to see how rapidly the insect may increase. There is a second brood of the moth in the latter part of July, but, if the first brood is destroyed, the second will be, of cource, destroyed with it. Hence arsenites, applied once or twice in June, will ensure a fairly sound crop of fruit.

Year by year less poison in dilution is found to be sufficient to accomplish the purpose. One pound of Paris green to 200 gallons of water is the usual prescription, but many experimenters have found that 250 gallons will not form too dilute a mixture.

Formerly it has been necessary to depend upon American inventors for tools for this work, but there are one or two spraying pumps invented in Canada which now answer our purpose well.

How best to cope with the curculio has long been a problem. Not only are the plum, apricot and peach stung and caused to drop by means of its evil doings, but the apple and pear are also subject to its ravages, and as a result, are much knotted and ill-formed. On this account the apricot is little grown in Southern Ontario where it might, otherwise, succeed well, and many fruit-growers are even debarred from engaging in the cultivation of plums.

Until spraying with Paris green was introduced, jarring of the trees was the only method adopted and, where faithfully performed, has been, on the whole, successful; some experimenters claim that it is more effective than the use of Paris green. The operator jars the tree with a sharp tap of a mallet and the "little turks" are gathered up in a sheet and burned. This must be continued every day until the plums are well grown. It is a much simpler plan to give the orchard one or two good sprayings, which will suffice, unless constant rains wash off the poisons, providing always that the first application is made almost as soon as the foliage appears, in order to destroy the parent beetles. The preferable method is scarcely yet settled. Professor Green, of the Ohio Experiment Station, strongly advocates the spraying method as most effective, while Professor Beal, of the Michigan Station, favors jarring.

The Curculionidæ is a numerous family and nearly all are harmful. Mr. Billups, who read a paper at one of our meetings at Niagara, stated that the members of this family number nearly ten thousand species, many of which are injurious to our fruit.

The Oyster Shell Bark Louse.

This is one of the worst pests of our Canadian apple orchards because it works almost entirely unseen by ordinary observers on account of its small size. Some of our worst foes are so minute that their presence can be only discerned by the use of a microscope. In its first stages this louse is almost microscopic. The eggs, which lie all winter concealed under the dead body of the parent louse, hatch out into tiny lice which emerge from their covering during the warm days of the early part of June, and in about a week they settle down upon some smooth place on the limbs, often concealed from view by patches of old bark. There they spend the summer sucking the juices of the tree, weakening its vigor, until full grown when each becomes a scale, covering in its turn

three or four score of eggs. When I first discovered it in my orchard, I found many trees almost dead through its effects. The bark was rough, but I had not previously suspected that these rough places were scales concealing young lice. Lousy trees! What a disgrace! I soon set to work with alkaline solution, such as washing soda and potash, and also with kerosene emulsion, and by their use have succeeded pretty well in destroying them. If neglected, these insects will in time completely cover a tree, even to the outer branches, and it is difficult then to reach them with broom or scrubbing brush. The only plan left is to spray the whole tree with an alkaline solution and kerosene emulsion. Some of the formulas recommended are as follows:

Kerosene Emulsion: Common or whale oil soap one-half of a pound; one gallon of hot water, and two gallons of kerosene. Stir until all are permanently mixed, and then before using dilute with nine parts of water. This will be found one of the most effective remedies for the Oyster-Shell Bark Louse Another more simple remedy and yet, if faithfully applied, quite effective, is a soda wash made by dissolving one-half a pound of common washing soda in a pail of water. Alkaline wash may be made of common lye and water, which, if applied during the first week of June when the young insects are first hatched out and are in their most tender stage, will, in most cases, answer every purpose. If concentrated lye is used a pound should be diluted in a barrel of water.

Among the newer enemies which the fruit-growers have to meet are the Pear Tree Psylla and the Raspberry Gall Fly, and of these we give a brief notice.

Pear Tree Psylla.

The Pear Tree Psylla bids fair to become one of the most troublesome enemies in fruit-growing which has yet appeared. As if it were not enough to discourage pear growers that the blight so often destroys their finest trees and the Curculio and Scab ruin their finest fruit, this tiny insect must appear, having emigrated from Europe, and completely wreck their bright hopes of success. Only so recently as 1891 was this insect noticed as a formidable enemy, and pear growers in various parts of the Eastern States lost thousands of dollars' worth of fruit and many valuable trees through its ravages.

A very excellent bulletin by Professor Slingerland, of the Cornell Experiment Station, devoted to this insect, has been published, from which we gather much of the accompanying information, in advance of its ravages; for there is little doubt that Canadian pear orchards will be visited by it during the coming spring.

Already New York State has suffered severely. Mr. H. Wright's orchard, near Ithaca, N.Y., promised in 1891, 600 bushels of fruit, but less than fifty bushels matured, and but a few trees made any growth. Mr. G. T. Powell, of Ghent, N.Y., a prominent fruit grower, stated that the insects reduced his pear crop that year from an estimated yield of 1,200 barrels to an actual yield of less than 100 barrels of marketable fruit. Besides this the trees in the orchard had a stunted appearance, no doubt owing to the attacks of this pest.

The Pear Tree Psylla was first introduced into this country from Europe in 1832, by Dr. Plumb, of Salisbury, Conn. The year after he first noticed it, and during the next five years, he lost several hundred trees by its ravages. From various reports it appears that the pest has already reached the Mississippi Valley it its progress. The severe outbreak of 1891 proves that in New York State, at least, it has become so numerous that it only requires favorable opportunity to do an exceedingly great amount of damage.

Entomologists class the Psylla as belonging to the family Psyllidæ, or Jumping Plant Lice, under the sub-order Homoptera. The general name Psylla is derived from the Greek word meaning a Flea. In Europe there are three species which infest the pear tree, and our species, Pyricola, is not the worst. Let us hope therefore, that its relatives may never reach us.

Among the indications of its presence are the following :

The old trees will be observed to make little new growth ; new shoots droop and wither in May as if from loss of sap A little later the old trees put on a sickly appearance ; the leaves will turn yellow, and the fruit grow but little, and about midsummer most of the leaves and half formed fruit will fall from the trees. Besides this the insect secretes a large amount of honey dew which covers the twigs, trunks and branches of the trees after the leaves expand, as is found throughout the season. At first this substance is clear like water, but soon assumes a disgusting blackish appearance, owing to the fungus growth within it.

Mr. Slingerland visited Mr. Wright's orchard at Ithaca, in the latter part of November, 1891, and states that the whole orchard appears as if a fire had swept quickly through it, scorching trees and blackening trunks, large branches and the smallest twigs. The Bartlett and Duchess varieties suffered the most.

The insect may be perhaps recognized from the following points of description, together with the accompanying illustrations :

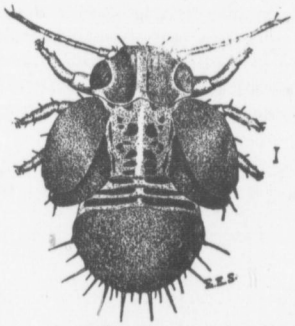


FIG. 1.

FIG. 2.

Fig. 1 represents the nymph or immature forms when first hatched. They are translucent yellow in color, and hardly visible to the naked eye, eighty of them placed end to end would scarcely measure an inch, but they increase in size until about twenty of them would measure an inch. A very conspicious feature is a broad black wing pad on each side of the body. Fig. 2 shows the adult insect, which strikingly resembles the Cicada in minature ; it would take nine or ten of these placed end to end to measure an inch, and the hair line in each case by the side of the insect shows the natural size The general color is crimson, with broad black bands across the abdomen. The legs have thickened femurs to aid the insect in leaping.

Mr. Slingerland found, when examining Mr. Wright's orchards in winter, hibernating broods of adults. They were hidden in crevices of large trees ; a favorite hiding-place on some trees was in the cavity of the bark about the scar of the severed limb. By April, 1892, the larger part of the eggs had been deposited singly. These had been placed in the creases of the bark, or in old leaf scars, about the bases of the terminal buds of the preceeding year's growth. The eggs are small and shining, and of a light orange yellow color. A short stalk on the larger end attaches the egg to the bark, and a long, thread-like process projects from the other end. By the 18th of May the most of these eggs are hatched out, and the minute nymph immediately seeks a suitable feeding place, where it sucks the sap with its short beak, a favorite place being in the axils of the leaf petioles and stems of the forming fruit. In about a month they are adults. The adult has strong legs and wings, and thus is able to move readily to distant orchards.

To be forewarned is to be forearmed, and therefore, the importance of making public at this time the methods of combating this pest, as laid down in Mr. Slingerland's bulletin, is evident.

None of the fluids applied seem to be destructive to the eggs, but the nymphs are found to be easily destroyed by kerosene emulsion. The emulsion was prepared after the following formula : One-half pound of hard or soft soap, one gallon of water and two gallons of kerosene. This was then diluted with twenty-five parts water, and in every case the nymphs were destroyed almost immediately after coming into contact with the liquid. The best time to spray for this nymph is early in spring, just after the leaves have expanded, probably, as a general rule, the two weeks succeeding the 15th of May. If this is faithfully done, the pest will be completely checked for the season.

Raspberry Gall Fly.

This is by no means so formidable an enemy as the last, but it is one almost unnoticed in Ontario until last year, when Dr. Brodie, of Toronto, who has been making a specialty of the study of Canadian galls and gall flies, wrote an article for the *Canadian Horticulturist* describing this fly. He tells us that it has been plentiful for the last twenty or thirty years in the county of York, on both cultivated and wild varieties of raspberries. The only reason why this insect does not completely destroy our raspberry plantations is the fact of its being kept in check by parasites, and, in Dr. Brodie's opinion, the encouragement of these is, in almost all cases, the true way of keeping in check the harmful creatures.

The illustrations which follow were drawn from life by Miss Violet Brodie, the doctor's daughter. Fig. 3 represents one of the galls as it appears on the raspberry bushes. There are over two inches long and three-quarters of an inch in diameter, covered with short prickles and of the same color as the bark of the cane. If these are collected the second season and put in a bottle the gall flies will emerge about the middle of May and may be seen walking on the

Fig 3.

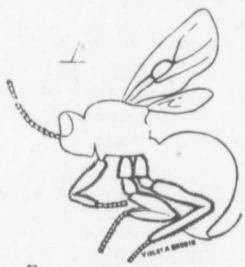


Fig. 4.—The Gall Producer. (*Disastrophus Turgidus.*

Fig. 5. Parasite of the Gall Fly.

side of the jar next the light. Fix. 4 represents the insect under consideration, which is known to entomologists as *Disastrophus Turgidus.* The doctor describes them as short and chunky, the head and thorax black and the abdomen reddish brown, flattened laterally and rounded.

The most numerous parasite, he says, is Torymus, which is of a coppery, brown-greenish color, wito a long ovipositor. Fig. 5.

The next most numerous parasite is the *Ichneumon*, Fig. 6, with head and thorax black, and abdomen reddish, blackish toward the end.

Another parasite is the *Ormyrus*, Fig. 7, which is uniform black color, the thorax punctured and rough, and the abdomen smooth, shining and pointed.

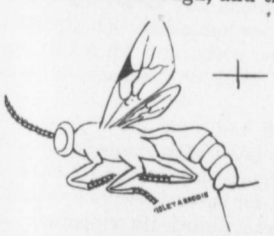


Fig. 6.—Ichneumon Fly, Parasite of the Gall Fly.

Fig. 7. A Species of Ormyrus.

These parasites should be encouraged and by no means destroyed, and by their aid this insect will be probably so kept in check as never to become a formidable enemy to the fruit grower.

In connection with this Raspberry Gall, we may notice another Gall not often described in public print. It is the Pithy Gall of the Blackberry, and the producer is a near relative of the Gall Fly. It is known as *Disastrophus nebulosus*

Fig. 8 shows one of the Galls which it produces on the blackberry canes. If these are cut open transversely, they will be found to contain a number of oblong cells, each about one-eighth of an inch long and containing a single larva. The perfect insect appears in spring and is about half an inch long, black, with transparent wings, and red feet and antennæ. The parasite insects prey upon this, as well as upon the Raspberry Gall Fly. A sample of this was sent us by a correspondent.

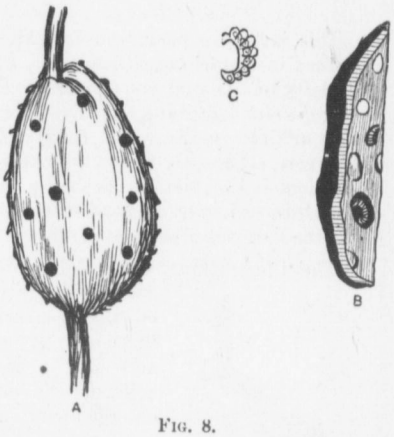


FIG. 8.

Time and space would certainly fail us were we to enumerate a full list of the fruit-grower's insect enemies; the stem and leaf of the grape vine, of the apple tree, and a long list of small fruit plants are all subject to the ravages of numerous destructive insect foes, some of which are easily dealt with, and others so difficult that to overcome them is still a difficult problem in our road to success

In view of all this, we feel the necessity of appealing to our professional friends, who are students of science, to aid us in solving our problems. Already we, practical men, are much indebted to scientists for the practical turn which they have given their investigations, and we venture to hope that, in the near future, they will place us under still deeper obligations along the line here indicated.

THE GRAVENSTEIN APPLE.

Mr. R. W. Starr, of Starr's Point, Nova Scotia, one of the best Canadian authorities on apples, writes to our Secretary as follows, concerning the Gravenstein apple:

For many years past this apple has been placed at the head of the list as a standard, profitable variety, by which all other sorts are compared for their commercial value to the orchardist. And so far it still retains its position, and has no successful competitor during its season, it is fast driving every other fall apple out of cultivation, for the reason that it can be more profitably grown than any other variety, and when placed on the market will always outsell any other sort of the same season.

From its thrifty, vigorous habit of growth, and well known reputation for early bearing, it is a favorite for working over old and unprofitable varieties, and seems to have the power to adapt itself to all varieties of stock and most conditions of soil.

As to its longevity, we have fruited it for between 50 and 60 years, top grafted on full grown trees that are bearing good crops yet, nor do I know of any Gravenstein trees on good soil dying of old age. We sometimes lose them as we lose other sorts by borer, collar rot, or sap-blight, but not more in proportion than other sorts, and when this does occur it may generally be traced to injudicious cultivation, want of drainage, or some climatic influence that is beyond our control.

As a shipper it will stand the voyage across the Atlantic and come out in good order if properly handled before shipment, and carried in well ventilated between-deck compartments. The tough, unctuous, close-grained skin makes it a good shipper, and I have no doubt but that the season for marketing might be prolonged for several weeks by placing the fruit in cool storage as soon as taken from the tree so as to retard its ripening. At present the shipping season to London is limited to say from September 15th to October 10th but for home markets they are frequently held into December, and it is not an unfrequent occurrence to see a barrel opened in March, showing perfectly sound.

B

In looking over some old papers I find a list of described varieties that I had written out in 1861 to accompany a collection of fifty varieties of apples grown on the old Starr homestead and sent to the London Horticultural Society's Show, held in conjunction with the World's Fair in the Crystal Palace of that year. The Gravenstein finished the list, and as this description and history was written so long ago, and the added experience of thirty-two years of close observance, has if possible increased my opinion of its value, I have copied it verbatim, to show that this apple is no new craze, but that it has steadily won its way to the top of the front rank and holds its position by genuine merit.

"This fine apple is said to have been originated at Gravenstein in Holstein. It was first introduced to Nova Scotia about the year 1835 by the late Hon. Charles R. Prescott who procured scions from the London Horticultural Society (of which he was a member) and grafted on bearing trees in his orchard at Starr's Point. Those branches bore fruit in '38 and from that source has originated all the Gravenstein trees of the Province. The tree is of strong, quick growth, and bears young. It is very productive, and perfectly hardy in this valley. Fruit large, varying from oblate to roundish, frequently irregular, and sometimes ribbed, stalk short, thick, and deeply set in a narrow cavity. Calyx large, closed, set in an irregular and rather wide basin; skin smooth, tough, bright yellow, at maturity; splashed, shaded, and marbled, with dark and light red, tinged with orange. Flesh quite firm, crisp, very juicy, with a brisk vinous slightly aromatic flavor, and in ripening develops a great deal of fragrance. Commences to ripen from 10th to 15th of September, but is not usually fully grown and colored before the 25th and if stored in a cool cellar may be kept until midwinter, i.e, *if kept under lock and key.*"

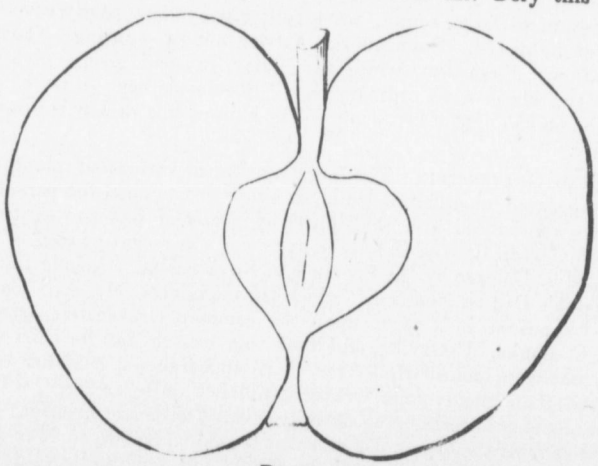
Starr's Point, September, 1861.

