



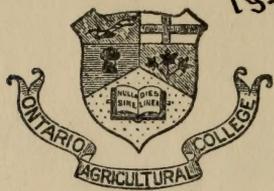
ANNUAL REPORT  
OF THE  
FRUIT GROWERS' ASSOCIATION  
OF  
ONTARIO  
1922

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Ontario Department of Agriculture

FIFTY-FOURTH ANNUAL REPORT

OF THE

Fruit Growers' Association

OF

ONTARIO

1922

PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO



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TORONTO

Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty  
1923

Ontario Department of Agriculture

FIFTY-FOURTH ANNUAL REPORT

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Fruit Growers' Association

ONTARIO

1923



THE LEGISLATIVE ASSEMBLY OF ONTARIO



82264

TORONTO

Printed by CLARKSON W. JAMES, Toronto, to the Order of the Legislative Assembly of Ontario

1923

*To His Honour* HENRY COCKSHUTT,  
*Lieutenant-Governor of the Province of Ontario.*

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Report of the Fruit Growers' Association of Ontario for the year 1922.

Respectfully yours,

MANNING W. DOHERTY,  
*Minister of Agriculture.*

Toronto, 1923.

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## OFFICERS FOR 1923.

<i>President</i> .....	PAUL FISHER, Burlington.
<i>Vice-President</i> .....	HOWARD LEAVENS, Bloomfield.
<i>Secretary-Treasurer</i> .....	P. W. HODGETTS, Toronto.
<i>Assistant Secretary</i> .....	A. FULTON, Toronto.
<i>Executive Committee</i> .....	OFFICERS, together with W. JAS. SCHUYLER, Simcoe, and DR. MOORE, Thornbury.
<i>Auditor</i> .....	D. F. CASHMAN, Toronto.

### DIRECTORS.

<p>Div. 1. JUSTUS JONES, Prescott, Ont.          2. H. LEAVENS, Bloomfield.             H. SIRETT, Brighton.             A. A. COLWILL, Newcastle.          3. W. M. FLETCHER, Clarkson.          4. PAUL FISHER, Burlington.          5. J. B. FAIRBAIRN, Beamsville.             GEO. E. BROWN, Fonthill.             HAMILTON FLEMING, Grimsby.</p>	<p>Div. 6. W. JAS. SCHUYLER, Simcoe.          8. W. H. MUNDY, R.R. 6, London.          9. H. S. HOWELL, St. George.          10. DR. MOORE, Thornbury.          O.A.C., PROF. A. H. MACLENNAN, Guelph.          H.E.S., E. F. PALMER, Vineland Station.          C.E.F., W. T. MACOUN, Ottawa.</p>
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### REPRESENTATIVES TO FAIR BOARDS AND CONVENTIONS.

*Canadian National:* W. F. W. FISHER, Burlington.  
*London:* W. ENGLAND, R.R. 5, London; A. J. CODY, R.R. 7, London.  
*Ottawa:* W. T. MACOUN, Ottawa.

### COMMITTEES.

*Horticultural Publishing Company:* HAMILTON FLEMING, Grimsby.

*New Fruits:* W. T. MACOUN, E. F. PALMER, A. H. MACLENNAN.

*Historical:* A. W. PEART, W. T. MACOUN.

*Transportation:* C. W. BAXTER, Grimsby; W. M. FLETCHER, Clarkson; W. J. BRAGG, Bowmanville; W. H. BUNTING, St. Catharines; JAS. E. JOHNSON, Simcoe; T. FOSTER, Burlington.

*Tariff:* JAS. E. JOHNSON, Simcoe; W. A. FRASER, Trenton; W. F. W. FISHER, Burlington.

## TREASURER'S REPORT, 1922.

### RECEIPTS.

Balance on hand, Dec. 31, 1921.....	\$2,222 90
Membership Fees.....	112 50
Imperial Fruit Show.....	921 94
Interest.....	37 93
Grant.....	1,700 00
	<u>\$4,995 27</u>

### EXPENDITURES.

Annual Meeting.....	\$313 35
Committee Meetings.....	109 13
Printing.....	20 25
Periodicals, Hort. Pub. Co.....	115 20
Imperial Fruit Show.....	1,839 87
Miscellaneous.....	242 55
<i>Balance on hand</i> .....	2,354 92
	<u>\$4,995 27</u>

DETAILS OF EXPENDITURES.

ANNUAL MEETING:

Advertising—

Farmer's Advocate.....	\$21 00
McLean Publishing Co.....	33 00
Farmer's Sun.....	35 00
Canadian Countryman.....	52 50

Rent of Hall, Prince George Hotel.....	50 00
Reporting Convention, M. E. Coo.....	60 00

Travelling Expenses—

P. Hynd.....	9 20
A. J. Cody.....	21 60
David Allan.....	25 25
P. W. Hodgetts.....	5 80

\$313 35

COMMITTEES:

Travelling Expenses—

A. A. Craise.....	\$6 00
H. Sirett.....	7 45
A. W. Peart.....	3 00
W. H. Bunting.....	11 08
F. C. Donald.....	12 20
L. B. Reynolds.....	5 50
W. H. Kneale.....	9 70
M. Meek.....	7 65
T. J. Mahoney.....	45 55

109 13

PRINTING:

College Press, Programmes.....	20 25
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PERIODICALS:

Canadian Horticulturist, Subscriptions.....	115 20
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IMPERIAL FRUIT SHOW:

Sale of Fruit—

H. C. Breckon.....	\$240 99
W. L. Hamilton.....	130 74
Harry Ryrie.....	73 18
W. F. W. Fisher & Sons.....	72 96
Smith Bros. (Freeman).....	200 48
Smith Bros. (Oakville).....	53 70
W. N. Langell.....	48 94
Woodland Orchards.....	83 15
J. F. Osborne.....	34 87
P. W. Hodgetts.....	21 33
C. W. Challand.....	41 63
Fred. Schuyler.....	25 11
W. H. Gibson.....	31 11
Leslie Smith.....	18 83
J. C. Smith.....	37 67
J. C. Harris.....	18 00
G. W. Breckon.....	9 00
Chas. Jarvis.....	8 93

1,150 62

Entry Fees, Geo. E. McIntosh.....	85 50
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Collecting and Packing Fruit—

H. N. Webster.....	\$86 15
W. L. Hamilton.....	334 86
P. W. Hodgetts.....	170 19

591 20

Baskets, Niagara Peninsula Growers, Limited.....	12 55
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\$1,839 87

MISCELLANEOUS:

Office Help.....	\$212 00
Audit.....	10 00
Treasurer's Bond.....	10 00
Fees.....	10 25
Exchange.....	30

\$242 55

# Fruit Growers' Association of Ontario

## ANNUAL CONVENTION

The Annual Convention of The Fruit Growers' Association of Ontario was held in the Prince George Hotel, Toronto, February 20th and 21st, 1923. The President, W. J. BRAGG, M.P.P., Bowmanville, in the Chair.