REPORT OF COMMITTEE ON NEW FRUITS—SEEDLING APPLES.

Mr. John Craig, chairman Committee on New Fruits, handed in the following Report:

A large number of samples of apples, mainly seedling varieties, have been received during the past year. The two following seem to merit propagation and a careful trial:

DERY, Syns.: (*Alexis Baldwin. Dery's Seedling. Pomme de fer.*).—Received from J. L. Dery, of Mont St. Hilaire, Quebec, October 7th, 1891. The original tree examined October 23rd, 1892, and further samples received from Mr. Dery this autumn. Mr.



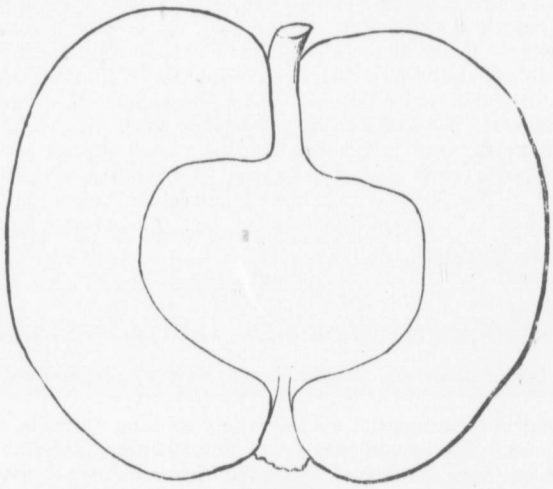
DERY.

Dery says this tree was raised from seed of American Baldwin, planted by his father about seventy years ago. Since fruiting age it has borne moderate annual crops. It is fairly healthy, and with good care should live for many years.

Fruit large, oblate, 3¼ by 2½ inches. Slightly ribbed. Skin green, and almost entirely covered with red, which is specked with numerous white dots, resembling Canada Baldwin closely in this respect. Stem short, usually about half an inch. Cavity moderately shallow, regular and slightly russetted. Basin small, wrinkled. Flesh greenish white, firm, lacking juiciness, sub acid ; quality good. The best condition during March and April.

The apple known and cultivated in the eastern townships as "Pomme de fer" resembles the above closely, and is evidently from the same stock.

CALUMET: Received from Mr. W. H. Murphy, Ottawa, who describes the tree as growing on his farm on Calumet Island, supposed to be of seedling origin, apparently about thirty years of age.

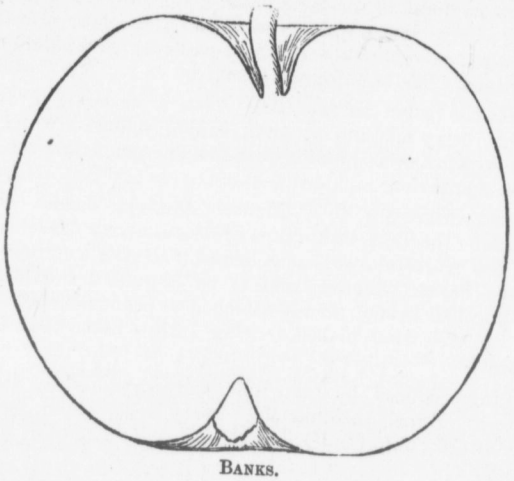


CALUMET.

Fruit medium to large, round, when fully ripe, yellow, partly covered with streaks and splashes of light red. Stem short. Cavity almost wanting. Calyx open; basin small and shallow. Flesh firm, white, very juicy, sub-acid, good. Mr. Murphy says it keeps through the winter with ordinary care. Specimens kept in my office were in good eating condition on the first of last June. The skin of this variety is not of the kind that "spots" readily.

BANKS' RED GRAVENSTEIN: The large number of variegated plants now in cultivation have all appeared, at different times, as single shoots upon the parent tree, and their peculiarities are reproduced and multiplied by means of bud propagation. A striking example in pomological lines of this force or power was recently noted in the collection of apples exhibited at Chicago by the Province of Nova Scotia. Among them was a variety called the "Bank's Red Gravenstein," which the introducer, Mr. A. S. Banks, Waterville, N.S., claims, "appeared as a sport upon the common Gravenstein tree in the orchard owned by E. C. Banks, Waterville, and that this branch has for thirteen years always borne apples that were almost wholly red." In appearance it is rather rounder and possibly less ribbed than the average Gravenstein; not quite as large, with a much more brilliant color, many specimens being entirely covered with deep crimson. In quality there is little difference from the type. In season it is said to be two to four weeks later. Its brilliant color and greater keeping qualities should add much to its value. The following is a description made from a typical specimen taken from the tables at Chicago, and the cut illustrates the same specimen :

Medium size, round, regular; calyx closed; basin shallow, obscurely ribbed. Stem ½ to ¾ of an inch long, set in deep narrow cavity. Color deep yellow, almost covered with splashes and blotches of brilliant crimson. Flesh white, moderately firm, juicy, rich, sub-acid, melting. Quality best. Core open. Same type of flesh and juice as Gravenstein.



BANKS.

As a sport from the old time favorite it is exceedingly interesting, and as a possible competitor it should receive careful attention.

NEW FRUITS AT THE CENTRAL EXPERIMENTAL FARM IN 1893.

Mr. Craig further supplemented his Report by the following:

GRAPES.

The following varieties fruited this season:

Alexander's Winter: Received in the spring of 1891, from S. D. Alexander, Bellfontaine, Ohio. Sent out as a white winter variety. Vine a fair grower, with foliage characteristic of the Labrusca type. Bunch loose, straggling; berry large, round and very slightly oval; very dark amber in color; skin thick, fairly tender, very little juice; pulp meaty, acid; seeds large; quality only fair; ripens with Salem. Not likely to be valuable.

Brilliant: Mr. T. V. Munson, Denison, Texas, produced this variety by pollinating Lindley with Delaware in 1883. The vine is moderately vigorous, bunch long; shouldered; berry medium size, almost round; color deep garnet; skin thin, juicy; pulp tender; seeds large, usually 2 to 3; quality good; berries do not drop easily. The first fruit of this variety did not ripen this season, although claimed to be as early as Delaware by the introducer.

Chase Bros.: A single vine of a variety received from Chase Bros. & Co., Rochester, N.Y., in 1887, and entered in the vineyard records under the above name, has fruited for the past three seasons. The introducer writes that "the variety originated with Jacob Moore, formerly of Brighton, N.Y." They further say "that the fruit is most excellent in quality, but it proved to be a shy bearer here, so much so that we did not feel justified in putting it on the market." As fruited here the bunch is of medium size; shouldered, fairly compact; berry medium size, round; color rich bright wine; skin fairly thin, juicy, very sweet; pulp tender, melting; seeds medium size, usually two; quality

good; ripens with Delaware; berries drop somewhat after picking. While recommending this variety to the growers, I would have them bear in mind the experience of the New York introducers.

Eclipse: Originated with John Burr, of Leavenworth, Kansas, and introduced by Stayman & Black, nurserymen, of the same place. Vine a weak grower; bunch medium to small; shouldered; berry large, round; vivid green in color; skin fairly thick; small amount of juice; pulp tender, brisk acid; fair quality; berries hold on well; ripens a week later than Concord. Too late for this locality.

Farrell: Origin the same as the last. Vine a moderate grower; bunch large, tapering; shouldered; berry medium to small, round, yellowish white; skin thin; pulp rather tough; juice vinous sweet; seeds small, numerous. Too late for this locality, taking this season as a criterion.

Hermann Jæger: Originator, T V. Munson, Denison, Texas Produced by pollinating Vitias Lincecumi—the Post Oak grape of Texas—with Herbemont, an old Texas variety. This did not fruit in a sufficient quantity to give a correct impression of the size and form of the bunch, which is said to be large and shouldered. Berry small, round, black, with purplish bloom; firmly attached to peduncle; juice and pulp sprightly acid; seeds small; not ripe when picked, October 10th. Later than Concord. Not promising for this vicinity.

Ideal: A seedling produced by John Burr, and introduced by Stayman & Black, of Leavenworth, Kansas. Bunch medium size; berry large, round, purplish amber; skin thick, juicy, vinous sweet; pulp tender; seeds large and numerous; quality fair to good. Ripens with Concord.

Oneida: Said to be a seedling of Merrimack, which it does not resemble in a single characteristic. Vine a short-jointed, weak grower; bunch medium size, slightly shouldered; berry small, oval, amber-colored; skin thick, tough; juice rich and sweet; pulp meaty and acid; seeds large. This variety keeps well, which seems to be its only point of merit.

Paragon: A seedling produced by John Burr, and introduced by Stayman & Black. Bunch medium size, cylindrical, compact; berry medium size, round, black, with purplish bloom; skin thin; very juicy, with a tender, dissolving pulp; seeds small; quality medium; berry does not drop readily; ripe September 5th; keeps till December. Berries resemble Early Victor quite closely.

Standard: Origin the same as the last. Bunch and berry medium; black; skin thin; small amount of juice; pulp tough and acid; ripens a little in advance of Concord; loses flavor rapidly. Not promising.

Campbell: Produced from seed of Triumph by T. V. Munson, Denison, Texas. The first fruit of this variety has given a small compact bunch; berry medium to small, round; skin thin, translucent; very juicy; pulp melting; seeds small; quality good. Ripens with Concord.

White Beauty: A seedling produced by John Burr, and introduced by Stayman & Black, Leavenworth, Kansas. Bunch medium size, compact; shouldered; berry round, clear white, covered with light lilac bloom; skin thin; very juicy; pulp moderately tender; seeds numerous; quite foxy; medium quality; late.

Black Raspberries.

Older: This variety originated with and has been introduced by R. D. McGeehon, Atlantic City, Iowa. It was set out in the spring of 1892, bearing some fruit the same season, and an abundant crop this year. The plant is exceedingly vigorous, and roots from the tips readily. Berry large, round, deep black, with very large drupes. The seeds are not prominent, and the berries are borne in good-sized clusters. It also has the habit of fruiting heavily on young wood. This year the first fruit ripened with Hillborn, while it continued bearing till the season of Gregg had closed. So far it seems to be a profitable variety.

A number of the newer black caps are being tested, but the above is the only one which so far stands out prominently as a variety worthy of careful trial.

Seedling Raspberries.

The seedling raspberries so favorably mentioned by a joint committee of the fruit-growers of Ontario and Quebec, in the Annual Report for 1890, have been undergoing further trial by being transplanted and subjected to ordinary field culture. Some have not sustained their early reputation, while others at first not deemed promising have done remarkably well. One variety not mentioned by the committee in this report, for the season being very late it was not at its best at the time of their visit, has since shown so many points of excellence that it has been named and is now being propagated for distribution. It may be described as follows :

Sarah : (Record number $\frac{3}{8}$.) 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 Marlborough 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 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 good picking taking place each year from the 8th to the 12th of 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.

CANADA'S HORTICULTURAL EXHIBIT AT THE WORLD'S COLUMBIAN EXHIBITION.

The Secretary's Report.

Having accepted, with the approval of the Directorate of this Association, the position of Superintendent of Canada's Horticultural Exhibits, under the Minister of Agriculture for the Dominion, it is but proper that I should give some account of my work.

I may begin by saying that Canada was the most prominent exhibitor of fruit, unless we except California whose immense orange exhibit was a most wonderful display. No country had her court so tastefully decorated ; for over the exhibit on a large arch was the word CANADA in letters twenty-seven inches high so that it could be read a long distance away ; and over the exhibit of each separate province smaller arches were made showing the name of the province.

The following tables will faithfully represent to you a comparative view of the number of varieties of fruits and vegetables from the various provinces and experimental farms of the Dominion.

The first table includes both those shown in a fresh state and those in solution. The totals in the right hand column are not the sum of the number of varieties exhibited by the various provinces and experimental farms, for many of the same were shown by each ; it contains simply the total number of distinct varieties shown by all, duplicates omitted.

In variety of fruits shown, Canada's exhibit was far in advance of any, owing to the large number exhibited by Ontario. The apples of Ontario, Quebec and Nova Scotia, the plums of British Columbia, and the pears, peaches, cherries and small fruits of Ontario were special objects of admiration. In bottled grapes, the exhibit by Ontario was remarkably good, but that made by the Central Experimental Farm at Ottawa surpassed every other shown at the fair during the early summer. They were remarkably well preserved, even the bloom being plainly discernible through the liquid.

FRUITS OF 1892.

—	Ontario.	Quebec.	Nova Scotia.	British Columbia.	Prince Edward Island.	North-west Territory.	Central Experimental Farm, Ottawa.	Exp. Farm at Nappan.	Exp. Farm at Indian Head.	Exp. Farm at Brandon.	*Canada.
Apples	111	140	86	27	27	.....	.....	.....	....	.....	292
Pears	59	12	13	.....	2	.....	.....	.....	.....	.....	73
Peaches	19	.....	1	.....	.....	....	.....	.....	.....	.....	19
Plums	55	14	17	20	12	.....	13	.....	1	.....	86
Cherries	16	3	10	.....	.....	.....	22	....	.....	.....	39
Grapes	53	30	10	.....	.....	.....	111	.....	.....	....	139
Strawberries	59	....	.....	.....	4	.....	.....	.....	.....	1	61
Currants	16	3	4	.....	1	8	.....	.....	5	9	25
Gooseberries	19	.....	7	.....	3	.....	13	1	1	1	37
Raspberries	13	.....	1	.....	.....	....	13	.....	5	3	18
Blackberries	4	....	.. ...	..	... ..	.....	.....	.....	.....	.....	4
Total of all kinds	424	202	149	47	49	8	172	1	12	14	793

In strawberries, Ontario was far ahead, and also in Heart and Bigarreau cherries, while in the Morellos the Central Experimental Farm took the lead, owing in part to the many Russian varieties under test.

The Province of Ontario deserves especial notice, because fully one-half the bottled fruit on exhibition from Canada was from Ontario. The Superintendent, Mr. A. H. Pettit, was engaged one year previous to the Exposition in collecting and preserving the fruit, and well earned the direct credit of the success gained by his province. No money was spared by the Provincial Government to make the exhibit a success, and much of the expense of installation and maintenance of Ontario's exhibit, as well as of the beautiful bottles containing the fruit, was furnished by that province.

The British Columbia apples, which had been kept in cold storage during the winter, were immense; and the huge Spys and Pearmains puzzled even the judges over their identity, owing to the peculiar habits of development induced on the Pacific Coast. The quantity was small, however, owing to the majority being frost-touched in transit to Chicago. The same misfortune apparently befell Nova Scotia's apple exhibit, though to a smaller extent; but to this was added careless handling by the cold storage employees, who had been instructed to open all packages and remove the paper wraps. Notwithstanding this, Nova Scotia's apple exhibit in May and June was a very interesting one, especially to the scientific student of horticulture, owing to the number of varieties. In this, however, Nova Scotia was outdone by Quebec, which showed one hundred and forty varieties, by far the largest collection of 1892 apples shown by any exhibitor at the World's Fair. Ontario came next with one hundred and eleven, but two-thirds of them were in bottles; and New York State next with one hundred and two varieties, none in bottles. Even Prince Edward Island showed twenty-seven varieties, some of them quite creditable, especially considering her climatic conditions.

From the next table it is quite evident that the largest part of the exhibits of fresh fruits of 1893 were made by the Province of Ontario. Some idea of her generous display may be gained from the fact that she not only filled her allotted space of two thousand square feet—one-half the whole Canadian Court—but was even compelled to seek additional space to accommodate the surplus during the last month of the Fair.

During the whole summer Ontario, being near at hand, was able to keep up an almost daily supply of small fruits, which could not be done by the other provinces on account of distance. From the time, therefore, of the disastrous cold storage fire until the apples of 1893 were ready, the tables of the other provinces were of necessity rather

* These are not the totals of the figures given, for there are many duplicates.

bare, a lack, however, which was then fully remedied. Indeed, when Mr. Bigelow, representative of Nova Scotia, arrived in the beginning of October, and laid out on the tables two or three barrels of Nova Scotia Gravensteins the Nova Scotia Court became the subject of general admiration. A sport of this famous apple was also shown under the name of Banks' Red Gravenstein, smaller in size, but higher in color and better in quality.

FRUITS OF 1893.

	Ontario.	Quebec.	Nova Scotia.	British Columbia.	Prince Edward Island.	Central Experimental Farm, Ottawa.	Exp. Farm at Indian Head.	Exp. Farm at Agassiz.	Canada.
Apples	144	119	144	51	30	.....	...	22	318
Pears	67	2	23	.....	.....	.....	.....	.....	82
Plums	75	.....	10	17	.....	.....	.....	15	98
Peaches	42	.....	.....	.....	.....	.....	.....	.....	42
Cherries	24	..	.....	.....	.....	.....	.....	.....	24
Grapes	79	7	.....	.....	.....	131	.....	.....	188
Strawberries	40	....	.....	.....	.....	.....	1	.....	41
Currants	10	.....	.....	.....	.....	.....	9	....	12
Gooseberries	24	9	.....	.....	.....	.....	2	.....	30
Raspberries	7	5	.....	.....	.....	.....	5	.....	13
Blackberries	5	.....	.....	.....	.....	.....	.....	.....	5
Quinces	3	.....	.....	.....	.....	.....	.....	.....	3
Figs	1	.....	.....	.....	.....	.....	.....	.....	1
Total number of varieties	521	142	177	68	30	131	17	37	847

Several shipments of magnificent apples also came from British Columbia about the same time, and their reputation went forth through the papers and brought many visitors enquiring for the big apples of British Columbia. The old Esopus Spitzenburg, that high-flavored old apple of the very choicest character, which no longer succeeds well in Ontario, was shown in perfect samples from the former Province. The same is true of that best of all dessert apples, the Fameuse, while the Ribstons and Bellefleurs were beyond criticism. To British Columbia, also, belongs the credit of showing the largest plums at the World's Fair, though closely matched by Oregon, the exhibitor of the largest apple. The shipments which came to hand about the end of September were beautiful, but unfortunately kept a very short time after their long journey.

The wild fruits shown from the North-west Territories, as indicated above, were important as showing the possibilities before us of such improvements by means of hybridization, cultivation, and such arts of horticulture, as shall develop a class of fruits of considerable excellence, and yet hardy enough for the climate of that country. Present experience seems to indicate that it is to the improvement of our best native fruits, rather than to the importation of exotics, that we must look for the greatest success.

The numerous great cases containing the large and magnificent display of vegetables from the five experimental farms of the Dominion and from the various Provinces, so carefully collected under the direction of Mr. Wm. Saunders, had been stored in the Produce Cold Storage, at Lake Street Bridge, in the city. At first I had supplies brought to the exhibit successively by bonded teams, but the distance was about eight miles, and the charges excessive. As soon, therefore, as the World's Fair Cold Storage was completed, which was early in June, I had the balance, two car-loads, transferred to that place, whence fresh lots were brought to the tables from time to time as needed. This continued one month when, on the 10th of July, that terrible disaster occurred, in which some fifteen or twenty gallant firemen lost their lives, besides an immense loss to property, including our reserve exhibit, sufficient for two succeeding months.

It is, however, a satisfaction to know that during the month I was permitted to draw upon this splendid store of vegetables, I succeeded in placing upon the tables of our vegetable court abundant samples of nearly every kind in the collection.

VEGETABLES OF 1892.

	Ontario.	Quebec.	Nova Scotia farmers.	Prince Edward Island.	New Brunswick farmers.	Central Experimental Farm at Ottawa.	Experimental Farm at Indian Head, N. W. T.	Experimental Farm at Brandon, Man.	Canada.
Potatoes	111	4	19	8	28	17	27	22	200
Turnips	6	2	3	4	5	.....	2	1	14
Carrots	6	3	3	6	8	7	3	5	22
Mangels	3	.....	1	.....	1	1	2	3	5
Onions	5	2	.....	1	2	.....	....	2	5
Beets	4	1	.....	3	5	3	1	1	10
Radishes	3	.....	.....	.....	.....	.....	1	1	4
Parsnips	1	1	....	1	3	.....	1	.....	4
Kohl Rabi	.....	.....	1	1	1	.....	1	.....	1
Peas (in pods, bottled)	.....	.....	.....	.....	.....	.....	5	5	10
Peas (shelled, bottled)	.....	.....	.....	.....	.....	.....	6	.....	6
Beans (bottled)	.....	.....	.....	.....	.....	.....	.....	8	8
Rhubarb	.....	.....	.....	.....	.....	.....	.....	6	6
Total number of varieties	139	13	27	24	53	28	49	54	295

VEGETABLES OF 1893.

	Ontario.	Nova Scotia.	British Columbia.	Prince Edward Island.	Central Experimental Farm, Ottawa.	Experimental Farm at Nappan.	Experimental Farm at Indian Head.	Experimental Farm at Brandon.	Canada.
Potatoes	171	29	7	.....	37	.....	27	.....	248
Turnips	16	1	.....	1	3	.....	9	.....	24
Carrots	19	1	4	.....	12	.....	6	.....	31
Mangels	13	3	.....	2	13	.....	3	.....	18
Onions	7	1	5	.....	.....	.....	12	.....	21
Beets	13	1	.....	.....	.....	4	13	1	24
Radishes	9	.....	.....	.....	.....	.....	5	.....	9
Corn—green	21	.....	.....	.....	36	3	.....	17	53
Cauliflower	2	2	....	.....	8	.....	1	.....	12
Parsley	.....	.....	.....	.....	.....	.....	2	.....	2
Tomatoes	5	.....	.....	.....	22	.....	.....	.....	27
Celery	4	.....	.....	.....	.....	.....	1	.....	4
Cucumbers	2	.....	.....	.....	.....	.....	5	.....	7
Beans	4	.....	.....	.....	.....	.....	9	.....	13
Peas	.....	.....	.....	.....	.....	....	3	.....	3
Cabbages	20	1	.....	....	.....	.....	6	.....	27
Kohl Rabi	3	.....	.....	2	.....	.....	.....	....	5
Rhubarb	.....	.....	.....	.....	.....	.....	5	.....	5
Egg plant	2	.....	.....	.....	.....	.....	.....	.....	2
Squash	4	.....	.....	.....	.....	.....	.....	.....	4
Total number of varieties	315	39	16	5	131	7	107	18	539

The Vegetable Court was a most important feature of our exhibit, because it was not only excellent during all the season, excepting, perhaps, the month of August, when

the old vegetables that were saved from the Cold Storage disaster were exhausted and the new ones were not yet received, but also because it was practically the only important vegetable display in the horticultural building. The only others attempted were those by New York and Michigan, the latter very poor, and the former, though containing some excellent collections of radishes, tomatoes, peas, beans, onions, etc., was shown at a very great disadvantage, owing to the style of installation. In consequence, the Canadian Vegetable Court was always full of visitors, and received many favorable notices from the foreign press.

The attention of the general public was arrested by the big pumpkin and the big squash, grown by Wm. Warnock, of Goderich, and exhibited during the month of October, in the two prominent corners of the Court. The pumpkin, Stump's Mammoth Red, weighed 146 pounds, and the squash, Mammoth Green, a new hybrid, weighed 365 pounds. Mr. Warnock said there was no secret about his method of growing it, and he willingly described it for the benefit of others desiring to grow monstrosities for exhibition purposes. A compost of one horseload of hen manure and three of loamy soil was made about the 1st of April, and mixed three times during the period till the 10th of May. Then hills were made seven feet in diameter and eighteen inches deep, mixed with one-third part of compost and levelled up six inches above the level. These hills are made about twenty feet apart. The seed was sown about the fifteenth of May and the ground kept loose. As the vine began to run, it was mulched three inches deep with horse manure over the whole surface of the beds. Every branch of the vine was held down with stakes two and a half feet apart, so that they might take root more freely. As soon as a specimen set which looked promising, he pruned off all others. The specimen is best got by artificial fertilization, for bees are often late and a blossom, well fertilized, will produce a more vigorous sample. Twice a week he pruned off all new growth and continued this through the season, also cutting off all other blooms except the one. Water was very important, and it was applied twice a week with a sprayer, an hour on a plant each time of application.

One special exhibit from Ontario deserves particular notice, viz.: a very fine collection of potatoes of one hundred and sixty-three varieties, sent forward by the Ontario Experimental Farm at Guelph. These and a collection of twenty-nine well chosen varieties from Nova Scotia, were prominent factors in winning us laurels for our vegetable exhibit.

The green corn exhibit from Canada was a great surprise. Fifty-three varieties, seventeen of them from the North-west Territories, were a standing wonder to Illinois and Iowa, who consider themselves almost the only corn producing countries of the world. This exhibit proved that in some parts of Canada fine varieties of corn can be produced, while even in the North-west many of the early varieties will mature.

Fruits and Vegetables in Tin Cans.

Number of varieties shown by Canadian exhibitors at the World's Columbian Exposition:

—	Mrs. Burke, Bowmanville, Ont.	W. Boulter & Son, Picton, Ont.	Ontario Canning Co., Hamilton, Ont.	Lakeport Preserving Co., Trenton, Ont.	Strathroy Canning Co., Strathroy, Ont.	Erie Preserving Co., St. Catharines, Ont.	Mrs. Weaver, Chatham, Ont.	Number from Canada.
Fruits	2	6	4	1	.....	4	7	24
Vegetables	.....	6	1	3	4	5	.....	19
Total numbers	2	12	5	4	4	9	7	43

Pickles, Catsup, Vinegar, Etc.

Number of kinds shown by Canadian exhibitors at the World's Columbian Exposition :

—	North-west Territories.	British Columbia.	Mrs. Tipling, Winnipeg, Man.	Mrs. Weaver, Chatham, Ont.	Erie Preserving Co., St. Catharines, Ont.	Total from Canada.
Jellies and jams	10	.....	.....	.....	.....	10
Pickles, catsup and vinegar	.....	15	12	5	1	33
Sweet pickles	.....	.....	.....	5	.....	5
Jams from wild fruits	6	.....	.....	.....	.....	6
Total numbers	16	15	12	10	1	54

Wine Exhibit.

Number of varieties from Canadian exhibitors :

—	W. D. Kitchen, Grimsby, Ont.	J. S. Hamilton, Pelee Island Wine Co., Brantford, Ont.	J. J. Purple, Halifax, N. S.	Niagara Falls Wine Co., Toronto, Ont.	John Bott, Walkerville, Ont.	Chas. Montreuil, Walkerville, Ont.	Ernest Girardot, Sandwich, Ont.	T. Beniteau, Windsor, Ont.	Total.
Wines exhibited through the Dominion	.....	6	1	.....	.....	.....	.....	.....	7
Unfermented grape juice for sacramental purposes	1	.....	.....	.....	.....	.....	.....	.....	1
Wines exhibited through the Province of Ontario	.....	.....	.....	5	2	2	5	2	16
Total numbers	1	6	1	5	2	2	5	2	24

The fruit and vegetable courts seemed to vie with each other in surprising the passers-by. In August and September, for instance, green corn was shown from the Central Farm, Ottawa, and from that at Indian Head, N. W. T. An oft-repeated remark was, "Is it possible you can grow corn in Canada, and even in the North-west?" The fact that, during a large part of the summer, Canada made the only large vegetable exhibit, was a strong point in our favor and proved the wisdom of the Dominion in providing abundantly for this exhibit in advance, so that we held our space until September, when fresh vegetables began to come in.

The fruits of Canada served as a means of placing before our foreign visitors one of the most promising industries of our country. Notes of the varieties we grow were made by gentlemen from Norway, Belgium, England, Russia and other European countries ; because such products, raised in profusion on the farm under the most ordinary conditions, revealed not only a pleasant line of occupation for the colonist, but also one of more than ordinary profit. This industry is attracting a most desirable class of

settlers, viz., young men of means, who wish to purchase fruit farms in Canada. And while fruit growers themselves do not desire an increase of fruit farmers, for fear of lessening the profits by competition, there is no doubt of the excellent results to the country at large of attracting to it a class of colonists, who have not only means, but also who are possessed of education and refinement.

There is reason to expect an increase in trade also from our fruit exhibit, because samples of Canadian apples were given to many visitors, and these united in acknowledging that, in point of flavor and color, the Ontario Spy, the Quebec Fameuse and the Nova Scotia Gravenstein were unsurpassed. Canadian peaches and pears were also pronounced superb by those who sampled them. The writer, who grows apples largely in the Niagara peninsula, was offered $4 per barrel for a car-load of his Red Astrachan apples, delivered in Chicago; and, later on, the same price for Cranberry Pippins, Fameuse, Spies, Kings and other fancy varieties. Canadian apples, especially the Tolman Sweet, the Northern Spy and the Fameuse are the most popular apples in the Chicago market. Thousands of barrels of Ontario Spies have been brought to this city during the last two years by apple buyers, and sold at a profit in spite of the McKinley Bill. The Canadian Swazie Pomme Grise was also asked for by private parties, who wished to secure that choice little dessert apple for their own use.

Thus it appears that, even in the United States, in some of the great cities of the west and south, there may open up in the near future an almost unlimited market for Canadian apples of certain kinds, as, for instance, the above mentioned kinds from Ontario; and, in addition, the Baldwin, Greening, Blenheim Orange, Cranberry Pippin, Ribston, Ontario and Golden Russet; from British Columbia, the Spitzenburg, Ribston, Golden Russet, Pomme Grise, Fameuse, Maiden's Blush, Ben Davis, Wealthy and many others; and from Nova Scotia, such kinds as Gravenstein, Ribston, King, Golden Russet and Nonpareil. This latter apple is scarcely distinguishable from the Ontario Roxbury Russet. Had there been a competition for the best quality of fruit, Canada might well have contested the place for supreme excellence. One proof that she even now holds that place in the commercial markets is the lively demand for our fruits on both sides of the Atlantic. In the Liverpool market, the greatest apple market in the world, Canadian apples always bring the highest price, and, on this account, American apples are sometimes shipped through Canada, and are labeled "Canadian," in order to bring the shippers more money. In this market, during the past five years, Canadian Baldwins have averaged a higher price than New York State or Maine Baldwins, as is proved by a table of actual sales carefully prepared by Messrs. Woodall & Co., of Liverpool.

A good point was made by inviting interested persons inside the office and giving them samples of Canadian apples and grapes to test the quality. We always boast that Canadian apples are the highest flavored apples grown, and this was the best way to prove it. The Montreal Fameuse was especially selected and a barrel kept in reserve. The universal verdict was in its favor, common expressions being, "Delicious," "The best I ever tasted," "Better than any American apple," etc., etc

Among the lessons to be learned from the Horticultural Exhibit at the World's Fair is the evidence that every apple has its home, where it may be grown to the greatest perfection. Thus, the Ben Davis, a comparatively poor apple in Canada, and one not to be much commended to orchardists, is at home in the State of Idaho, and, as grown there, is so large and highly colored that it is the most profitable apple that can be grown, while our Canadian Spy is a comparative failure. The Baldwin is a failure in Illinois and a success in Maine and in Canada. The Green Newtown Pippin is a success in Pennsylvania, and as grown there is a grand success, it being the highest priced apple in the British market; but the same apple is not profitable in Canada. One point is noteworthy, that the farther north an apple can be successfully grown the better the quality and the higher its color. Here then is Canada's opportunity. Her orchardists need to select such varieties as are proved by this World's Fair to be grown to the highest perfection in Canada. No further exhibitions, in which Canada has a part at all, should lack in a first-class fruit exhibit. Fruit growing is one of her leading industries, more especially in the older provinces, and, while agricultural exhibits may attract emigrants to settle upon her free grant lands of the North-west, a horticultural exhibit,

especially of fruits, will tend to attract to the older provinces the sons of a wealthy class who bring wealth and refinement along with them. One thing should not be forgotten, viz., that a fruit exhibit cannot be made at any moment, but must be prepared a year in advance, in order to have an exhibit through the early part of the season.