### PRESIDENT'S ADDRESS.

W. G. BRAGG, M.P.P., BOWMANVILLE.

It is with a great deal of pleasure that we welcome you to our Sixty-Third Annual Meeting of the Ontario Fruit Growers' Association. We meet to-day under peculiar circumstances, having passed through a very strenuous season in which we faced conditions never before forced upon us. Questions regarding this will come up at our meeting to-day. In fact, the executive, in preparing the programme for this convention was careful in putting on our programme speakers who were prepared to deal with the different situations as we saw them during the past year. I am sure this will meet with your approval and that your interest will be held throughout the convention.

We are glad to see so many of our old friends here to-day and to note the number of new faces.

The apple season of 1922 was very peculiar. We had an excessively heavy crop of tree fruits, and when the apples were put on the market they came in competition with the more tender fruits from the Niagara District, such as peaches, plums and pears, which militated against the sale of our apples. I made a number of visits to the Toronto markets, and I found on different occasions the dealers were completely overwhelmed with the supply of fruits from the different parts of the Province. It was absolutely impossible for them to make satisfactory sales of any of these fruits because it was a matter of putting on the market a product which the people would not buy. However, we trust throughout the Province generally conditions have not been too bad and that the fruit growers have made a reasonable profit out of their enterprise.

It is a matter of gratification to the fruit growers of Ontario, and to this Association particularly, that Ontario fruit stood so high at the Imperial Show in London, England. We have every reason to be proud of the splendid success we made. Mr. Carey, who acted as judge at the Imperial Show, will make the presentation of medals which our fruit growers received at that show. In looking over the list of varieties, I find that the Ontario Fruit Growers' Association came out first, and sometimes first and second, as winners of the prizes in the Overseas Section at the Imperial Show.

We also made a very good record and showing at the Royal Winter Fair at Toronto, a record of which we also may be proud.

During the past season in one class of fruit we were not successful in production, and that is raspberries. There seemed to be a disease which struck the raspberry cane in the last season, so we have on our programme a speaker who will deal with that subject alone—Mr. J. F. Hockey, of the Dominion Plant Laboratory, St. Catharines. Last season was so disastrous that some growers have gone out of raspberries entirely.

## REPORT OF HISTORICAL COMMITTEE, 1922.

A. W. PEART, BURLINGTON.

The winter of 1921-1922 was mild with very little snow. Two severe ice storms in the central portion of the Province did considerable damage to fruit trees especially those of the tender varieties, breaking down branches, and in some cases entirely stripping the trees. It was hoped that the coat of ice would smother the San Jose Scale, but many on the more sheltered parts of branches escaped and were strongly in evidence during the picking season. Black knot is still a scourge in many plum orchards, and will soon destroy the trees if not cut out.

There was plenty of moisture during the growing season and fruits reached a good size. The fruit crop generally was very good, and of excellent quality; cherries, peaches and plums were very heavy and prices sagged as the season went on, until the margin of profit was wiped out and hundreds of bushels of fruit were left on the trees. Pears too were good, but prices very low. Grapes were a heavy crop and prices generally satisfactory. The apple crop was fair. Typical orchard sales in the Province for standard varieties, fall and winter, ran from 60 to 75 cents a bushel on the trees, the buyer doing the picking. Orchards well-cared for gave fine apples of extra colour.

The Province is to be congratulated on the success of its fruit exhibits at the Imperial Show, London, England, and the Royal Show, Toronto. At the former our growers secured eleven first prizes, nine second and one third, as well as a cash award of £74. At the latter, they won first and third in the 100 box lots, and first in single, 10 and 20 box lots of Jonathans. We more than held our own in McIntosh and Spy against considerable competition.

It might not be out of place here to give a word of commendation to the various exhibits at the Royal Show: fruits, vegetables, flowers and plants, fish, grains, foxes, poultry, sheep, pigs, cattle and horses—all were there in abundance, and of a quality which was a revelation as well as a matter of pride to Canadians.

No money has been made on the land these last two years. Economic conditions bear more hardly on the fruit grower and farmer than they have for probably fifty years. He is being ground between two powerful forces which he appears unable to escape. On the one side are high overhead expenses, wages, taxes, high cost of implements, machinery, etc., general slackness and lack of thorough work. On the other side, there is the low price of farm products, running from zero in some fruits and vegetables to a fair price only for some lines. In other words, the cost of production has swallowed the profit, and the growers have had to use their savings, sell off some of their capital or get advances from the banks. Another factor in the depression is due to the extravagance everywhere, brought about by the flush times of the war. We will have to overhaul our economic habits all along the line or go broke. Fifteen or twenty years ago the workers on the land bought closely and spent their money carefully and with judgment. The chief question in their mind was "Is this article necessary?" When they had products to sell they sought diligently for the best market. Farm wages are out of all proportion to the price of farm products. Municipal taxes are increasing about 10% per year, and owing to heavy municipal and governmental undertakings will continue to increase. The price of agricultural implements and machinery is 100 per cent. higher than before the war. All the above and others as well are contributing causes to the hard times on the farm. The situation is one of the general economic effects of the World War. Can we do

anything about it? It is time to call a halt both in private and public business, and to scrutinize carefully our position. We must revise our spending habits and insist on rigid economy on our farms and in our municipal, Provincial and Federal Governments, and we must stamp out all frenzied finance schemes and try to bring about an era in which common sense will rule. If we have the will to do these things, a brighter day will dawn for the workers of the soil.

MR. MACOUN: I would like to add a word or two in addition to this report in regard to the death of some very prominent horticulturists in America during the past year. Most of these men lived on the other side of the line, but they were international in that their work was of practically as much value to us as to the United States. I refer first of all to the death of Prof. S. A. Beach, of Iowa College Experimental Station. He was one of the outstanding figures in American horticulture; he was an old friend of this Association, and has addressed it in times past. He died last summer. Then there was Prof. Whitten, Professor of Horticulture of the Agricultural College of California, who died during the past year. There was also Dr. Tracy, of the Department of Agriculture, Washington. All of those interested in the growing of vegetables will know about Dr. Tracy who did more than any other man to systematize the nomenclature of vegetables, and his death is worthy of record by our Association. Then there was the death of Harold Powell, President of the California Fruit Exchange. Mr. Powell was able, during the time he was head of that Exchange, to bring it to such a shape that it was modelled all over the world.

In Canada, we have not lost many prominent horticulturists during the last year, but I should like to refer to the death of Mr. A. P. Stevenson, of Morden, Manitoba. Mr. Stevenson who died early in this winter, did more to prove that apples could be grown in Manitoba than any other man. He had an orchard in Southern Manitoba which I visited nearly every year, where apples were growing just as in the Province of Ontario. It was not a very large orchard, but he would have from 200 to 300 barrels of apples each year, of just as fine fruit as can be found anywhere. His enthusiasm during the many years he worked in the West has inspired many to test out fruits there, and it has done a great deal for the advancement of horticulture on the prairies. I think, Mr. Chairman, this should be added to the report of the Historical Committee.

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## REPORT OF COMMITTEE ON NEW FRUITS.

PROF. W. T. MACOUN, OTTAWA.

I had hoped that our committee on New Fruits would be able to get together before this meeting and have drafted a report, but in a few words I shall be able to tell you what we should have presented in our joint report.