Many mistakes are made by shippers in the selection of fruit for exhibiting. Apples and pears lacking in color, with stems off, blemished with spot, curculio or worm, are often forwarded; a great mistake, for the judge takes off points for each such imperfection.

The packing, too, is often bad. Plums, for instance, were sent in cork dust and heated on the way, when they should be carefully rolled in tissue paper and packed closely in narrow crates. A convenient sized package for shipping plums and peaches for exhibition is made as follows: Sides, four pieces $\frac{1}{4}$ inch stuff, 20 inches by $5\frac{3}{4}$ inches; top and bottom, two pieces, 4 inches by 20 inches; ends, two pieces, $\frac{1}{2}$ inch stuff, $4\frac{1}{2}$ inches by $11\frac{3}{4}$ inches. Pack from top (the narrowest side) and open on side.

The same package would be most desirable for extra samples of peaches and plums for an appreciative market. It is used by California, and the care exercised by California fruit growers in selecting, grading and packing their pears and peaches has gone a long way toward bringing them the reputation and consequent high prices which they have earned in the markets of the East.

The importance of exhibiting *large masses* of special varieties of apples is plainly manifest for making an impression on visitors at a World's Fair. A plate of two of a single variety, no matter how excellent, attracts no attention from people walking through miles of exhibits; but when we showed a hundred plates of a single variety, as in the case of the Nova Scotia Gravenstein, or a large cone of beautiful apples, as, for instance, the one Mr. Bigelow, of Nova Scotia, made of his King apples, they were the admiration of all, and drew especial attention to the Province that produced them. An abundant supply of the finest commercial apples should be shown and inferior ones should be left at home, and not sent forward simply for the purpose of increasing the number of varieties on exhibition, for every poor sample lowers the average percentage of excellence scored by the whole exhibit.

Floricultural Exhibit.

Sir D. L. Macpherson, Chestnut Park, Toronto.

	Height. ft.	Spread. ft.	Leaves No.
1. Adiantum Santa Catharina, West Indies*			
2. Buonapartea juncifolia, Mexico	3		
3. Asplenium bulbiferum, New Zealand			

John Hoskin, Esq., Q.C., Rosedale, Toronto.

4. Kentia Balmoreana, New Guinea	12	12	19

Waterworks Reservoir, Summerhill Avenue, Toronto.

5. Ficus Parcelli, Polynesia	5	3	
6. Cycas revoluta, China	4	6	90
7. Latania Borbonica, South China	10	15	5
8 to 11, 4 Crotons (various)	4		
12. Nephrolepis exaltata			

Horticultural Gardens, Gerrard Street, Toronto.

13. Livistonia Australis	6	12	36
14. Latania Borbonica, South China	4	5	8
15. Pandanus Veitchii, Polynesia	4	4	
16. " Utilis, Madagascar	4	4	
17. Cycas revoluta, China	3	4	22

*The country named after each plant is that from which it was originally introduced.

Normal School, St. James' Square, Toronto.

18. Ficus elastica, East Indies	10	11	
19. Draccena Youngii	4	4	
20. Areca lutescens, Maritius (7 brakes)	6	6	
21 and 22. 2 Curculigo recurvata, East Indies			
23. Casuarina equisetifolia, Australia	12	5	
24. Latania Borbonica, South China	4	5	13
25. Phyllocactus latifrons, Mexico	12	10	
26. Nephrolepis exaltata			
27. " davalloides furcans			

Government House, King Street, Toronto.

28. Araucaria Cunninghami, Moreton Bay	18	5	
29. " Bidwellii, "	10	10	
30. Livistonia Australis	7	7	21
31. Aspidistria lurida var., Japan	3	5	
32. Cycas Circinalis. East Indies	4	10	

Exhibition Park, Dufferin Street, Toronto.

33. Ceroxylon nivea, Brazil	4	4	5
34. Latania Borbonica, South China	5	8	21
35. " "	6	10	10
36. Pandanus Veitchii, Polynesia	7	8	
37. Kentia Fosteriana, New Guinea	6	6	6
38 and 39. 2 Crotons (various)	5		
40 and 41. 2 Crotons	4	3	
42. Aspidistria lurida var. Japan	3		
43. Latania Barbonica, South China	4	5	10
44. Carludovica atravirens, Tropical America	2½		
Many small ferns			

Central Prison, Strachan Avenue, Toronto.

45. Areta rubra, Mauritius	18	15	10
46. Sabal Andersoni	18	10	12
47. Latania Borbonica, South China	6	14	18
48. Pandanus Vietchii, Polynesia	4	5	
49. Draccena Massangeana	7		
50. " Lindeni	5		
51. " neo calidonica	4		
52. " Amabilis	3		
53. " Baptisti	3		
54. Kentia Balmoreana, New Guinea	5	4	8
55. Pandanus utilis, Madagascar	5		
56. Areca lutescens, Mauritius (5 brakes)	6	4	
57. Kentia Fosteriana, New Guinea	8	5	8
58. Areca Baueri, Norfolk Island	5	4	5
59. Cycas Circinalis. East Indies	5	5	13
60. Phœnicophonum sechellarum, Seychelles	3	2½	5
61. Draccena indivisa, New Zealand	5	4	
62. Carludovica atrovirens, Tropical America	3		
63 and 64. 2 Yucca aloifolia var. West Indies	5		
65. Papyrus antiquorum, Egypt	5		
66. Cereus nycticaulis, Mexico	4		
67-70. 4 Maranta zebrina			
71. Petris Wallichiana			
72. " Smithsoniana			
73. Nephrolepis exaltata			
74. Onychium japonicum, Japan			
75. Verschaffeltia splendens, Seychelles			
Many small ferns and Palms			

The Asylum, Queen Street, Toronto.

76. Rhapis flabelliformis, China	4		
77. Latania Borbonica, South China	5	6	7

Ontario Agricultural College, Guelph.

78. Pandanus utilis, Madagascar
79. Phœnix daclylifera, India, Levant
80. " Canariense
81. Eucalyptus globulus, Australia
82. Rhapis flabelliformis, China

Messrs. Manton Bros., Florists, Toronto.

83-88. 6 Dracœna Indivisa, New Zealand
Many small ferns

Mr. F. G. Foster, Florist, Hamilton.

89. Kentia Balmoreana, New Guinea
90. " Fosteriana "
91. Phœnix reclinata, India
92. Areca lutescens, Mauritius
93. Latania Borbonica, South China
94. Dracœna Lindeni

This exhibit was given a very prominent place in the dome and was counted very fine by experts in floriculture. It was cared for by first-class florists from Toronto and was, therefore, kept in the best possible condition.

From the Central Experimental Farm, Ottawa, there was shown a very fine collection of thirty five varieties of evergreens, which served an excellent purpose during August, and September in decorating the tables when the stock of fruit is at the lowest. A full list of these may be seen in the catalogue.

In addition to the above exhibits, there was also a very fine collection of Canadian horticultural literature, containing the reports of the Nova Scotia Fruit Growers' Association, thirteen volumes; a book entitled "The Canadian Fruit, Flower and Kitchen Gardener" by D. W. Beadle of Toronto; a set of fourteen bound volumes of the "Canadian Horticulturist;" a set of twenty-five reports of the Ontario Fruit Growers' Association, and a collection of fine photographs giving excellent views of some representative Canadian fruit farms. These, coupled with the products of farms and gardens, gave the visitor a very correct conception of the progress of horticulture in Canada. British Columbia showed a map of that province, a very commendable feature, for nine-tenths of the visitors would otherwise have had no idea of its situation, much less of the location of its towns, rivers or fruit centres. I am of the opinion that at future exhibitions an important feature in both agricultural and horticultural courts should be a well executed map of each province, not too large, but clearly marked to indicate those localities where the products shown may be successfully grown.

Thus, in every way, I have endeavored to impress our visitors with some adequate notion of the high position occupied by Canada, both practically and theoretically in horticultural pursuits, and I am confident that, in a large degree, this effort has achieved signal success.

In closing, I submit the list of awards in horticulture, which must be gratifying to every loyal Canadian. That Canada should carry off over sixty awards and medals, besides many "Honorable Mentions" in the Department of Horticulture alone speaks volumes for her fruits and vegetables as compared with those shown by other countries when viewed by expert judges. The Province of Ontario alone took thirty-four awards in fruit—by far the largest number taken by any exhibitor.

List of Awards.

Name of Exhibitor.	Exhibit.
Department of Agriculture, Ottawa	General Collection of Vegetables from her Experimental Farm.
Central Experimental Farm, Ottawa	Collection of Vegetables.
" " "	" Grapes.
Experimental Farm, Brandon, Man	" Vegetables.
" "	" " in solution.
" Nappan, N.S	" Vegetables.
" "	" " from New Brunswick farmers.

LIST OF AWARDS.—*Continued.*

Name of Exhibitor.	Exhibit.
Experimental Farm, Agassiz, B. C	Collection of Apples.
" Indian Head, N. W. T	" Vegetables.
Mrs. Tinling, Winnipeg, Man	" Pickles.
Ontario Canning Company, Hamilton, Ont	" Canned Fruits.
W. Boulter & Son, Picton, Ont	" "
The Fruit Growers' Association of Ontario, office at Grimsby	Horticultural Publications.
W. D. Kitchen, Grimsby, Ont	Unfermented Grape Juice.
Province of Ontario, Toronto	Grapes.
" "	Apples of 1892.
" "	" 1893.
" "	Pears and Quinces.
" "	Stone Fruits.
" "	Cherries.
" "	Currants.
" "	Gooseberries.
" "	Blackberries.
" "	Fruits in Solution.
" "	Collection of Vegetables.
" (Niagara District) Toronto	Grapes.
" " "	Pears.
" " "	Apples.
" (Burlington District), "	Grapes.
" " "	Apples.
" " "	Pears.
" (Wentworth District), Toronto	Grapes.
" " "	Apples and peaches.
" " "	Pears.
" (Essex District) "	Pears and peaches.
Province of Ontario (Belleville and Eastern Districts), Toronto, Ont	Apples.
Province of Ontario (Grey District), Toronto, Ont	"
" (Huron " "	"
" (Simcoe " "	Apples and Pears.
" William Rennie, "	Turnips and Mangels.
" Jas. Shepherd & Sons, Queenston	Peaches.
" W. R. Read, Port Dalhousie	"
" C. Atkins, Stony Creek	"
" W. Kottmeier, St. Catharines	"
" E. Tyhurst, Leamington	"
" Geo. W. Cline, Winona	Plums.
" Wm. Stewart, Goderich	"
" Wm. Warnock, "	"
" W. M. Orr, Stony Creek	"
" R. Trotter, Owen Sound	"
" Mrs. A. M. Croly, Tilsonburg, Ont	Botanical Collection.
"	Collection of Plants.
Province of Quebec, Quebec	Apples of 1892.
" "	Fruits in Solution.
Province of Quebec, Missisquoi Horticultural Society, Frelighsburg	Apples of 1893.
Province of Quebec, Missisquoi Horticultural Society, Frelighsburg	Grapes.

LIST OF AWARDS.—*Concluded.*

Name of Exhibitor.	Exhibit.
Province of Quebec, Geo. B. Edwards, Covey Hill.....	Apples of 1893.
Province of British Columbia, Victoria	Collection of Apples.
" "	" Plums.
" "	" Vegetables.
Province of Prince Edward Island, Charlottetown.....	" Apples.
" " "	" Vegetables of 1892
The Fruit Growers' Association of Nova Scotia, Wolfville.	Apples of 1892.
" " " "	Apples and pears of 1893.
J. W. Bigelow, Wolfville.....	Apples.

Mr. E. Hutcherson of British Columbia contributes the following Act, designed to provide for the destruction of various diseases and insects, from which possibly we may gain some useful hints :

THE HORTICULTURAL BOARD ACT OF BRITISH COLUMBIA.

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

1. This Act may be cited as the "*Horticultural Board Act, 1892.*"

2. There is hereby created a Provincial Board of Horticulture, to consist of six members, who shall be appointed by the Lieutenant-Governor in Council, one from the Province at large, and one from each of the horticultural districts which are hereby created, to wit :—

1. The First District shall comprise the Electoral Districts of Victoria, Victoria City, Esquimalt, and Cowichan.

2. The Second District shall comprise the remaining Electoral Districts of Vancouver Island, and The Islands.

3. The Third District shall comprise all of New Westminster Electoral District south of the Fraser River :

4. The Fourth District shall comprise the Electoral districts of New Westminster City, and of Vancouver City, and New Westminster Electoral District north of the Fraser River, and the Electoral District of Cassiar :

5. The Fifth District shall comprise all the rest of the Mainland of British Columbia.

3. The members shall reside in the districts for which they are appointed ; they shall be selected with reference to their study of and practical experience in horticulture, and the industries dependent thereon ; they shall hold office for a term of four years, and until their successors are appointed and qualified : Provided, however, that three of the Board first appointed (to be determined by lot) shall retire at the expiration of two years. All vacancies in the Board shall be filled by appointment of the Lieutenant-Governor in Council, and shall be for the unexpired term.

4. The Lieutenant-Governor in Council may appoint a Secretary, prescribe his duties, and may also appoint a Treasurer, who shall give a bond to the Lieutenant-Governor in Council in the sum of one thousand dollars for the faithful performance of his duties. The Secretary and Treasurer shall hold their appointments at the pleasure of the

Lieutenant-Governor in Council. Before entering upon the discharge of his duties, each member of the Board shall take and subscribe to an oath of allegiance, and to faithfully discharge the duties of his office, which said oath shall be filed with the Provincial Secretary.

5. The Board shall receive, manage, use, and hold donations and bequests of money and property for promoting the subjects of its formation; it shall meet in the months of April and October of each year, and as much oftener as it may deem expedient, for the consultation on and for the adoption of those measures that will best promote the horticultural industry of the Province; it may, but without expense to the Province, select and appoint competent and qualified persons to lecture in each of the districts named in section 2 of this Act, for the purpose of encouraging and improving practical horticulture, and imparting instruction in the best methods of treating the diseases of fruits and fruit trees, cleaning orchards, and exterminating orchard pests.

6. The office of the Board shall be located at such a place as the majority thereof may determine; it shall be kept open to the public, subject to the rules of the Board, every day excepting Sundays and public holidays, and shall be in charge of the Secretary during the absence of the Board.

7. For the purpose of preventing the spread of contagious diseases among fruits and fruit trees, and for the prevention, treatment, cure, and extirpation of fruit pests and the diseases of fruits and fruit trees, and for the disinfection of grafts, scions, or orchard débris, empty fruit boxes or packages, and other suspected material or transportable articles dangerous to orchards, fruits, and fruit trees, said Board may suggest regulations for the inspection and disinfection thereof, which regulations shall be circulated in printed form by the Board among the fruit-growers and fruit dealers of the Province, and shall be published at least ten days in two daily papers of general circulation in the Province, and shall be posted in three conspicuous places in each district, one of which shall be at the County Court House thereof.

8. The Lieutenant-Governor in Council shall appoint, from the number of the Board or from without their number, to hold office at the pleasure of the Lieutenant-Governor in Council, a competent person especially qualified by practical experience in horticulture, who shall be known as "Inspector of Fruit Pests." It shall be the duty of said Inspector to visit the horticultural districts of the Province to see that all the regulations of said Board to prevent the spread of fruit pests and diseases of trees and plants injurious to the horticultural interests of the Province, and for the disinfection of fruit, trees, plants, grafts, scions, nursery stock of all description, orchard débris, empty fruit boxes and packages, and other material, be made known to the people of the Province; he shall, whenever required, and under the direction of the Lieutenant-Governor in Council and of the Board, and may also upon his own motion, and upon complaint of interested parties, inspect orchards, nurseries, and other places suspected or believed to be infested with fruit pests, or infected with contagious diseases injurious to trees, plants, or fruits, and he shall report the facts to the Board. The Inspector shall, from time to time and whenever required by said Board, report to it such information as he may secure from observation, experience, and otherwise, as to the best method of diminishing and eradicating fruit pests and diseases from orchards, and also suggestions as to practical horticulture, the adoption of produce suitable to soil, climate, and markets, and such other facts and information as shall be calculated to advance the horticultural interests of the Province. "The Inspector shall from time to time, under the direction of the Board, hold meetings throughout the Province in the interests of horticulture, and impart such information and instruction to fruit-growers and farmers as may tend to the improvement and expansion of the fruit industry of the Province."

9. Whenever a complaint is made to any member of the Board that any person has an orchard, trees, or nursery of trees, or a fruit packing house, store room, sales room, or any other place in this Province infected with any noxious insects, or the eggs or

larvæ of any such insects, or that any packages of trees, plants, or fruit arriving in this Province, or in this Province about to be disseminated, which are known or suspected to be from localities that are infected with any disease or pest injurious, or that may become injurious, to the fruit interests of the Province, such member shall inspect, or cause to be inspected, the premises or property to which such complaint relates, and if the same be found to be infected as aforesaid, such member shall notify, in writing, the person having charge of such premises and property to appear before him at such time and place as specified in such notice, to be heard in reference to the infection of such premises or property aforesaid, and such property shall not be removed after the person in charge of the same shall have been notified in writing as aforesaid without the written permission of a member of the Board and whether the person notified to attend is present or not. If such member shall be of the opinion that such premises or property or any of the same, are infected as aforesaid, he shall notify, in writing, the person in charge of the same, within a time to be prescribed in such notice, to treat and disinfect said premises or property in the manner presented in said notice, and if the person so notified shall neglect or refuse to treat and disinfect the said premises or property, in the manner and within the time prescribed in the said notice, such person shall be liable to a fine of not less than ten dollars nor more than one hundred dollars, to be recoverable on summary conviction before a Justice of the Peace; and if it appears on the trial that any orchard, trees, nursery, building, or any other structures, premises, or property in charge of the defendant referred to in said notice, or any part of such structure, premises, or property, is infested or affected as aforesaid, the Court shall declare whatsoever of the same is so infected a nuisance, and shall order it to be abated, or may make any other order necessary to prevent its continuance, and it shall be the duty of the Board, or some member thereof, to execute such order, and the costs and disbursements of the prosecution shall be adjudged against the party convicted as aforesaid.

10. It shall be the duty of the Secretary to attend all meetings of the Board, and to procure records of the proceedings and correspondence, to collect books, pamphlets, periodicals and other documents containing valuable information relating to horticulture and to preserve the same; to collect statistics and other information showing the actual condition and progress of horticulture in this Province and elsewhere; to correspond with agricultural and horticultural societies, colleges and schools of agriculture and horticulture, and other persons and bodies, as he may be directed by the Board; and prepare, as required by the Board, reports for publication; he shall also act as assistant to and obey the directions of the Inspector of Fruit Pests, under the direction of the Board, in the exercise of the duties of his office, and shall be paid for his services as said Secretary and Assistant Inspector a salary to be fixed by the Board, and his mileage actually paid out shall be allowed when acting as assistant to the Inspector of Fruit Pests.

11. The Board shall annually, in the mouth of January, report to the Minister of Agriculture a statement of its doings, with a copy of the Treasurer's account for the year preceding, and abstracts of the reports of the Inspector of Fruit Pests, and of the Secretary. The members of the Board shall receive as compensation for their services their mileage actually paid out when attending the meetings of the Board, and shall be allowed a sum not exceeding five dollars a day for time actually employed, to be fixed by the Lieutenant-Governor in Council.

12. The Treasurer shall receive all moneys belonging to the Board, and pay out the same only for bills approved by it, and shall render annually a detailed account to the Board of all receipts and disbursements.

13. The said Board shall, when making its annual statement, report to the Minister of Agriculture what (if any) legislation is needed in aid of the horticultural and fruit-growing interests of the Province.

14. The powers and duties devolving by this Act upon the said Board and the Inspector of Fruit Pests in relation to fruit and fruit trees, are hereby extended to hops and hop plants, for the purpose of preventing the spread of disease among hops and hop plants, and of extirpating any pests affecting the same.

15. Notwithstanding anything in the said Act contained, it shall be lawful for the Lieutenant-Governor in Council, at discretion, from time to time, to assign the performance of the duties of the Secretary of the Board to the Inspector of Fruit Pests, and to remunerate the Inspector accordingly.

PUBLIC NOTICE.

Pursuant to Section 7 of the above Act, the following notice is published in the fruit growing district of British Columbia.

NOTICE.

Rule 1. All agents, dealers, nurserymen, or persons importing, selling, or distributing nursery stock, as well as all trees, plants, and fruit, (unless they have in their possession a certificate from the Horticultural Board that their property is free of pests) before distributing, offering for sale or disposing of any article as above mentioned, shall notify the member of the Board, his agent or representative in whose district any such article is found, or the Secretary or Inspector of this Board, who shall inspect or cause to be inspected said nursery stock, trees, plants, or fruit, and if they are found to be free from pests shall issue a certificate to the owner or person in charge, stating said articles appear free from injurious insect pests.

Rule 2. All persons possessing, forwarding, or distributing trees, plants, nursery stocks, or fruit infested with any insect such as: Woolly aphis, apple tree aphis, scaly bark-louse, oyster-shell bark-louse, San Jose scale, red scale-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 trees, plants or fruit.

Rule 3. The Board demand that all boxes or crates which have been used in the importation of fruits or nursery stock into this Province shall be immediately broken up and destroyed by fire, whereby growers will avoid the expense of disinfecting, which it is incumbent on the members of the Horticultural Board or their agents to enforce. The following method will be considered sufficient for disinfecting boxes, etc.: By dipping them in boiling water containing not less than one pound of concentrated lye or potash to every ten gallons of water, and submerging said material not less than five minutes.

Rule 4. Nursery stock or any trees or plants infested by any insects as included in Rule 2, shall be disinfected by dipping in a solution prepared as follows: Take three pounds of soap (whale oil or good home-made soap), three pounds sulphur and one pound Gillett's concentrated lye, or lye of equal strength and purity, boil one hour in four gallons of water, add one gallon coal oil, then boil slowly twenty minutes and add twenty-five gallons of water.

Rule 5. Where insect pests, such as are mentioned in the British Columbia Fruit Growers' Supplement for 1893, or other known injurious insects, are found to exist, spraying must be done and other remedies applied during the growing season, while the trees are in leaf, as shall be recommended by the Board from time to time, so that the insects can at least be held in check until the stronger washes of the dormant season can be safely applied.

Rule 6. Where hop fields are infested with the hop-louse spraying must be done as shall be recommended by the Board.

Rule 7. Horticultural and Fruit Growers' Societies are requested to work in harmony with this Board, and may, without expense to the Board, elect from their number

one or more persons to act as local Inspectors or Advisers, who shall report to the member of the Horticultural Board of the district in which such Society is located, or to the Secretary or Inspector of the Provincial Board, cases where trees or plants are infested, and the owner or person in charge refuses to obey the directions of the Society in carrying out the rules of the Board, also any other matters of importance to the interests of said Society.

Rule 8. All members of the Board are hereby authorized to inspect any garden, orchard, trees or nursery of trees, fruit, packing-house, warehouse, store-room, sales-room, or any other place in the Province liable to be infested with any noxious insects or eggs or larvæ of any such insects, in order to satisfy themselves that the rules and regulations of the Board are duly observed.

Rule 9. Any person having infested material, trees, plants, fruit or packages, and refuses or neglects to take action to have the same disinfected, or pests exterminated, after due notice has been given, shall be deemed guilty of an offence against the Act, and shall be dealt with according to law.

By order of the Board,

E. A. CAREW-GIBSON,
Acting Secretary.

Office of the Provincial Board of Horticulture,
VICTORIA, 26th October, 1893.

THE WORLD'S HORTICULTURAL SOCIETY.

Immediately following the World's Congress on Horticulture at Chicago in August last, a series of meetings was held to consider the advisability of organizing a horticultural society which shall include every country of the globe. After much discussion, in which many eminent men from various parts of the world engaged, the World's Horticultural Society was organized and the election of the three general officers was held, on the 25th of August. This new society is designed, in the language of the constitution, "to promote correspondence and to facilitate exchange of plants and information between the countries of the world." This society can co-ordinate and extend the work of all existing societies, compile statistics, promote legislation and education, prepare correspondence directories, diffuse all the latest information from the various parts of the globe, consider means of transportation, and facilitate the exchange of varieties and every commodity in which pomologists, viticulturists, florists, vegetable gardeners, and other horticulturists are interested. The society will probably meet occasionally at the various International Exhibitions, upon which occasions, also, it can greatly aid in procuring exhibits from all parts of the world.

The general charge of this great society resides in three officers: The president; vice-president at large; secretary-treasurer at large. There is to be a vice president and a secretary-treasurer for each country, who shall direct the affairs of the society in their respective countries. The officers elected at Chicago upon the 25th of August, 1893, were: Prosper J. Breckmans, A. M., Augusta, Georgia, U. S. A., president, a native of Belgium, but for many years a prominent pomologist and nurseryman of the United States, where he is now president of the American Pomological Society; Henri L. de Vilmorin, Paris, France, vice-president, a distinguished horticulturist, scientist and author, who is favorably known throughout the world; George Nicholson, secretary-treasurer, Curator of the Royal Gardens, Kew, England, everywhere known as the author of the incomparable Illustrated Dictionary of Gardening. Later, the president appointed William F. Dreer of Philadelphia, vice-president for the United States, a man long and favorably known in the seed trade; and Mr. Dreer appointed Professor L. H. Bailey, Cornell University, Ithaca, N.Y., secretary-treasurer for the United States. At

this juncture, Mr. Nicholson declined the office of secretary-treasurer at large, as it would be inconsistent with his present duties. This is a source of great regret to his many friends and admirers. Until a successor is elected, the secretary-treasurer for the United States has consented to act in the capacity of general secretary-treasurer.

The society now requests the earnest and early support of its friends. The vice-presidents of the various countries will be announced soon, and the organization will then be quickly completed. The society needs the co-operation of every enlightened horticulturist and every important horticultural organization.

PROSPER J. BERCKMANS, President.
Augusta, Georgia, U.S.A.

HENRI L. DEVILMORIN, Vice-president,
No. 22, Avenue de la Bourbonnais, Paris, France.

L. H. BAILEY, Ithaca, N.Y., U.S.A.,
Secretary-treasurer for the United States,
And temporary Secretary-treasurer at large.

The initial membership fee for North America is $2, which also covers the dues for the remainder of the current year. Thereafter, the dues are $1 a year. Every American horticulturist should identify himself with this organization; and every state or district society should do the same. Remittances from the United States should be sent to the secretary at Ithaca, N.Y.

CONSTITUTION.

This body shall be known as the World's Horticultural Society.

The object of this society shall be to promote correspondence and to facilitate exchange of plants and information between the countries of the world.

The membership of this society shall be composed of societies in the various countries and of individuals, who shall subscribe to its constitution and pay the membership fees.

The officers of this society shall consist of a president, first vice-president, and a secretary-treasurer; also a vice-president and a secretary-treasurer in each country, independent state or province, whenever suitable persons can be found who are willing to undertake the duties of such office. The officers shall constitute an executive committee, which may call meetings on such occasions of interest as may be deemed worthy.

The term of office of all officers of this society shall be three years, and until their successors are duly elected and qualified.

The vice president in each country shall be appointed, at the outset, by the president of the World's Horticultural Society, after conference with the foreign representatives at the World's Columbian Exposition, or upon correspondence with horticulturists in the various countries.

The vice-president of each country shall appoint the secretary-treasurer for that country.

The fee for societies shall be $5 annually, or as near that amount as the currency of the country readily admits. The initial fee for individuals shall be $2, or approximately that amount, which fee shall also be the dues for the remainder of the current calendar year. The annual dues thereafter shall be one-half that sum.

The funds shall be spent by the executive committee for the necessary expenses of the society, which shall allow one-third of all the collections in each country to be retained there for its own expenses and to be disbursed by its own secretary, except in the country represented by the president, where all the funds collected shall be retained, but that country shall pay its share of the general expenses. The executive committee has power to publish a periodical of the size and frequency of issue warranted by the funds, and which shall be sent free to all members of the society. In the absence of meetings of the executive committee, the president, first vice-president, secretary-treasurer, and the secretary-treasurer of the country represented by the president, shall constitute a finance committee, which shall audit the accounts of the society, any two of whom shall constitute a quorum.

The president, first vice-president, secretary-treasurer, and secretary-treasurer of the country represented by the president, constitute the committee on by-laws of the World's Horticultural Society, any two of whom shall constitute a quorum.

Adopted by a meeting of horticulturists of various countries, in Chicago, Aug. 25, 1893.

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APPENDIX II.

REPORTS OF AFFILIATED SOCIETIES.

REPORT OF THE BURLINGTON HORTICULTURAL ASSOCIATION, 1893.

This society has again to report a successful year.

The membership now numbers over sixty, which shows a substantial increase for the year. Four meetings have been held which were well attended, and in the proceedings of which a strong interest was taken.

Several papers were read and addresses given which elicited lively discussion.

As it is the custom of the society, the usual annual outing was taken. This year the members visited the plum and grape plantations in the vicinity of Stony Creek, meeting with a kind reception from the proprietors, and receiving as well as giving many valuable points as to culture and marketing of fruits. A Society Exhibit was made at the Industrial Fair, Toronto, at which we were awarded first prize. By means of municipal grants a great deal of fruit of every variety grown in this district was sent to the World's Fair, Chicago. A competent fruit man was engaged to collect, sort, pack and ship suitable fruit throughout the season, commencing with the earliest strawberries and continuing on through with the various fruits as they matured to the close.

This was his sole work, so that, obviously, a large quantity of fruit found its way to Chicago.

At the date of writing no official notice of results has reached us, but, from the press reports of awards made this district certainly stands high.

OFFICERS.

The following are the officers of the association for 1893.

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: GEO. N. PEER, Freeman P. O.

Directors—Apples, Edwin PEART; Grapes, C. N. DYNES; Small Fruit, ALEX. REACH; Peaches and Pears, W. F. W. FISHER; Plums, C. G. DAVIS; Vegetables, E. THORPE; Shipping, Jas. LINDLEY.

Executive Committee: Dr. HUSBAND, ALEX. REACH, P. MCCULLOUGH.

Entertainment Committee: The President, Vice-President, and Secretary-Treasurer.

Auditors: GEO. N. PEER, and C. N. DYNES.

REPORT OF FRUIT GROWING IN 1893 ABOUT BURLINGTON.

The following paper was sent in by Mr. Geo. E. FISHER, President of the Burlington Fruit Growers' Association (affiliated).

To the Secretary of the Ontario F. G. A:

SIR:—In responding to your request I have much pleasure in submitting the following brief report of the fruit crop of 1893 and of the present condition of orchards in the Burlington district.

Apples were upon the whole a light crop, of fair size and very highly colored. Greenings were more plentiful than any other variety, Baldwins and Ribstons next; these three being our most profitable varieties year after year. Some orchards situated near the lake gave an average yield. One gentlemen, the Rev. Mr. Watt, picked fourty-four bushels of Baldwins from one tree—a pretty good yield for last year. In going back from the water the quantity decreased rapidly and beyond a distance of probably three miles there were very few apples. Spraying is pretty generally resorted to, and where that was practiced there was not an unusual proportion of worms and very little scab. The foliage was not heavy but healthy, and the growth of wood, though not large, was well matured; and this may be said of all our fruit trees.

The yield of pears was probably sixty per cent. of that of 1892. The fruit was smaller and more knotty. The scarcity and poor quality of the Duchess was remarkable, as of late years we have had full crops and splendid samples of this variety. Bartletts did fairly well. The Lawrence and Vicar gave very large crops, but the Anjou and many other varieties were short. Blight was more prevalent than usual and many young trees showed the effect of the previous winter's frost.

Plums were a good crop, well developed and unusually free from rot. The curculio did much damage where spraying had been neglected, but where this had been carefully attended to it caused no trouble. Large plantations of both plum and pear trees have been made here, but while the blight has destroyed many pear trees, our plum trees have escaped serious injury from black knot.

Peaches have not been planted largely, but occasionally a few hundred trees are found together. The disease known as the yellows has not been troublesome. The steady cold of the preceding winter held the buds in check till spring opened, resulting in a full crop of exceedingly fine quality.

Grapes were an immense crop, of exceptional size and flavor. We have had very little mildew; the vines are very thrifty and the wood is well matured.

Strawberries yielded a large crop and were a good sample. Michel's Early made more money than any other variety. Monmouth, the largest early berry grown here, did very well. Considerable experimenting with new varieties is being done. New beds have run well. Some growers are discouraged by low prices, but these have only old varieties, which were unprofitable, while large fruits sold well.

Raspberries, blackberries, gooseberries, red and black currants gave heavy crops, made plenty of wood and promise well for another year.

BRANT HORTICULTURAL SOCIETY.

Officers.

President: Lyman Chapin, Brantford.