There are three main sources for the testing of fruit in the Province of Ontario: The Vineland Experimental Station, Vineland; the Agricultural College, Guelph, and the Dominion Experimental Farm, Ottawa. In addition to these, there are a few fruit testing stations. At these main testing stations, it is our duty to test out all the new things that appear on the market. In addition to that, most of us are trying to originate new varieties of fruits which will be better than those we have to-day. I think you will all agree with me that there is not now a single perfect fruit; each one of them has one or more weak points as far as commerce is concerned.

During the past season a few varieties of apples have come prominently to the attention of Ontario Fruit Growers. One of these is the Golden Delicious

which is being highly advertised by the firm of Stark Brothers, the introducers of the Delicious apple. I have had an opportunity of testing the Golden Delicious apple, and I find it of very good quality; it is an apple somewhat of the type of Grimes Golden, but a little juicier. Whether or not it will be satisfactory in the Province of Ontario we do not know, but it is being tested in the different parts, and in a few years we will know more about it.

Another apple which has received a good deal of attention in the press recently is the Seedless Fameuse or Snow Apple. It is seedless and coreless. This apple was brought to the meeting of the Quebec Pomological Society at Macdonald College last December by Mr. A. W. Buzzell, of Abbotsford, Quebec. I had an opportunity of seeing and tasting the fruit. Mr. Buzzell when he was packing his fruit from a young orchard, early this winter, noticed there were quite a number of specimens of Fameuse which were a little different in shape from the ordinary Fameuse. They were a little longer, and he cut one of those and found it had neither a core nor seeds, so he cut some more and every one of them was just the same. The only indication of a core is a very small line running from one end to the other of the apple; the apple is practically solid flesh. The remarkable thing about this is that Mr. Buzzell does not know where that tree is in his orchard. This is the first year these trees have come into bearing, and nobody knows whether these will be reproduced next year or not. I fancy Mr. Buzzell will find the tree this year or next year, and I fancy also he will find that the apple will be seedless just as he found it this year.

Mr. Buzzell, if he is a careful man, should make a lot of money out of that apple, whether it is good or bad. We hope it will be good. It certainly tasted and looked like the Fameuse.

This brings to mind the new variety of strawberry called the Rockhill, that has been purchased for \$50,000 from Mr. Rockhill, of Iowa. Mr. Rockhill had 350,000 plants of these strawberries before he sold it, and he was wise in that. I have been told this Rockhill is the best everbearing strawberry that Mr. Rockhill has introduced. He introduced the Progressive and America, two of the best we have, and I understand Mr. Rockhill made practically nothing out of these two, because he was foolish enough to let those go out before he had increased his stock sufficiently to be able to sell at a large price.

In regard to the breeding of new varieties of apples, we have been engaged in that work at Ottawa for about 25 years, and we think we have made very good progress, but it will take quite a few more years before we are satisfied that it is time to quit. To give you an idea of the progress we have made in developing winter apples: 25 years ago we had only five varieties of winter apples which we considered hardy at Ottawa. Now we have nearly 300 varieties there that have gone through that very severe winter of 1917-18, and we are testing to find out which of these varieties will stand up and be the most useful in the colder parts of Canada. Then we have introduced a few sorts such as the Melba apple, a summer seedling of the McIntosh, which we believe is going to be a leading commercial variety before many years are over. Its season is just before the Duchess; it is a red apple, tastes a good deal like the McIntosh and is very attractive in appearance.

Most of those who live in the Niagara Peninsula are well acquainted with the field work they are doing at the Vineland Station in the breeding of tender fruit, and I think before many years are over you will see some fine things sent out from there which will take the place of the commercial varieties already on the market.

## THE CANADIAN HORTICULTURAL COUNCIL: ITS ORGANIZATION AND AIMS.

LESLIE BURROWS, OTTAWA.

It has been the practice of the Fruit Branch of the Department of Agriculture from time to time to call together the fruit growers of the Dominion to discuss questions relative to the fruit industry and make recommendations which have resulted in the amendments to the Fruit Marks Act. At the Conference in 1912, a resolution was adopted recommending that a National Fruit Growers' Association be formed to coordinate the work of the various fruit organizations in the Provinces throughout the Dominion. An organization was formed, and a directorate appointed, but not more than one or two meetings were held. It was probably due to the war commencing in 1914 that the further organization of the National Fruit Growers' Association was dropped. Immediately following the war, the question was again taken up, and at the last Dominion Fruit Growers' Conference held in Ottawa in February, the policy of that conference was broadened so as to include representatives not only of fruit growers, but of the package manufacturers, jam manufacturers, canners and the nurserymen. The question of the formation of a council was again brought forth and it was decided to recommend the formation of a Canadian Horticultural Council to include representatives from all the horticultural and allied interests rather than limited strictly to the fruit growers. Following that meeting a provisional directorate was appointed and representatives were nominated from the various fruit growers' associations, vegetable growers' associations, package manufacturers, jam manufacturers, canners, nurserymen, amateur horticulturists and florists and gardeners in proportion approximately relative to the size of the industry, but bearing in mind the necessity of a majority of growers being on the council at all times. A provisional constitution and by-laws were drawn up and provisionally adopted. The objects of the council set forth in the constitution are before you this morning, as follows:

"To advance all matters tending towards the improvement of the horticultural and allied industries in Canada including plant origination and registration, production, grading, packing, transportation, storage and marketing.

"By bringing about a closer co-operation between those engaged in the horticultural and allied industries in Canada and a fuller understanding of their problems. By initiating, fostering and assisting in obtaining such legislation and regulations as will be beneficial to the horticultural and allied industries.

"By emphasizing through inter-provincial co-operation the importance of the horticultural and allied industries and to obtain for them the position they deserve as an important and progressive branch of agriculture. By encouraging the development of horticultural education, the holding of horticultural displays, the distribution of literature and systematic advertising informing the general public as to the value and general use of horticultural products.

"By encouraging the adoption of uniform standards of grading, packages and packing, and assisting in developing home and foreign markets.

"By providing means for the registration of horticultural plants, shrubs or trees and recognition for varieties of outstanding merit.

"By co-operating with the railway, express and steamship companies in securing the best conditions for transportation and a just equalization of charges therefor.

"By co-operating with any agency working in the national interests for the improvement of marketing methods or for the more equitable distribution of horticultural products.

"By carrying on any undertaking which may seem to the council capable of being carried on in furtherance of these objects."

The membership clause and the finance clause were the two most difficult to determine. There is always a considerable amount of discussion as to who and who should not have representation, and the number of representatives which a certain association or group of associations should have. After very careful consideration on the part of the Provisional Directorate, which consisted of

Col. Roberts as President, F. W. Bishop, President of the United Fruit Companies, Nova Scotia, 1st vice-president; R. R. Scott, Scott Fruit Company, Winnipeg, 2nd vice-president; directors: W. E. Groves, Canadian Florists and Gardeners' Association; W. Stewart, president, Ontario Vegetable Growers' Association, and the late Mr. Wagstaff, of Wagstaffs, Limited, Hamilton, it was decided to recommend that the membership should consist approximately as follows:

'The Canadian Horticultural Council shall consist of eighteen representatives of the horticultural and allied industries in Canada, appointed, where possible, by the associations of the industries concerned. Five of these shall be representatives of the Fruit Growers (one each from British Columbia and the Prairie Provinces, combined; Ontario, Quebec; New Brunswick and Prince Edward Island, combined, and from Nova Scotia). Four of the Vegetable Growers (one each from British Columbia and the Prairie Provinces, combined; Ontario; Quebec; and New Brunswick, Prince Edward Island and Nova Scotia, combined). Two of the wholesale fruit and vegetable dealers (one from Western Canada and one from Eastern Canada). One of the package manufacturers; one of the florists and gardeners; one of the jam manufacturers and one of the canners; one of the nurserymen; one of the amateur horticulturists and one from the seedsmen.'

The next most difficult question was the arrangement of the finances. In allotting the finances amongst the different associations, the first idea was to allot according to size. It was found in preparing the budget in order to maintain a permanent office and administrative staff that the annual expense of the council would approximately be \$10,000, and on this basis a division was made between the various associations interested. At the same meeting, various standing committees were appointed, one on Transportation, of which Mr. G. E. McIntosh was chairman; one on Legislation, of which Mr. Baxter was chairman; one on Plant Registration, of which Mr. Macoun was chairman, and a Publicity Committee, of which Mr. E. B. Luke, Montreal, was chairman. The various committees have met throughout the year and have taken up a considerable amount of work. The Plant Registration Committee were in a position after a number of meetings to recommend a system for the formation of plant registration bureau providing for a means, practically, of plant patenting. The meeting of the Council was called and a report of the committee presented and adopted. It was decided that instead of requesting that legislation be obtained through the Dominion Government as a protective means, to proceed on a voluntary basis for at least two years, until such time as it was known the exact nature of the legislation required. The matter was taken up with the Honourable Minister of Agriculture who thoroughly endorsed the scheme, and offered financial assistance in order that it should be carried out. Such financial assistance has so altered the financial requirements of the Council that the clause referring to finances was immediately amended reducing the required amount from the various associations very considerably; in fact the only finances required now are those to cover the annual meeting and the committee meetings which it is proposed to hold throughout the year. The remainder of the finances we expect to receive from the Dominion Government for the purpose of plant registration which will carry the administrative staff.

Other committees have taken up a number of questions with the various departments of the Government, and so far have been quite successful. We have obtained, through our Publicity Committee, a large amount of publicity free, and because it was free, naturally, it was very limited. The Transportation Committee, through Mr. McIntosh, has taken up a number of questions.

The Council has devoted the majority of its time during the past year to placing before the associations which we expect to form, its membership, its objects and work, and this is the final meeting at which the organization must

be taken up. Each and every other association has held their annual meeting, and have unanimously endorsed the Council, and have agreed to support it by naming their representatives and paying their allotted dues.

As only one representative has been allotted to the fruit interests of Ontario, and as the finances are proposed to be contributed by the larger co-operative associations, particularly the Niagara Peninsula Growers and Ontario Fruit Growers, it is proposed that such delegates that you may care to appoint might, with an equal number of members from the Niagara Peninsula Growers, together nominate the man to represent the fruit interests of Ontario.

It is quite probable that a number of the provisions of the constitution as it stands at present are not acceptable to you. That may be expected, when we think of the fact that the Fruit Marks Act as it stands to-day contains only one small clause of the original Fruit Act, but the Fruit Act that we are putting through, which is before the House at the present time, shows progress. We hope that the constitution of the Council may be amended from time to time to show the same progress as has been made with the Fruit Marks Act.

The Council is entirely a council of representatives of the horticultural and allied interests; there is no provision for a member of the Government or a Government appointment on the Council, although it has the support and sympathy of the Dominion Government. The council, is therefore, capable of being made entirely what the interests care to make of it, and what they care to use it for.

---

## THE IMPERIAL FRUIT SHOW.

P. J. CAREY, TORONTO.

I would like to draw a comparison between the two shows that have been held in London. It is generally known that I had the honour of taking over the Dominion display in 1921, and last year, 1922, of being Canadian judge, and I feel very grateful to the fruit growers of Canada for receiving that honour. I may say that I did the best I could. This last year, I am not too modest to say that I got what I went after.

At the 1921 Show, the Dominion had an exhibit, and we thought it was a fairly good one. British Columbia had a good display; Ontario, Nova Scotia, New Brunswick had good displays. These were non-competitive. In the 1922 show these were all missing with the exception of Ontario. Ontario had a non-competitive display as well as a competitive display. In a comparison between the two years, the last show would suffer very severely. Visitors attending an exhibition want something spectacular; they are not satisfied with anything that is ordinary, and last year's show fell down in that respect. In future I would be very much in favour of displays, non-competitive, supported by the different Governments. The London *Daily Mail* has suffered a heavy loss through the two shows, and they have given up the game entirely. It is said they have lost by the small attendance £8,000 in the two years, and they have withdrawn.

Next year's show will be held in Manchester. This should be a great success. Manchester is situated in such a way that it is claimed there are 10,000,000 people within thirty miles of it. It is about thirty miles from the sea, and is reached by ship canal. I would say that I hope the Governments and exhibitors will co-operate and put up good displays at this coming show.

Have the shows paid for the trouble? You cannot figure out the value of

exhibitions in dollars and cents. The great value of exhibitions is the impression it gives, and it is through impressions that we reach our conclusions, so that we cannot set down the value of exhibitions. I am in favour of exhibitions all the time, not that I have any hope of a continuation of further trips, but I was always a great supporter of exhibitions. They do an untold amount of good. I would say then that the outlay and the time was very well spent. Whether the effect on the English growers will be long-lived or not I do not know. You all noticed last year the photograph of the entry that took the first prize at the first Show. I expected my work would be very easy as Canadian judge in finding fault with the English pack, but do you know what happened? I found—whether they were sent for, or strayed over there—two expert packers who had been engaged to put up these exhibits, and they were almost the last word in packing. You can readily see the great handicap to Ontario and the Canadian exhibitors. I had to look for some other means of combating the two-to-one judging, and my only plan was to go down to the bottom of the boxes; there I found plenty of reason why they should not have prizes. This work has been very stimulating to the English growers; they have adopted the Canadian apple box and they are already packing, but outside of Cox Orange, I do not know any English variety that would be suitable for boxing to any great extent. They are caring for their orchards better than they used to. I had a peep into some of their orchards, and to my mind they were not at all promising—trees closely planted and not spreading. If it is true, as they claim, that their fruit is as good as ours, you can imagine the wonderful difference between two cases, one shipped from Toronto to Liverpool and then on to London, as against the other produced by the local growers and drawn to the market in motor cars. But I find the sale of their apples would only affect our fall varieties, with the exception of one or two varieties such as Newton Wonder and Bramley Seedling.

A great industrial depression has spread over the land there. The great shipbuilding plant on the Clyde River, where hundreds of thousands of men were engaged, were closed down entirely. The same can be said of Newcastle-on-Tyne and other shipbuilding points. You can readily see then why the Canadian apples are not selling at very high prices.