Vice-President: Chas. Grantham, Cainsville.

Secretary-Treasurer: D. M. Lee, Paris, Ont.

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 of the Brant County Fruit Growers' Association was held in the Town Hall in the Town of Paris, on Tuesday afternoon, January 29th, 1894.

There was a good attendance present, and much interest manifested in the subjects under discussion. The session was opened by the President, Mr. Lyman Chapin, of Brantford, whose remarks were very appropriate and practical.

The Mayor of Paris, Mr. J. H. Fisher, welcomed the Association to Paris, and complimented the work which had been done by it in encouraging the development of the industry about Paris.

A paper on Window Gardening was given by T. A. IVEY, of Brantford, which is as follows:

WINDOW GARDENING.

A knowledge of the habits or requirements of the plants desirable for window gardening, either inside or out, is of first importance, as without this knowledge fine healthy plants from the greenhouse or conservatory are often ruined in a very short time; not through any lack of interest on the part of the grower, but simply through wrong treatment, in which, it may be, only one essential element is lacking for the health of the plant. For instance, suppose a palm, a fine healthy specimen, is brought into the house-window from the greenhouse, where it has been grown in a nice even temperature of say fifty-five degrees at night, and perhaps ten to fifteen degrees higher during the day, and all its other requirements as to moisture, ventilation, etc., had been carefully looked after by the florist. Now, suppose this same palm is handled in its new quarters in the window by one anxious to keep it looking nice. It is kept nicely watered, and perhaps every day the temperature may be as near as can be the same as it had in the greenhouse, the moisture at the roots about the same, and the amount of light about the same. It is in the same soil, in the same pot, but it soon shows signs of going back. The leaves become withered and the plant generally looks sick. There is probably just one cause of trouble, viz., the condition of the atmosphere of the room as to moisture. The plant had grown in a moist atmosphere in its greenhouse quarters. The change in this respect is very great in its new situation in the house, the air being very dry there. I have recently tested this in two specimens of palms taken from the greenhouse to the dwelling. One was watered in the ordinary way at the root. The other was watered at the root in the same way, but in addition was carefully sprayed all over every day. This last retained its fresh look all right, while the other speedily withered its leaves and looked like dying and had to be returned to the greenhouse to recover. I think this establishes what I said at the beginning. It is necessary to know the requirements of our plants as to moisture, heat, ventilation, light, soil, etc., the difference being considerable in different plants. Let no one imagine that he can grow successfully a large variety of plants in exactly the same surroundings and with the same general treatment. In our greenhouses we have a considerable range of temperature, and can vary the amount of light and moisture in different parts of the house, and can thus vary the treatment of plants according to their natural requirements to a great extent. This affords the florist in charge opportunities for the exercise of his brains. He must select the portion of the greenhouse with a low temperature for plants requiring less heat, while the hotter portions will receive the plants requiring high temperature, and so on. The care of house plants and window gardening will call forth the ingenuity of the grower to produce the same conditions as near as possible. This at first sight looks like a very difficult thing to do, but it is said "Where there is a will there is a way," so with the will in the right direction it is possible to accomplish much. It will be first necessary to find out what your plants really do require on the lines above referred to. Then, next in order is to study your house, its different apartments, and the conditions of heat, light, moisture, etc., in each; then a general arrangement of plants may follow. The kitchen, if light and warm and having more moisture in the air than any other room in the house. would be a good place for such plants as coleus, crotons, palms, etc. A cooler room would do for geraniums, stocks and the like. A warmer room with less moisture would suit pandanus, abutilous, some varieties of palms, especially if the lack of moisture in the air was supplied by frequent spraying in the case of the latter, and so on over the whole list much can be done. What I have said is no doubt more suggestive than otherwise, but if it will lead any interested persons to study out results for themselves along these lines, then I shall feel rewarded for my trouble in preparing this paper.

Considerable discussion followed, by which much information was elicited regarding how to water plants, how often to apply it; best fertilizers to use for house plants; proper temperature for coleus, geraniums, etc.

The President then called upon Mr. L. WOOLVERTON, Secretary of the Ontario Fruit Growers' Association to give an address on Small Fruit Growing. The following are some of the points made by Mr. Woolverton in his address:

SMALL FRUITS FOR PROFIT.

The man who is favorably situated, and has the right kind of soil, and who himself is the right sort of a man, may devote his attention more or less to small fruits with a reasonable prospect of making a fair profit. To be favorably situated, he must either be within driving distance of a market for his fruit, or near an express office from which his fruit may be forwarded to a city at a reasonable rate; to have the right kind of soil, he must have land that is not too heavy to be easily cultivated at all seasons, and not so light as sand as to be too readily affected by drought; and to be the right sort of a man, he needs to have some knowledge of fruit culture, much patient perseverance, and a disposition to pay close attention to many little and apparently unimportant details. Mr. J. H. Hale, an authority of high standing in Connecticut, gives the following as the requisites to success in small fruit culture: 1. A love of fruits for their own sake, and pleasure in their culture. 2. A soil fairly well adapted. 3. Markets within easy reach. 4. A supply of extra laborers near enough to be promptly available in emergencies. 5. Plant no more than can be thoroughly cultivated and profitably marketed.

Upon such circumstances I can encourage any one so disposed, to enter upon this industry. But, just here, I wish to sound a note of warning, and to say that not all the glowing accounts of the profits of fruit culture are to be swallowed whole. It has been to the interest of the nurserymen to laud the business, to exaggerate the profits of it until many are tempted to leave good situations to engage in it, who are utterly ignorant of it, and who are doomed to disappointment. Like any other line, the profits only come as the reward of the most patient industry.

The subject of small fruits for profit is too large to be treated in one paper; it needs a series of papers in order to deal with it in a profitable manner. I shall therefore in this one confine myself principally to the

STRAWBERRY,

leaving the others for successive papers. One of the most important essentials for success in the selection of varieties. And in this the amateur is almost bewildered with the multitude, each of which has been boomed as the one beyond all the others in value.

It may be interesting here to notice that all our prominent varieties are natives of America, and improved from that known botanically as Fragaria Virginiana. A little while ago, the popular foreign varieties, such as Jucunda, and Triomphe de Gand had their commenders, but of late, since the introduction of such fine large varieties as Sharpless, Bubach, Haverland, etc., and others, they have been thrown aside, because so much less productive. My list of varieties for profit is soon given. I would omit the old Crescent. True, it is one of the earliest and most productive of all strawberries, but it is soft and poor in quality.

The Wilson seems likely to give place to some of the newer varieties for main crop, but many still prize its firm flesh and tart flavor, especially for canning for home use. Firmer than the Crescent, it is better suited to ship to distant markets, and it never disappoints the planter as a market berry unless enfeebled by rust, which lately is its chief fault.

The Sharpless for large berries and top prices is indispensable, but it is a poor shipper, and unless used soon after picking is almost inedible. It is best cultivated in very narrow rows or else in hill culture.

Among the newer berries which have been tested, we mention the Bubach as one of the most promising; indeed it is likely to displace the Sharpless, being about as large, more regular in shape and far more productive. At least this was my experience with it last season.

The plant is a strong grower, with large, healthy foliage, and very productive; succeeds on light or heavy soil. The blossom is perfect; berry large, roundish conical, bright scarlet, moderately firm, fair quality; season, early to medium.

The Williams, a variety which originated near you, in a place called Cainsville, is quite a success with me in Grimsby; indeed, I have gathered more fruit from it than from any other variety. It is also very firm and therefore an excellent shipper. It is too well known to you to need description.

The Saunders, one of John Little's seedlings, is in my opinion very valuable. The plant is a good grower and a heavy bearer; blossom, staminate; fruit, large, conical, dark glossy red; quality, good; season, medium.

The Haverland is a very productive variety, and the plant withstands drouth well; blossom, pistillate; fruit, medium to large, but rather soft, light red; season, early. This variety is a favorite with me on account of its shape, size, and color.

Warfield is another very productive plant, though rather small; berry, firm, dark glossy red; some say it is larger than the Wilson, but with me it averages about the same.

Another berry, which the originator, Mr. John Little, has done me the honor of calling the Woolverton, impressed me very favorably, but I have not tested it yet long enough to say much about it.

The Enhance is much commended by some experimenters, and the plants are strong, healthy growers; berries, large like Sharpless, but firmer; season, medium.

You need not invest much in plants. You should learn some of the secrets of the nursery—enough at least to propagate all kinds of small fruits for yourself. Buy a dozen of any new kind of strawberry plant and very soon you will have all you want for yourself.

Fertilization of the Blossoms.

The strawberry grower who is ignorant of the sexuality of the plants he is using, often makes a serious mistake in planting. Many varieties, such as the Wilson, Downing, May King, Captain Jack and Sharpless, have perfect flowers—that is, the stamens and the pistils are both fully developed. Everyone nowadays knows that unless the pollen dust from the stamens fertilizes the pistils, no seeds will be produced, and little or no fruit, but in the case of the perfect or hermaphrodite varieties above mentioned, this is safely provided by their own flowers.

There are other varieties, however, such as Crescent, Bubach, Jewell, Manchester, which have imperfect blossoms. They are pistillate—that is, they have pistils only, and the stamens are aborted, or so imperfectly developed as to supply no pollen. Such varieties need to be planted in the vicinity of some variety from which the wind and the bees will bring the pollen dust to their pistils, and for this purpose it will suffice if every third or fourth row is planted with a hermaphrodite. George R. Knapp, a celebrated strawberry grower, of Greenfield, Mass., speaks very highly of the Sharpless as a variety for this purpose, and says he has found the Crescent unequalled when every third or fourth row is planted with the Sharpless; while for a medium to late kind, he has had great success with the Manchester fertilized by Sharpless, and declares that in this way the size of the former is very materially increased.

Choice and Preparation of Soil.

A deep, rich sandy loam, not too light, is best for strawberries. Generally speaking, such land as would produce a good crop of corn is the kind of land which may be depended upon for a successful plantation. For one or two years previous the ground should be thoroughly worked up, and then, before setting, thoroughly manured and prepared for planting by deep plowing and pulverizing. It may then be marked out with a corn planter in rows three feet apart.

Planting.

Great care should be taken to shade the rows from the rays of the sun. I use a basket covered with a damp cloth for carrying the plants while planting. The quickest method I have ever tried of setting the plants is to open the earth with a slanting cut of the spade, while a boy spreads out the roots of the plant, and places them in the opening. The spade is then withdrawn, and the earth, falling back, is firmed with the foot, and thus the plant is securely and well planted. Planters differ somewhat as to the best distance apart in the rows, some advocating 12, some 18 inches; but unless there is reason for economizing plants, the lesser distance is to be preferred. The best time for planting is as early in the spring as the ground is in good condition, in order that the plants may make as much growth as possible the first season, and be prepared to yield a full crop the following season.

Manure.

In this lies concealed one great secret of the greatest success in profitable strawberry culture, as well as in most departments of practical horticulture. We are often astonished at the immense yield of a small garden plot, and we say, "If a quarter of an acre will yield 1,500 quarts of fine berries, an acre would yield four times as many, or about 6,000 quarts." We plant the acre, with the expectation of coining money, and lo! we get only about 2,000 quarts from the whole acre. What is the trouble? Why, we have put the labor, the manure and the cultivation, on the acre that we before put on the quarter, and the failure is the natural result. Listen to what Mr. P. Curry, a market gardener in Keokuk Co., Iowa, says in the *Prairie Farmer* on this point: "In your issue of June 7th a writer reports a big strawberry yield of 5,000 quarts from one acre. I will give a report which discounts his. I have a patch, 10 by 13 rods square, of Crescent Seedlings fertilized with Captain Jack, from which we picked in 1886 5,060 quarts, and in 1887 5,100 quarts. This is exclusive of all used at home and given away. The secret of the large crop is, deep ploughing and heavy manuring and mulching."

No doubt that barnyard manure is one of the best fertilizers for the strawberry, if it can be had in sufficient quantity. The late Mr. E. P. Roe was an enthusiast in small fruit culture, and he advised it in preference to any other manure, recommending a dressing as heavy as sixty tons to the acre. At one dollar per load this would be rather an expensive operation, but with him it was the secret of his success. Mr. J. H. Hale, of Massachusetts, who is a good authority on small fruits, recommends fertilizers containing a large proportion of phosphoric acid and potash, but lacking in nitrogen, claiming that this latter element tends to the over-production of foliage. He uses ground bone ashes and wood ashes in the proportion of 1,500 pounds of the bone and 500 pounds of muriate of potash, or its equivalent in wood ashes, to an acre. Another noted strawberry grower (Mr. M. B. Faxon, of the same State) says he always applies stable manure in the fall to his beds, and a little phosphate in the spring, the latter tending greatly to increase the size and quantity of the berries.

Cultivation

should proceed the whole season through. Many neglect cultivation before fruiting season, on the plea that it will disturb the plants, lessen the yield, and cause the fruit to become dirty. But worse ills than these are likely to overtake the man who neglects cultivation. His plantation is lost in weeds and grass, his berries dry up in time of drouth, and are as small as his profits. I have tried watering such a plantation at great expense, by drawing barrels of water and pumping the water over the ground, and by digging a well in the strawberry patch; but a day's hot sunshine, and the ground was as dry as ever. My experience is that constant cultivation in time of drouth is an excellent mode of irrigating plantations in Canada.

If some system of irrigation could be planned by which a constant supply of water would be furnished the strawberry plantation in time of drouth, it would, no doubt, bring

the planter the highest success, giving him a full crop of the largest fruit. In California, where the land would be a desert without it, irrigation is necessary every summer, and is worked in a gigantic scale, each grower paying for his supply of water according to the amount he uses, and the results are marvellous. Plains that were before destitute of vegetation become clothed with beauty, and yield their owners immense crops of fine fruit.

With us irrigation is not an absolute necessity, and hence is neglected; but we believe, if some simple and inexpensive method could be adopted, that the results would be most gratifying. We referred in a late number of the *Canadian Horticulturist* to a method of tile irrigation which looks practicable and worthy of a trial. It is described as follows: By means of the farm windmill, a tank reservoir may easily be filled, and thus, the necessary water and pressure for flooding small areas, may be obtained. The water is distributed by means of common drain tile, using sizes from two to four inches in diameter; the larger for the main or distributing tile and the smaller for branches. The tiles are laid at a depth of about a foot or fifteen inches below the surface, the excavations being made by a plow without much expense, and the lines of tiles are laid about ten feet apart. When the water is turned on into the standpipe, it will fill the pipes to their extremities, which, of course, are closed, and a portion of the water, constantly escaping by the joints, will work its way by capillary attraction toward the surface of the soil. One acre is about the extent which may be worked under one system of pipes and machinery.

It is important that cultivation should continue throughout the season. Time and labor thus spent will return four-fold in yield of fruit, and size of berry the coming season, for it is at this time that the fruit buds are being formed for the next year. It is a great advantage to keep the rows narrow both for ease in cultivtion, and for general thrift of the plants. The wide matted row may do well for a single season, but then it becomes crowded and grass grown, and in time of drouth suffers extremely; and about the second year it needs plowing up. But if the rows are kept narrow, with not more than two or three plants abreast, all will receive the benefit of the hoe and of the cultivator, they will keep up a thrifty growth, and may be kept in bearing for several successive seasons.

Winter Protection

is of the utmost importance. It grieves one to see a beautiful bed of strawberry vines exposed to the killing influence of the alternate freezing nights and thawing days of March and April, when a little timely effort would have saved them. Straw, cornstalks, coarse manure, evergreen boughs, etc., may be used and need not be applied until the ground is frozen, as the purpose is not to keep away the frost but to prevent the frequent thawings and freezings.

Picking

in a proper manner is more important than many suppose. Careful hands who will not mash the fruit, but gather by nipping off a part of the stem with the thumb and forefinger deserve better pay than those who are careless. This work should not be done if avoidable when the fruit is wet, as it will not look or keep as well as when picked dry. The cool of the afternoon is about the best time, for then the fruit is dry and not overheated by the burning rays of the sun.

In some plantations it is customary to give each picker a carrier which holds six small baskets marked with his name or corresponding number. He must return all baskets to the packing shed, full or empty, and receive an account ticket. These are of rough paper, with name and number of picker and with figures for quarts, which are punched to show how many are delivered. At night these are taken up and the number of quarts marked on a weekly ticket, which contains in addition to name and number of picker, six columns for record of berries picked each day, one for sum total and one for cash paid Saturday evening. These are taken up when paid and filled.