I would like also to state that I made an investigation of the peach shipments to the Old Country. The bulk of the fruit was handled by George Munro, Ltd. He reports the fruit as landing, some in good condition, but in twenty-four hours showed signs of decay or brown heart, and completely broke down. He also stated that there is a general objection to the yellow flesh varieties, an objection that is not well founded, but it is hard to make the average Englishman change his mind. Our peaches, too, landed just when the English-grown fruit was at its best on the market. He also reports that the packing of the peaches was faulty. Two tiers were put in each box, while experience has shown that one tier in a box is accepted as the right way. In answer to my questions, Mr. Munro was very emphatic in pronouncing the exporting of Canadian peaches as not being a paying commercial proposition, and I may say I fully agree with him. The same may be said, I think, of grapes and tomatoes. There has been fairly good success in the exporting of pears. We sent peaches to the Old Country in 1910 which landed in first-class condition, but they cost us 10 cents each peach, showing that the ordinary grower could not ship peaches successfully. Peaches for shipping to Great Britain must be packed carefully, cooled, wrapped, one tier in a box, and there is a great deal of cost involved in picking, packing and selecting, so that I repeat that I do not think the shipping of peaches to the Old Country a paying proposition.

Mr. Carey then presented the medals as follows:

RESULTS IMPERIAL FRUIT SHOW, 1922  
OVERSEAS SECTION.

SIX BOX EXHIBITS:

Wealthies . . . . .	1st.	W. L. Hamilton, Collingwood.
	2nd.	Harry Ryrie, Oakville.
Snows . . . . .	1st.	W. L. Hamilton, Collingwood.
	2nd.	Fred. Schuyler, Simcoe.
McIntosh . . . . .	1st.	W. L. Hamilton.
	2nd.	W. F. W. Fisher & Sons, Burlington.
Kings . . . . .	1st.	H. C. Breckon, Bronte.
	2nd.	H. C. Breckon, Bronte.
Golden Russet . . . . .	1st.	J. F. Osborne, Newcastle.
	2nd.	W. L. Hamilton, Collingwood.
Spy . . . . .	1st.	W. F. W. Fisher & Sons, Burlington.
	2nd.	P. W. Hodgetts, Clarkson.
Blenheim . . . . .	1st.	H. C. Breckon, Bronte.
	2nd.	H. C. Breckon, Bronte.
Jonathan . . . . .	1st.	W. N. Langell, Point Pelee.
Cox Orange Pippin . . . . .	3rd.	M. C. Smith, Burlington.
Spitzenburg . . . . .	2nd.	Smith Bros., Oakville.
Greening . . . . .	1st.	H. C. Breckon, Bronte.
	2nd.	Smith Bros., Freeman.
Newton Pippin . . . . .	1st.	C. W. Challand, Simcoe.
Stark . . . . .	1st.	W. H. Gibson, Newcastle.

THE BEST ONTARIO EXHIBIT (Kings), H. C. Breckon, Bronte.

MR. HODGETTS: I think an explanation is due in regard to that second prize for Spies. It was not the intention of the Secretary to exhibit at this Imperial Show. The packing of the apples was carried out at Clarkson at my place; shortly before shipping it was found that we were still short six boxes of Spies, and these were taken out of my orchard.

What we have been trying to do at these shows is encourage the men who have good commercial orchards in the Province. It is a little difficult for us to go all over the Province to get the fruit because the time is so short from when the fruit is ready to be picked until it has to go forward. This Show in London has been set for the convenience of the English growers and not the Canadian growers. Our fruit has to leave Ontario points the first week in October to get over in time for the Show. You can understand what that means with Spies and some of the other winter varieties. It was necessary to get the fruit as near one centre as possible, and for that reason we did not visit some of the outlying orchards where we might have got just as good fruit.

I want also to make an explanation about the second prize on Greenings, won by Smith Brothers, of Freeman. We did not feel like taking the best of Mr. Smith's apples for the Imperial Show, because we were counting on them putting up a good exhibit at the Royal, and they did. Their orchards won first and third prize for the best 100 box lot of apples in the Royal Show at Toronto. That was one of the best winnings Ontario made at that time. We knew the British Columbia growers were coming down with several carloads of fruit, and they were bound to carry off some of the prizes when coming in competition with Ontario. When the fruit was put on the stands, it was remarkable in appearance and packing. The judging was done by Mr. Rees and Prof. Peck from New York State, one a western man and the other, originally, a Nova Scotia man. The British Columbia men objected that there was no western man judging, but we pointed out that Mr. Rees was from Oregon and educated at the Oregon Agricultural College.

We first came in competition with British Columbia in the sweepstakes box. Our hope was based on the box put up by Paul Fisher, of Burlington, but we

lost to the box of Spitz packed by the British Columbia Growers of Kelowna. The 100 box lots were judged after that, and fortunately Mr. Smith, with 100 boxes of perfect McIntoshes, got first prize, and his brother with another lot of McIntoshes got third, so I think they deserve a great deal of praise that they won these high prizes for Ontario at the Royal Show, even though they did not get first prize at the Imperial.

The following committees were appointed:

RESOLUTIONS COMMITTEE—MR. W. H. GIBSON, Newcastle, Convener; MR. PAUL FISHER, Burlington; MR. JAS. E. JOHNSTON, Simcoe; MR. GEO. C. BROWN, Fonthill; MR. FRED SHEPPARD, Queenston; MR. W. FRASER, Trenton.

NOMINATING COMMITTEE—MR. WM. FLETCHER, Clarkson, Convener; MR. E. F. PALMER, Vineland; MR. L. K. SHOURDS, Wellington; MR. M. WINTERS, Mount Brydges.

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### APPLE SCAB.

PROF. W. H. WHETZEL, ITHACA, N.Y.

(Illustrated by Lantern Slides.)

Apple Scab or Black Spot or Fungus has always been present in the apple orchards in this country since the earliest days, but it is only since we began to make apple growing a big business and began to compete with each other in having fine fruit and an educated public that it became important. Apple scab is a plant, and one of the chief factors in determining whether this plant will make a good crop is the weather, but the weather is not the only factor.

I am going to ask you to use your imagination this afternoon. Where is the apple scab now? I do not suppose any of you think or worry about it; you had enough of it last summer, and you try to forget it all winter. That is where you make the first mistake. The time to think about it is now. I can assure you it has not disappeared from your orchards. The place to look for it at this time of year is on the ground. It is in the old leaves on the ground. It is not in the old apples because the scab on the old apples has all perished by this time. Some of the scab lives on the twigs, but that is of no importance; for all practical purposes this apple scab is on the leaves on the ground. If we look carefully at one of these leaves, we will see little black pimples, sometimes many, sometimes quite scattered, and if we look sharp we will see where the old scab spots were last season. If the scab did not appear on the leaves of your trees, there would not be any in your orchard next year, and yet the average fruit grower does not think the scab on the leaves amounts to much. The apple scab fungus, during the winter, is not on the leaves but inside the leaves. If I took a sharp razor and cut through that leaf and magnified it enough and you could look into the edge of it, you could see inside the leaf a very complicated arrangement. It is a very interesting and very remarkable structure when the leaf is green, and when it is dead it is not so beautiful but still interesting.