My own plan is to give out the patch in sections for the season to competent persons, who will use their own children or employ others and thus relieve me of oversight, or of the need of an overseer. Many a woman with a family of children will gladly take a contract for a certain number of rows for the season, and I have never had the work done so well and with so much comfort as in this way. Strawberry picking can be contracted in this way at 1½ cents per quart; currants, gooseberries and blackberries at 1 cent, and raspberries at 2 cents, and be well and faithfully done.

The Package

which I have used for some years is the 24 quart basket crate, which is sold with the fruit. The cost is only 16 cents per crate and baskets, or ⅔ cent per quart, and it has always appeared to me that the express charges on the heavy wooden crate and the frequent loss of the same, is quite that much and not so convenient or attractive on the market. Latterly I have used a 16 quart crate costing 12 cents, which is very convenient to handle, and contains just the quantity of fruit which a small family wants to purchase at one time for canning or preserving. Indeed the time has come when large awkward packages are at a discount and tidy and convenient packages are most in demand.

When all is done, and done properly, the question remains, does it pay?

At 1 cent for picking, 1 cent for the package, 1 cent for express charges and the commission merchant, and 1 cent per quart toward paying expenses of cultivation and rent of land, we have 4 cents a quart as the minimum price which will cover all expenses, and the profit must be looked for in the number of cents over this which the crop averages, and the yield per acre.

Taking an average yield of 2000 quarts per acre, and an average price of 8 cents per quart, we have 2000 x 4 equalling $80 profit; but as we only get two crops in three years, we have only an average of say $50 per year net profit. But double the yield, as it is possible to do, and you will more than double the profits.

Most farmers agree that there is positively no net profit in grain growing, and little in any agricultural line unless it be live stock. I wish to point out that money can be made in strawberry culture; not to give any extravagant ideas of the profits of it, for there is plenty of room for failure, but it is worth trying in favorable localities, and is as likely to be profitable as any other crop.

The Secretary of the Brant Horticultural Society then gave an address on methods of picking and marketing small fruits, which was followed by considerable discussion.

The next meeting of the Society will be held in Burford, some time in the month of February.

D. M. Lee, Secretary.

APPENDIX III.

CATALOGUE OF FRUITS—APPLES.

FOR USE OF JUDGES AT EXHIBITIONS.

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.

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	2	8	1	3	14
Baldwin	W	2	5	7	8	22
Beauty of Kent	A	.....	8	8	7	23
Ben Davis	W	.....	1	8	9	19
Benoni	S	10	.....	1	.....	11
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	1	9	7	8	25
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	2	10	10	10	32
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	9	5	9	8	31

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	2	7	7		
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	5	5	4	6	20
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	1	9	10	5	25
Maiden's Blush	A	3	7	7	8	25
Mann	W	4	7	6	8	25
Magog Red Streak	W	3	7	5	7	22
McIntosh Red	W	6	7	7	8	28
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	4	8	8	8	28
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 Catnead	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	8	31
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		2	7	5	6	20
Tetofsky	W	1	5	1		7
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 Astracan	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	1	1	3	5
Augusta	B	M	6			
Barry (Rog. 43)	B	M	5	9	6	20
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	8	25
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.	Ship'g 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	3	15
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	1	6	7	14
Dracut Amber	R	E	1	6	7	14
Eaton	B	M	7	5	3	15
Early Dawn	B	M	6	4	4	14
Elvira	W	L	1	2	1	4
Empire State	W	L	3	4	4	11
Early Ohio	B	E	3	6	5	14
Eumelon	B	E	6	5	4	15
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	7	3	5	15
Lady Washington	W	L	3	5	3	11
Lindley (Rog. 9)	R	E	10	9	9	28
Massasoit (Rog. 3)	R	E	6	4	5	15
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.	Ship'g 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

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.—LaRue, 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, LaRue, 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 Nonsuch.

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, LaRue 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, Gartner, 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, Worden.
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.

G. W. CLINE, *Chairman of Committee.*

PEARS.

Dr. BEADLE, Chairman of the Committee on the revision of the Pear Catalogue, presented the following Report at the annual meeting at Peterborough, and it was adopted.

This rating is solely for the use of Judges at Exhibitions, and not intended to be in any sense a guide for planters. In the rating here given the specimens of the several varieties are supposed to be perfect, free from the larvæ of the codling moth, from scab spots, curculio, indentations and all blemishes. Any specimens falling below perfection should be rated by the Judges at some figure less than the figure here given for perfect specimens, according to the degree of imperfection manifest in the specimen under consideration.

D. W. BEADLE,
GEO. W. CLINE,
W. H. DEMPSEY, } *Committee.*

——	Desert.	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	6	11
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 Boussock	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
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

APPENDIX IV.

ONTARIO'S FRUIT EXHIBIT AT CHICAGO.

A list of varieties of fruit from the Province of Ontario on exhibition at the World's Columbian Exposition in Chicago in 1893; prepared by the Secretary, who was also Dominion Superintendent of Horticulture.

APPLES.

Alexander,
Algoma Seedling,
American Golden Russet,
American Pippin,
Autumn Strawberry,

Baldwin,
Beall,
Beauty of Kent,
Bellefleur,
Bell Russet,
Ben Davis,
Benoni,
Black Apple,
Black Detroit,
Black Gilliflower,
Blenheim Orange,
Bonum,
Borsdorfer,
Bowman's Sweet,
Brockville Beauty,

Cabashea,
Canada Baldwin,
Canada Red,
Cayuga Red Streak,
Cheeseboro' Russet,
Chenango,
Clapperton's Nonsuch,
Colvert,
Cooper's Market,
Cornish Gillyflower,
Cranberry Pippin,

Duchess of Oldenburg,
Dutch Mignonne,

Early Joe,
Early Strawberry,
English Pippin,
English Russet,
Esopus Spitzenburg,

Fallawater,
Fall Jenetting,
Fameuse,
Flushing Spitzenburg,
Frontenac Red,

General Grant Crab,
Gideon,
Gloria Mundi,
Golden Pippin,
Golden Sweet,
Gravenstein,
Greening,
Grimes Golden,

Haas,
Hardestine's Pippin,
Hawley,
Hawthornden,
Haly,
Holland Pippin,
Hubbardston,
Hyslop Crab,

Ironclad,

Jersey Sweet,
Jonathan,

Kentish Fill-Basket,
Keswick Codling,
King,

Ladies' Sweet,
Lady,
LaRue,
Leeds,
Lowell,

Maiden's Blush,
Marengo Crab,
Michigan Red,
McIntosh Red,
McLean,
Mother,

Naigle's Winter,
Newton Pippin,
Noble's Vandevere,
Nonpareil,
Northern Spy,

Ontario,
Ortley,

Peach,
Peck's Pleasant,
Pewaukee,
Phœnix,
Pomme Grise,
Porter,
Pound Sweet,
Primate,
Prince Albert,
Princess Louise,

Rambo,
Red Astrachan,
Red Calville,
Red Pearmain,
Red Russet,
Ribston Pippin,
River,
Roxbury Russet,
Russian No. 1,
Russian No. 3,
Russian No. 4,
Russian No. 7,
Russian No. 8,
Russian No. 9,
Russian No. 10,
Russian No. 11,

APPLES.—*Continued.*

Russian No. 315,
Russian A,
Russian B,
Russian Y,
Russian Seedling,

Seek No Farther,
Solard,
Spotted Pippin,
Steele's Red Winter,
St. Lawrence,
Stott's Russet,
Striped Gilliflower,
Stump,

Sutton Beauty,
Swaar,
Swazie Pomme Grise,
Sweet Bough,

Tetofsky,
Tolman Sweet,
Transcendant Crab,
Trenton,
Twenty Ounce Pippin,

Vandevere,
Vanity Crab,
Vermont Pippin,

Wagener,
Wallbridge,
Wealthy,
Westfield Seek No Farther,
White Pippin,
Wilson's Seedling,
Winesap,
Winter St. Lawrence,
Winter Strawberry,

Yellow Bellefleur,
Yellow Newton Pippin,
Yellow Transparent.

PEARS.

Ananas d'Eté,
Angoulême,
Anjou,
Anne de Bretagne,

Bartlett,
Bartlett Pere,
Belle de Beaufort,
Belle Lucrative,
Bergamot,
Bessemianka,
Beurre Bosc,
Beurre Chaudry,
Beurre d'Eté,
Beurre Diel,
Beurre Giffard,
Beurre Grise d'Hiver,
Beurre Hardy,
Beurre Superfin,
Bloodgood,
Brockworth Park,
Budd,
Buffum,

Chambers,
Chaumontel,
Clairgeau,
Clapp's Favorite,

Dearborn's Seedling,
Dempsey,
Doyenne Boussock,
Doyenne de Comice,
Dr. Reeder,
Duchess,
Duke de Brabant,

Early Harvest,
Easter Beurre,
Elizabeth,

Fertility,
Flemish Beauty,

Gagovka,
Gansell's Bergamot,
Glout Morceau,
Goodale,
Grey Doyenne,

Honey Sweet,
Howell,

Josephine de Malines,

Kieffer,
Kingsessing,
Kirkland,

Lawrence,
Leconte,
Leslie,
Longstem,
Louise Bonne,
Louise Clapp,

Madeline,
Marguerite de Marillat,
Mignot,
Mikado,

Napoleon,

Onondaga,
Osband's Summer,
Oswego Beurre,

Paradise d'Automne,
Petite Marguerite,
Pound,
President Druard,

Reine de Verger,
Rostiezer,

Sapieganka,
Secretary Marechat,
Seckel,
Seedlings (several kinds),
Sheldon,
Souvenir de Congres,
Steven's Genesee,
Summer Belle,
Summer Bergamot,

Therese,
Tonkovietka,
Triomphe de Vienne,
Tyson,

Vernon,
Vicar,

White Doyenne,
Wilmot,
Windsor,
Winter Nelis.

Peaches.

Alexander,
Amsden's June,

Beatrice,
Blood,
Bowslaugh's Late,

Centennial,
Chinese Cling,

Early Barnard,
Early Crawford,
Early St. John,
Early York,

Foster,

Garfield,
George the Fourth,

Hale's Early,
Haun's Golden,
High's Early Canada,
Honest John,

Ireland's Seedling,
Jacque's Rareripe,

Kensington,

Late Crawford,
Lemon Cling,
Longhurst,
Lord Palmerston,
Louise,

Morris White,
Mountain Rose,

Niagara,

Old Mixon,

Pine Apple,

Reeve's Favorite,

Salway,
Seedling Crawford,
Smith's Extra Late,
Smock,
Snow,
Steven's Rareripe,
Stump the World,

Wager,
Waterloo,
Wheatland,

Yellow Alberge,
Yellow Rareripe.

Plums.

Abundance,

Belgian Purple,
Bingham,
Bleeker's Gage,
Botan,
Bradshaw,
Burrow's Seedling,

Canada Orleans,
Caraduc,
Cline's No. 1.
Cline's No. 2.
Coe's Golden Drop,
Columbia,

Damson,
Dennison's Superb,
Diamond,
Duane's Purple,

Early Orleans,
Egg,
Empire,
English Damson,
Evelyn,

Fellemberg,

General Hand,
German Prune,
Glass,
Goderich,
Golden Gage,

Goliath,
Green Gage,
Gueii,

Hermosa,
Horse Seedling,
Huling's Superb,

Imperial Gage,

Jefferson,

Kingston,

Lady Grey,
Lawson's Golden Egg,
Lombard,
Lord Derby,

Magnum Bonum, Yellow,
Magnum Bonum, Red,
Miner,
McLaughlin,
Monroe Egg,
Moore's Arctic,
Moyer,

Native Blue,
Niagara,

Ogan,
Ontario Pride,
Orleans,
Owen Sound Beauty,

Peach,
Peter's Yellow Gage,
Pond's Seedling,
Prince Englebert,
Prince of Wales,
Prince's Yellow,
Purple Egg,

Quackenbos,

Red Gage,
Reine Claude,

Saunders,
Seedling of Smith's Orleans,
Shipper's Pride,
Shropshire Damson,
Simon's Plum,
Smith's Orleans,
Stewart,
St. Lawrence,
Sweetwater,

Vanity,
Victoria,

Washington,
Weaver,
Webster's Gage,
Wetherell's Seedling,
Wild Plum,

Yellow Egg,

Zena.

Cherries.

American Amber,
Black Eagle,
Black Heart,
Black Spanish,
Black Tartarian,
Coe's Transparent,
Early Purple,
Early Richmond,
Elkhorn,
Elton,
English Morello,
English Oxheart,
Governor Wood,
Great Biggareau,
Kentish,
Knight's Early Black,
Large Montmorency,
Mazzard,
Minnesota Ostheim,
Montmorency Ordinaire,
Monstreuse de Mezel,
Napolean Biggareau,
Native,
Ostheim,
Red Cluster,
Seedlings,
Vladimir,
Yellow Spanish.

Currants.

Black Champion,
Black Naples,
Black Seedlings,
Cherry,
Common Red,
Fay's,
Lee's Prolific,
Naples,
Native Black,
Raby Castle,
Red Dutch,
Saunders,
Versailles,
Victoria,
White Dutch,
White Grape,
White Imperial,
Wild.

Gooseberries.

Ashton (Improved),
Bloodhound,
Bottle Green,
Clayton,
Companion,
Crown Bob,
Downing.
Duke of Sutherland,
Golden,
Golden Ball,
Gold Finder,
Green River,
Gypsy Queen,
Houghton,
Industry,
Keepsake,
King of Trumps,
London,
Ocean Wave,
One of Them,
Pearl,
Providence,
Railway,
Ruby,
Smith's Improved,
Sulphur Queen,
Thumper,
Warrington,
White Eagle,
Whitesmith,
Winnow's King,
Winderful,
Yellow Champion,
Yorkshire Fillbasket.

Strawberries.

Advocate,
Auburn,
Atlantic,
Baron's Eclipse,
Barton,
Beder Wood,
Belmont,
Boyton,
Bubach,
Cameronian,
Captain Jack,
Cloud,
Crawford,
Crescent,
Cumberland,
Curtis,
Daisy,
Dominion,
Edgar Queen,
Enhance,

STRAWBERRIES.—*Continued.*

Eureka,

Farnsworth,

Gandy,
Governor Hoard,
Great Pacific,
Grenville,

Hatfield,
Haverland,

Ivanhoe,

Jessie,
Jumbo,

Lady Rusk,
Leader,
Little's 15,
London,
Louise,
Lovett,

Maggie,
Manchester,
May King,
Martha,
Miami,
Middlefield,
Michel's Early,
Monach,
Monmouth,
Mount Holyoke,
Mrs. Cleveland,
Mrs. Garfield,
Mystic,

Parker Earle,
Pearl,
Princess,

Sadie,
Saunders,
Seneca Queen,
Sharpless,
Shaw.

Townsend,

Victoria,

Walton,
Warfield,
Westbrook,
Williams,
Wilson,
Woodruff,
Woolverton,

Yale.

GRAPES.

Adirondac,
Alvah,
Amber Queen,
Augusta,
August Giant,
August Mammoth,

Bacchus,
Black Hamburg,
Black Pearl,
Black Prince,
Brighton,
Burnet,

Canada,
Canterbury,
Catawba,
Centennial,
Challenge,
Champion,
Clinton,
Concord,
Conqueror,
Cottage,
Creveling,

Delaware,
Diana,
Dracut Amber,
Duchess,

Early Dawn,
Early Victor,
Eaton,
Eldorado,
Elvira,
Empire State,
Etta,
Eumelan,

Faith,

Gaertner,
Geneva,

Hartford,

Iona,
Irving,
Isabella,
Israella,
Ives,

Janesville,
Jefferson,
Jessica,

Kensington,

Lady,
Lady Washington,

Marion,
Martha,
Mary,
Missouri Riesling,
Moore's Diamond,
Moore's Early,
Moyer,
Muscadine,

Niagara,
Noah,
Northern Light,
Norwood,

Othello,

Pearl,
Perkins,
Pocklington,
Potter,
Poughkeepsie,
Prentiss,

Red Chasselas,
Rentz,
Rogers 1 (Goethe),
Rogers 3 (Massasoit),
Rogers 4 (Wilder),
Rogers 9 (Lindley),
Rogers 13,
Rogers 15 (Agawam),
Rogers 17,
Rogers 19 (Merrimac),
Rogers 22 (Salem),
Rogers 24,
Rogers 28 (Requa),

GRAPES.—*Continued.*

Rogers 30,
Rogers 32,
Rogers 33,
Rogers 34,
Rogers 36,
Rogers 39 (Aminia),
Rogers 41 (Essex),
Rogers 43 (Barry),
Rogers 44 (Herbert),
Secretary,
Senasqua,
Taylor,
Telegraph,
To Kalon,
Transparent,
Triumph,
Ulster Prolific,
Vergennes,
Walter,
White Ann Arbor,
White Chasselas,
White Nice,
Woodruff,
Worden,
Wyoming Red.