In this labyrinth of cells and structures inside this leaf that you cut through, you see a strange body that does not belong on that leaf. That is the house that the fungus lives in during the winter, and from the little nose that stands up on the upper surface of the leaf, you have a good idea of what is in the leaf. There are thousands of these houses in each leaf. Inside each house, there are probably 100 or more little bags, and in each bag there are eight spores—there are always eight—eight in a row. But they are not in there now. What you have are these bags out of which the seeds or spores will be made, but they will be

ripe and ready for business in the spring when the buds begin to open, when the first green begins to appear.

When the fungus gets ripe, the tree is beginning to send out its green leaves in this form. If any of these spores are ripe before that time and are discharged into the air, they float away; if they fall on a bud like that, it does not do any damage because there is no green there. The fungus can only establish itself on some green part of the plant, and therefore, during the many generations that the apple scab plant and the apple tree have lived together, they have come to work together, so to speak. The scab fungus is ripe when the apple tree is sending out its leaves, and that is the first danger point.

But the spores do not come out of their houses until a certain thing happens, and that thing is rain. When the water falls, one of these little bags begins to lengthen and pushes its nose out of that little pimple, and then suddenly the top comes off, and its spores are shot into the air perhaps a quarter of an inch. That is to get them above the leaves. Then a little breeze blows, even the action of the rain dropping will stir up enough breeze to float the spores. If you are in the orchard when these spores are being discharged, you will breathe hundreds of them into your lungs, but you won't get apple scab. But if any of these spores are carried out to a bud in that condition, then something does happen.

The leaves when they first come out of the bud are hairy; the outside of the leaf is exposed; the inside of the leaf covers the blossom in the centre of the bud. During this period some of the spores will lodge in the hairs of these leaves, and in an hour or two begin to germinate, and after five or six hours they send out a long sprout, and that grows among these hairs and finds a place where it can get through the skin of the leaf, and part of that seed goes down that tube underneath the skin of the apple leaf, and the old spore travels up. The old spore is above, but the fungus is safely inside the apple leaf just under the skin. Then the rain passes over, the sun comes out, and everything looks lovely. Sometimes you go out after the rain and spray very thoroughly and energetically. If the fungus could laugh, he would have a good laugh at your expense, because you cannot touch him after he is under the skin of the leaf.

In ten days or two weeks, after the bud is opened up and the leaves expanded, you will find on the inside of the leaves faint brownish spots beginning to form. The fungus has been growing, and it has grown so much that you can see the spot, and if you magnified that spot so you could see it, it would look like roots growing out of the centre with little stalks, and on the end of the stalks there would be another seed, different from those in the bags, because this plant has two kinds of seeds. The seeds in the old leaf on the ground are in bags; the seeds on the stalks are single spores on the end of each stalk. We call them summer spores, and the others are called winter or asco spores.

These spores in the bags do not all get ripe at once. Each bag ripens all its spores at one time, but the other bags ripen at other times, so that one of these fruit bodies would shoot spores for weeks or a month. In this section probably these winter spores are being ripened and shot into the air for six weeks more, or less. If the weather is warm and favourable, they ripen more quickly; if the weather is cold, they do as the apple does, they do not develop rapidly. If it is a rainy season, still there would be spores coming from the old leaves on the ground whenever it rained.

Before we go on with the story, I want to point out two or three practical things. If it is true that these spores are shot from the leaves on the ground, if this is the time when the tree is first exposed to infection, that must be the time to make your first application of fungicide to get control. In New York State we

used to spray at the dormant stage; that was done to control San Jose Scale, but it does not control scab, because in the first place there are no scab spores doing business at that time; and in the second place, if they were, the spray could not hurt them because there is no green that they can attach themselves to. So there is no point in making dormant application. If the weather is dry when the bud is pushed out green like that, and stays dry, the bud will reach that stage, but it won't be in danger from the scab until it rains. Therefore, you have two things to guide you: You have the weather, and you have the stage of the development of the buds. Just as soon as the buds show green, then get one of your eyes on the weather and keep it there.

A MEMBER: How about fogs?

PROF. WHETZEL: Fogs won't wet the leaves enough to make the spores. Just before it rains is the time to make your first application. You make this application not to kill the fungus, because it is not there, but you make it to protect the leaves from the fungus that is coming when it rains. Common sense tells you you must make the application ahead of the rain. This is to protect against diseases of plants caused by fungi that have spores. And the nearer the application is made to the rain, the better. If you can spray your buds this afternoon, and the rain starts to-night, you have done a good job; if you sprayed two days ago, you have lost out a little, because in those two days, the bud has grown, and the base of the bud is not protected. The point is in getting all the green part covered, and the farther you are away from the rain, the more of the leaf surface is going to be unprotected, because it has grown in the meantime.

Lots of men think that the application washes off. If you have done a good job of spraying, there won't be enough washed off to worry about. A good application of fungicide will protect from ten to twenty days no matter how much rain there is. It is the new growths that come on, because in good weather, the buds grow faster, and it is that which requires you to make an extra application.

The first application we called the Delayed Dormant Application, in the State of New York—delayed until after dormant. We find in New York, three years out of five, that is the most important application, because if we protect the parts exposed, then we ought to get a period of sunny weather in which the buds grow until they have reached this stage. It not infrequently happens that one application made there, and one after the buds fall, will give a perfectly clean crop of apples. In a rainy season it won't.

MR. MACCOUN: Do you know how long these spores will stay alive before they germinate on the leaf?

PROF. WHETZEL: Not very long—probably for several days; it would depend on the weather. Most of them that do damage start to grow during the rain period when they were scattered. It is not the single shower that does the work, it is the day or two of rain or moist weather during which the fungus has a good chance to grow.

PROF. CAESAR: That is probably what was meant when the member asked about fogs?

PROF. WHETZEL: That is different again. If you had a rain and then you had a fog or wet weather for a couple of days, that would be fine for the growth of the fungus, but the shooting of the spores would not take place in a fog; you must have rain.

Q.—Supposing these leaves were ploughed under? A.—You can suppose that, but you could not plough them all under. If you could that would be fine. Q.—How about fall ploughing? A.—I do not think fall ploughing is a good

practice. If you could plough early enough in the spring, all that you turned under would be destroyed; the fungus cannot get out of the ground, but the best plougher cannot plough all of them under, and one leaf might have a million spores. You have got to put the fungicide on the trees; there is no other way by which you can escape scab at the present time.

Q.—Could not the leaves be raked up and burned? A.—If a man had a 100-acre orchard, it would be rather expensive. Spraying is the only known way to meet the application.

The next application that ordinarily would be made would be the pink application. But sometimes during the wet season, a good deal of growth occurs between these two sprays, and in ten days or two weeks the blossoms have reached this stage, and if they are not protected, there is going to be scab, so other applications may be necessary depending on the weather. You can make three applications if you want to be sure, and then you might not be sure. You can make an application when the buds are like that, and still have scabby fruit, if you do not do it at the right time. It is not only the stage of the bud, but the weather; keep ahead of the rains and keep the green growing parts protected.

The next application is after the blossoms have opened and the petals have fallen off. That is four applications already: Delayed Dormant, Pink, one that may come before the Pink, called the Pre-Pink, and the Calyx. And how many more applications you may make depends on the weather, and you have got to figure that yourself. If you had a dry spell and practically no rain from the time the buds show green until the calyx fell, you would be safe, but that is a dangerous gamble.

Q.—Would not the development of the spores depend on the temperature? A.—Not much; the spores shoot up when it is rather cold. The fact of the matter is when the temperature is high, you are much more apt to have less scab than in cold weather.

After the spores have come out of the leaves on the ground, you might think your troubles are over, but no matter how well you spray and protect your foliage, you will always have a few leaves that will be missed and that will have an occasional scab. If the weather during July and August, becomes rainy, and particularly if you have done a poor job of spraying in the spring, then you want a later spray, because those spots on the under sides of the leaves will produce thousands of spores, and one rain, when there are ten scabby leaves to a tree may be enough to scab all the fruit or practically all on that tree unless it is also protected, so that you need to make an application when the apples are this size or larger. In fact one season a man said he did not have a scabby apple, and then three weeks before he picked, he got a lot of scab and lost 100% of his crop. It would have paid him to make an application late in the season. Many of our growers, the last of July or the first of August make one or more applications to protect the growing fruit. It is not uncommon to have the infection develop after the fruit is picked; sometimes in storage the apple scab fungus develops.

You say, "I have sprayed my orchard thoroughly and have had clean apples, how does it happen that I get scab the next year?" For the reason pointed out, that you never can protect your trees so well that none of the leaves have scab, and more than that, there are apt to be neglected trees that you did not spray, or leaves from nearby orchards may blow into yours, so there is practically in every orchard, always enough scab fungus in the leaves to supply the necessary spores to start the infection.

You had scab this year, and you are sure to have scab next year. The leaves

are full of it. Probably every man has enough scab in the leaves on the ground to scab his apples for the rest of his life, but you may not have any scab next year, even if you do not spray, but that would be because the weather was unfavourable to these spores at the right time. The modern fruit grower cannot take a chance on not spraying. As a matter of insurance, you have to figure on a minimum of three applications per season.

If I can sell you these two ideas: First, that the weather is the important guide along with the development of the bud, and that it is the new growths that have to be protected constantly ahead of the rain—if I can sell those two ideas and the reasons for them, I will make you more money than anything else I could sell you. These two are the main factors.

In the apple growing section of our State, in ten counties, this year we supplied during the six months of the growing season, from April 1st to October 1st, a special plant doctor whose business it was to go into his county and tell the fruit growers when to spray and what to spray with. These growers paid for this service, and only the men that paid for it got it. The growers who get this service spray when they are told to spray, and with the stuff they are told to spray. Of course, if one man wants one thing and another another, and they are both equally good, we do not make any difference. We have a man who supervises these field men, and we have in addition to that a man detailed at the Weather Bureau with headquarters at Rochester who forecasts the weather for our Spray Service. If it is fifty-fifty whether it will rain or not rain, he prophesies rain; the regular Weather Bureau prophesies no rain. When he sees a rainy period coming from the west or east, two days ahead, he telephones the young fellow in charge in that county. He in turn calls up one man in a dozen different localities, and tells them "To-morrow or the next day is the day to spray, using so and so." Then each man calls up three of his neighbours, and they in turn call three more, so that every man in the service is notified. In a good many counties, the man has to repeat back what he has been told, and he also enters on a card just what was told him, and these cards have to be turned in at the end of the season, so if anybody fell down we would know who it was.

In addition to that, the young man is busy for the next few days travelling through the county seeing that the growers put the right application on, and that they understand how to use it. Our growers are so much sold on the importance of the weather and the difficulty of controlling this disease, that although it costs them from \$1,800 to \$2,000 a year for this service, they pay it not only gladly, but yell for it like children do for a certain patent medicine. It is our trouble to get enough competent young fellows to handle the work. Ten counties were doing it this year, not only for apples, but in some counties they are doing it for the potatoes.

MR. FAIRBAIRN: Tell us a little more about the production of summer spores.

PROF. WHETZEL: When the asco spores, or winter spores from the old leaves on the ground shoot into the air, they are carried to the underside of the leaf when it is like this. They start to grow, but you cannot see any trace of them for several days. By the time the leaves have expanded you begin to see faint greenish-brown spots on the inner side of the leaf. If you look at it carefully, you will see threads running out from the centre, and on these threads just under the skin of the leaf, are little stalks; they begin to push up through the surface of the leaf and on the end of each stalk a little seed spore begins to swell up and grow. The first time it rains it will knock these spores off and wash them down on to the apples and leaves below, falling on the upper surface of the leaf

below. They sprout like the asco spores into the inner surface and form other spores, and you can get many crops of summer spores—every two or three weeks if it rains. But you do not get any more crops of these spores until the next fall. There is one crop of asco spores, and that is in the spring, but there are many crops of summer spores depending on the number of rains you get.

Q.—Spores do not stay on anything but leaves?—that is the winter spores? Are they on the ground? A.—No, only on the leaves. This fungus cannot live on grass or fence posts or on the ground, but only on apples and apple leaves.

Q.—Can they live on wild flowers? A.—Only probably. There is a scab fungus on pears, but it is a different species; you could not take the apple scab and put it on pears or vice versa. Asco spores are not produced until March, April or May, but here is what happens: The roots of the fungus are just under the skin of the leaf all summer; that leaf falls to the ground, and then the fungus can grow into the leaf. During the summer the apple leaf has too much energy to allow the fungus to go deeper than just under the skin, but as soon as that leaf is dead, then the scab goes all through that leaf, and feeds on the dead substance in the leaf and forms these fruit bodies that I told you about.

Q.—If a spore lights on an unprotected leaf, will it develop regardless of weather conditions? A.—No, it will only grow if there is moisture there.

Q.—Then dry weather will kill it? A.—Yes, in time, because it cannot stand many days of dry weather, that is winter spores; summer spores will last a little longer.

Q.—When do you spray for dry weather conditions? A.—I cannot tell you.

Q.—You do not know of any application to put on the dead leaves to kill the spores? A.—If you soaked the leaves with copper sulphate, it would not kill the spores. The water in the solution will go through and get to the spores, but the copper will stay in the walls, and these spores will go right on and develop just the same. Various schemes have been tried, but none have been found very feasible at all.

Q.—Owing to this system established in New York State, what results have been obtained? Are the apple crops better as compared with the crops for years previous to the war? A.—I do not think I can answer in those terms. We began this system during the war; it grew out of the food supply situation for other crops, and then it was adopted for fruit growing work. The only way I can answer is that it has evidently made money for the growers, otherwise they would not continue to support it in increasing large numbers.

We have in some of the counties, Criterion Orchards. We divide the county up into communities or zones, and we have a Criterion Orchard in each zone. This is usually a small orchard, and the grower agrees to treat it exactly as we direct. We take that orchard and compare it with an orchard nearby that was not in the system, but treated hit or miss, and there is always shown a very much higher percentage of control in our Criterion Orchard than in the orchard not in the system. Then we make a comparison with an orchard in the service, and while they don't get as high a percentage as in the Criterion Orchard, it is shown they get a higher percentage than the fellows outside the service. We can easily show a grower it is highly profitable to him to pay his \$5 or \$10 or \$30 or \$40 for the service for the year. I am quite sure, that the apples have been on the average cleaner since this system was inaugurated than they were before, because of course there is much more treatment of apple orchards now than there was five or ten years ago.