RASPBERRIES.

Black Giant,
Brandywine,
Caroline,
Cole's Prolific,
Franconia,
Golden Queen,
Gregg,
Highland Hardy,
Marlboro',
Nemaha,
Philadelphia,
Shaffer,
Turner,
White Antwerp.

BLACKBERRIES.

Erie,
Kittatinny,
Lawton,
Lucretia Dewberry,
Snyder,
Taylor,
Western Triumph.

APPENDIX V.

EXPERIMENTAL FRUIT STATIONS FOR THE PROVINCE OF ONTARIO.

Subsequent to the meeting at Peterborough, the committee on experiment stations, consisting of Prof. John Craig of Ottawa, A. McNeill, of Windsor and W. W. Hilborn, of Leamington, prepared the following report, and submitted it to the directorate through the mail. The report was accepted, and the scheme adopted, a copy of which is herewith presented:

The exhibits of fruit made by Ontario at the World's Columbian Exposition gave to the world a truer conception of the possibilities and attainments of the Province. It also inspired the fruit-growers of the Province with a better appreciation of the capability of her soil and climate for the production of fruit—that "flower of commodities"—in its highest state of excellence. It has also emphasized in a general way the fact that each variety of fruit varies in respect to appearance and quality according to the soil and locality in which it is produced, and has a more or less area in which it reaches most nearly perfect development.

Our knowledge of the variations in habit of growth and quality of the fruit due to soil and climatic effects is vague and undefined, and data with regard to the relative success of varieties in different sections is lacking. The fruit interests of the Province suffer in consequence.

The Fruit-Growers' Association of Ontario has long recognized the advantage that would result from establishing a system of experiment stations, particularly designed to collect information of this character and to promote the fruit interests of this Province generally. That they are sincere in the matter is attested by the fact that a standing committee was appointed three years ago, whose duty it was to do everything in its power to bring the scheme to a successful completion. This committee has interviewed the Government annually, but thus far without any definite results.

The fruit-growers of Ontario fully appreciate the liberality with which they have been treated by the Provincial Government, but are assured that the good use made of their grant has more than justified the expenditure, in witness of which they point with pride to their journal of horticulture which has a circulation as wide as the continent, is well known in Europe, and is recognized as the official organ of the fruit-growers of the Dominion.

In view of the large capital invested, and the annual revenue derived from the fruit industry of the Province, which, according to recent statistics, is second only in value to the hay crop, which takes the lead, your petitioners feel that they are justified in laying their desires before you with full assurance that they will receive at your hands that consideration which their importance deserves.

It is believed that the fruit interests of the Province cannot be served best by the establishment of a single experiment station, no matter where it might be located; and, further, that results more useful and more immediately available would be obtained by the establishment of a number of small and inexpensive trial experiment stations. These might be carried on in co-operation with the various fruit-growers in different parts of the Province, who already are specialists, and have made a financial success of growing

one or more classes of fruit. For example, the services of a grape specialist, or a plum or peach grower might be secured with all the advantages accruing from knowledge gained by practical experience.

Organization.

The Board of Control shall consist of the President and the Horticulturist of the Ontario Agricultural College, and three members of the Fruit Growers' Association elected by the directors of that body, with the Secretary as *ex officio* member.

The line of work to be pursued by each station shall be decided upon by the Board of Control, and shall be submitted to the directors at the time of the annual meeting of the Fruit-Growers' Association for approval, together with a full report of the work of the year for incorporation in the Annual Report.

An Executive Board for each station, whose duty it will be to carry out the directions of the General Board of Control, shall consist, of the experimenter and the director of that district acting with the Secretary of the Fruit Growers Association.

All plants shall be purchased by the Secretary of the Fruit Growers' Association after consultation with the experimenter, subject to the approval of the Board of Control

Experimenters and their Duties.

Each experimenter should be a specialist and should have suitable soil for the cultivation of the particular class of fruit of his own choosing, which is mainly to be tested at the station of which he has charge. He shall be elected by vote of the Board of Control, subject to the approval of the Directors of the Fruit Growers' Association; and in case of incapacity or dereliction of duty shall be dismissed and his place filled by action of the same body.

The experimenters shall be members of the Fruit Growers' Association of Ontario.

The first duty of each shall consist of making an accurate and trustworthy report on all varieties of the particular fruit assigned which he has on trial up to date. To this list shall then be added all the desirable sorts of late introduction. These shall be obtained by the Secretary of the Fruit-Growers' Association in consultation with the other two members of the Executive Committee, subject to the approval of the Board of Control, and shall be properly planted, carefully recorded and labelled.

The Board of Control shall have power to arrange and manage all details in regard to perfecting the organization not otherwise provided for.

Collection and Diffusion of Information.

Brief reports shall be rendered to the editor of *The Canadian Horticulturist*, for publication in that journal, once in two months during the growing season; and a complete report not later than the 15th November of each year shall be forwarded to the Horticulturist of the Ontario Agricultural College for publication, if deemed by him to be sufficiently important.

It is suggested that one or more annual visits be made to each station by the Horticulturist of the Ontario Agricultural College at the most favorable periods for securing information for publication in bulletin form, and pointing out to the Secretary any faults observable in the station, as well as indicating useful lines of work which might be inaugurated. At the time of these visits he will be received by the experimenter as the official representative of the Board of Control as well as of the Government.

Expenditure, Nature and Number of Stations.

It is suggested that ten trial stations be organized and located as follows:

No. 1. Apples and pears.....
Located Managed by

No. 2. Apples .....
Located Managed by

No. 3. Apples and plums .....
Located Managed by

No. 4. Peaches and strawberries .....
Located Managed by

No. 5. Plums and cherries .....
Located Managed by

No. 6. Grapes .....
Located Managed by

No. 7. Cherries and small fruits .....
Located Managed by

No. 8. Grapes and Currants .....
Located Managed by

No. 9. Strawberries and peaches .....
Located Managed by

No. 10. Gooseberries and raspberries .....
Located Managed by

Contingencies .....

It is believed that an appropriation of $2,000 will be sufficient to initiate and carry on this work successfully, including the purchase of plants for each station the first and succeeding years.

Stations Proposed to be Established in the Spring of 1894.

No. 1. Apples, pears and small fruits..... $100
Located in Prince Edward County.
Managed by W. H. Dempsey, Trenton.

No. 2. Apples, grapes, plums, strawberries, currants, gooseberries and cherries $100
Located in Simcoe County.
Managed by C. G. Caston, Craighurst.

No. 3. Plums, apples, pears, grapes and small fruits..... $100
Located in Huron County.
Managed by

No. 8. Grapes, currants, gooseberries, plums, pears, cherries and blackberries $100
Located in Wentworth County.
Managed by M. Pettit, Winona.

No. 9. Peaches and strawberries, currants, cherries, gooseberries, raspberries, plums and quinces..... $100
Located in Essex County.
Managed by W. W. Hilborn, Leamington.

Estimated Expenditure for 1894.

Five stations at $100	$500
Trees, plants, etc	200
Clerical work—corresponding with stations, purchasing stock for each, keeping lists, making tabulated statements for publication	50
Meetings of Board of Control	75
Travelling expenses of official visitors	75
Contingent fund	100
	$1,000

Experimenter's Agreement.

I of of the county of and Province of Ontario, do promise and agree to properly and carefully plant all fruit trees and plants entrusted to me for experimental purposes and to give them proper care in the way of cultivation and pruning, and that I will keep a record of the same and report as to the growth of the trees and plants, their hardiness, etc., size and quality of the fruit, time of ripening, and all other information required within my power and ability to give. I will be guided by the Board of Control in making these reports and report when and to whom they may direct. I further agree to be guided by the Executive Board as to plan and methods of experimental work entrusted to me. I also agree to give any information I can to, or asked for by the Horticulturist of the Ontario Agricultural College, or by the Secretary of the Fruit Growers' Association of Ontario.

In consideration of faithfully carrying out the experimental work as outlined above, and making reports as directed, I am to receive annually the sum of dollars. All trees, plants etc., entrusted to me for experimental work when once planted shall become my property, but not to be used in any way to advance personal ends, such as controlling or propagating new varieties.

Should I fail to carry out the wishes of the Board of Control, I hereby agree to forfeit all or any part of my annual grant, as considered right and just by the said Board of Control.

(Signed)

Dated

APPENDIX VI.

LIST OF PLANTS AND TREES

DISTRIBUTED BY THE FRUIT-GROWERS' ASSOCIATION OF ONTARIO FROM 1875 TO 1893 INCLUSIVE.

1875.—Swazie Pomme Grise Apple.

1876.—Glass Seedling Plum.

1877.—Goodale Pear.

1878.—Burnet Grape.

1879.—Ontario Apple.

1880.—Saunders' New Hybrid Raspberry.

1881.—Senasqua Grape; two pounds of the Dempsey Potato; Hydrangea Paniculata; Wealthy Apple.

1882.—Spirea Prunifolia; Lee's Prolific Black Currant; three bulbs of Gladiolus; Moore's Early Grape.

1883.—Rose Peonia; Worden Grape; Niagara Raspberry.

1884.—Yearling Tree of the Canada Baldwin Apple; Deutzia Crenata; Prentiss Grape; three papers choice Seed, viz., Pansy, mixed Aster and Drummond's Phlox.

1885.—Russian Apple, one year old; Catalpa, one year old; Fay's Prolific Currant, one year old; Tuber of choice Double Tulip; Three papers choice Seeds, viz., one each of Diadem Pink, Striped Petunia, Salpiglossis.

1886.—Three plants Ontario Strawberry; Russian Yellow Transparent, one year old; one plant Lucretia Dewberry, Early Victor Grape, one year old; two plants Marlboro' Raspberry; three papers Seeds, viz., Gypsophila Paniculata, Aquilegia Caerulea and Delphinium, mixed colors.

1887.—Vladimir Cherry; Dahlia; two plants Hilborn Raspberry; Niagara Grape Vine, one year old; New Single-flowered Geranium; three packets Flower Seeds.

1888.—Storm King Fuchsia; Golden Queen Raspberry (two plants); Niagara Grape Vine, one year old; package of Spring-flowering Bulbs, viz., Tuberose (double Excelsior Pearl), Dahlia (Gaiety, striped flower), Napoleon Gladiolus; Jessie Strawberry; Tree of Doyenne Boussock Pear, one year old; Abutilon (double); Ostheim, Russian Cherry.

1889.—Niagara Grape; Vergennes Grape; Princess Louise Apple; Paul Neyron Rose; Baron de Bonstettin Rose; Jessie Strawberry.

1890.—Russian Apricot; Simon's Plum; John Hopper Rose; Shaffer Raspberry (four tip plants); Wealthy Apple; Bubach No. 5 Strawberry (four plants); Richardia Alba-Maculata, or Spotted Calla.

1891.—Golden White Apple; Mill's Grape Vine; Williams' Strawberry; Triomphe de Vienne Pear; two Cannas; Gen. Jacqueminot Rose; two Dahlias.

1892.—Moore's Diamond Grape; Idaho Pear; Williams' Strawberry; Gipsy Girl Apple; Japan Honeysuckle.

1893.—Rosa rubifolia; Spiraea media rotundifolia; Picea pungens; Pinus ponderosa; Pseudotsuga Douglasii; Seedling black Currants; Red Queen Apple; Golden Reinette Apple; Crimean Apple.

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(Bureau

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APPENDIX VII.

ONTARIO FRUIT STATISTICS.

The following table contains the numbers of apple, pear, peach, plum and cherry trees, and of grape vines in the townships of Ontario as computed for 1892 and 1893, from returns sent in by farmers and fruit-growers to the Department of Agriculture (Bureau of Industries.)

Districts.	1893.		1892.	
	Bearing Age.	Young Trees.	Bearing.	Non-Bearing.
APPLE TREES.	No.	No.	No.	No.
Lake Erie	1,296,335	409,771	1,264,495	459,296
Lake Huron	800,837	249,856	751,637	254,074
Georgian Bay	500,747	242,374	450,135	223,953
West Midland	1,164,110	292,200	1,097,843	308,063
Lake Ontario	1,993,891	447,905	1,961,607	460,617
St. Lawrence and Ottawa	786,100	316,937	750,621	309,334
East Midland	373,917	153,799	346,407	152,896
Northern Districts	17,426	31,839	15,235	32,711
The Province	6,933,363	2,144,681	6,637,980	2,200,944
PEAR TREES.				
Lake Erie	134,047	84,617	121,224	92,918
Lake Huron	46,975	27,246	45,216	28,137
Georgian Bay	22,486	33,253	17,474	32,556
West Midland	72,803	48,625	61,929	46,045
Lake Ontario	211,702	294,560	205,976	273,788
St. Lawrence and Ottawa	20,830	15,877	19,199	14,383
East Midland	12,071	9,834	14,045	10,992
Northern Districts	838	1,153	213	693
The Province	521,752	515,165	485,276	499,512
PLUM TREES.				
Lake Erie	56,230	82,400	48,533	79,291
Lake Huron	56,617	37,766	59,129	40,306
Georgian Bay	85,502	80,002	93,962	85,120
West Midland	68,337	75,957	62,943	74,317
Lake Ontario	247,960	333,427	225,181	332,743
St. Lawrence and Ottawa	127,226	40,589	130,732	38,970
East Midland	31,212	22,414	30,041	24,854
Northern Districts	9,477	7,539	8,933	7,814
The Province	682,561	680,094	659,454	683,415
PEACH TREES.				
Lake Erie	173,392	153,080	141,502	182,536
Lake Huron	10,516	7,055	9,118	8,275
Georgian Bay	1,688	3,013	1,859	1,322
West Midland	17,124	9,660	12,658	11,824
Lake Ontario	319,054	212,804	277,765	229,720
St. Lawrence and Ottawa	....	204	....	253
East Midland	99	498	198	617
Northern Districts	....	16	....	7
The Province	521,873	386,330	443,100	434,554

ONTARIO FRUIT STATISTICS.—*Continued.*

Districts.	1893.		1892.	
	Bearing Age.	Young Trees.	Bearing.	Non-Bearing.
CHERRY TREES.	No.	No.	No.	No.
Lake Erie	166,145	52,853	163,610	58,369
Lake Huron	82,713	27,535	81,138	29,420
Georgian Bay	53,293	28,769	54,796	23,314
West Midland	77,017	30,862	76,368	30,017
Lake Ontario	94,338	63,182	93,713	55,776
St. Lawrence and Ottawa	28,945	14,962	29,731	10,629
East Midland	13,954	10,046	12,348	10,684
Northern Districts	1,659	1,449	1,471	1,837
The Province	518,064	229,658	513,175	220,046
GRAPE VINES.				
Lake Erie	922,042	195,408	962,265	250,708
Lake Huron	37,506	34,335	35,715	24,762
Georgian Bay	23,194	8,774	28,455	8,052
West Midland	55,870	24,879	48,259	29,028
Lake Ontario	1,117,502	473,981	1,029,479	571,626
St. Lawrence and Ottawa	40,037	18,048	37,135	44,704
East Midland	26,013	26,864	31,911	20,605
Northern Districts	1,118	1,141	914	1,174
The Province	2,223,282	783,430	2,174,133	950,659

The districts given in the above table are comprised as follows:

LAKE ERIE. Essex, Kent, Elgin, Norfolk, Haldimand and Welland.
LAKE HURON. Lambton, Huron and Bruce.
GEORGIAN BAY. Grey and Simcoe.
WEST MIDLAND. Middlesex, Oxford, Brant, Perth, Wellington, Waterloo and Dufferin.
LAKE ONTARIO. Lincoln, Wentworth, Halton, Peel, York, Ontario, Durham, Northumberland and Prince Edward.
ST. LAWRENCE AND OTTAWA. Lennox and Addington, Frontenac, Leeds and Grenville, Dundas, Stormont and Glengarry, Prescott and Russell, Carleton, Renfrew and Lanark.
EAST MIDLAND. Victoria, Peterborough, Haliburton and Hastings.
NORTHERN DISTRICTS. Muskoka, Parry Sound, Nipissing, Algoma, Manitoulin, Thunder Bay and Rainy River.