Q.—Do you use a high pressure spray? A.—They use all kinds. A good

many men spray with guns now, and all kinds of apparatus. The pressure is 50 lbs. to 200 or 300.

Q.—Would you use a gun? A.—Personally I would not use a gun; I would use a rod and nozzle.

Q.—Supposing it should rain before you got the spray on, would you spray? A.—No.

Q.—Would you spray during the rain? A.—Yes, if the hired man would stand for it; it would be better than not to spray at all. To be sure, it would not have a chance to dry, but at the same time, if it was only a drizzle, it would kill a good many spores. The thing to do is wait until the next clear period has past and another rain coming on, and then spray.

Q.—Do you think the Codling Moth is as injurious as Apple Scab in the State of New York? A.—One or two applications at most will hold the Codling Moth, but I do not think many of our growers worry about the Codling Moth, but they all worry about the Apple Scab.

Q.—Do you recommend lime sulphur? A.—I never recommend anything. I do not care what you use. There are a lot of things you can use. There are two fungicides for Apple Scab, sulphur and copper. You can get sulphur in a variety of forms and copper in a variety of forms. You can use any of these; they can all control Apple Scab if properly applied.

Q.—The fellows who follow your directions—what do you tell them to do? A.—We put out a spray calendar and a dust calendar to our men and they are at liberty to use whichever they want. The important thing they hire these men to do is to tell them when to make the application and to see that they are doing it thoroughly. Of course if a man was going to use Bordeaux mixture we would warn him it was dangerous if he applied it at the Calyx application, because he would almost certainly get russetting fruit; very few of our growers use Bordeaux mixture for that reason. It will control Scab but it will rust the fruit three years out of five with us.

Q.—If you have orchards absolutely under your control, what do you use? A.—Either dust or spray, depending upon what the community at large want used; sometimes we run both.

Q.—What kind of spray? A.—Lime-sulphur in the State of New York.

Q.—What definite mixture do you use? A.—When we use lime-sulphur, 1-40.

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## THE CONTROL OF THE CODLING MOTH.

L. CAESAR, PROVINCIAL ENTOMOLOGIST, O.A.C., GUELPH.

The Codling Moth is more difficult to control all over the province some years than others. This condition is usually due to the weather or other natural factors, which play a large part in determining its abundance, being specially favourable to the insect. When these favourable conditions happen to coincide with a small crop of apples it is difficult to obtain a high percentage of worm-free fruit in any orchards except those in which spraying has been well done for several years previously. In these orchards, with comparatively few exceptions, good results may be obtained even in the most favourable season for the insect. Where, however, the crop is small and the insects have not been kept down to a minimum in previous years it is logical to expect serious injury; for the moths have an instinct to lay their eggs near or upon the fruit; hence, the smaller the number of apples the larger the number of worms that will attack them and

the greater the chance of some of them not being destroyed by the spray and entering the fruit.

But some years, like the last, the Codling Moth is not any more difficult to control than usual in the greater part of the province including the warmer parts like Niagara or the south-western counties which are usually worst infested, while in other parts it is very difficult to secure good control and in spite of the most thorough spraying just after the blossoms fall there will be many sideworms.

This raises the question of why such a difference should be. I do not know whether I have discovered the correct explanation or not, but it is my belief, based on observation, that proximity to cold bodies of water is the determining factor in such a season. I think you will find that it was the orchards which were situated near the Great Lakes, as for instance, Burlington, Oakville, Brighton and Trenton which suffered most this year, while the orchards situated three or four miles back from the lakes were comparatively free from worms. If I am correct in this conjecture the explanation would seem to be this: That in orchards under the influence of the cold breezes from the lake the development of the Codling Moth was much slower than in other orchards, and, what is still more important, the cold retarded the insect more than it did the fruit. So that whereas the regular Codling Moth spray remained on the apples back from the lakes long enough to control the worms, yet near the lakes this spray had nearly all disappeared from the fruit before the worms hatched out from the eggs and began to enter the apples. Now while apples are small they are covered with little hairs or pubescence. This remains on until they are nearly an inch in diameter and where it is present the worms seem nearly all to enter by the calyx end, apparently because these hairs make side entrance difficult. It may be also that the hairs are a great aid in holding poison and thus securing the destruction of the worms. But once the pubescence is off a much larger percentage of the worms try to enter the side and as the poison, though present in the calyx end, will have disappeared from the side, more worms will succeed in entering the apples there.

If the above is a correct view of the case the logical step in localities where cold winds from the south of the lake retard the development of the insect is to give an extra application of spray between three and four weeks after the regular Codling Moth application. This spray will catch most of the first brood larvae as they are preparing to enter the fruit. It is the first brood we must aim to destroy, as its destruction means no trouble from the second brood. There is no other single and helpful suggestion for control than this late application which I can give you. That it will work I have a good deal of proof. I have tried it in a number of cases, and also have observed that when Mr. Ross and myself were studying the Apple Maggot and applied a spray the last week in June or the first week in July we regularly had excellent control of the Codling Moth; and it would be about the end of June or in some districts about the first of July that the extra application I have just mentioned should be given.

If the weather is fine at this date I should use for this spray arsenate of lead and water alone in the proportions of  $1\frac{1}{2}$  pounds of the powder form or 3 pounds of the paste form to 40 gallons of water. In a wet season Bordeaux mixture of the strength of 2 pounds of bluestone and 6 or 8 pounds of hydrated lime to 40 gallons of water could be used along with the arsenate of lead; or for the Bordeaux 1 gallon of lime-sulphur to 50 or even 60 gallons of water might be substituted.

In conclusion let me once more call attention to the fact that the better an orchard is sprayed for Codling Moth one year the easier it will be to secure good control the following year. This cumulative value of spraying is a great encouragement to the doing of good work, and I am of the opinion from what I have observed that it is almost as important towards the control of Apple Scab as of the Codling Moth.

Q.—Is there any evidence of a second brood? A.—Yes, there are in some districts; it is a late first brood. The way to combat that second brood is to knock out the first brood, and to knock it right out I would give that second spray three weeks after your blossoms have fallen.

Q.—Does that require a stronger solution? A.—No.

Q.—Do you think when the weather improves it would be better to wait two weeks after the blossoms have fallen? A.—I would put on one spray immediately after the blossoms have fallen; and I would wait for at least three weeks to finish my spraying.

Q.—You would not delay that spray three weeks on account of scab? A.—No, I am thinking of the Codling Moth.

Q.—Scab and Codling Moth go hand in hand? A.—They do, but you spray definitely for Apple Scab.

Q.—Brown Rot Fungus in the blossoms of the tender fruit is of more importance to us than this? A.—Brown Rot Fungus attacking the blossoms of cherries and plums is very important to some growers, but it is not of much importance to those who are here.

Q.—That is the reason some of us do not come here? A.—I thought it might be better when we get to the fruit meetings at Grimsby and St. Catharines to go into that subject.

Q.—What quantity of arsenate of lead would you use with 40 gallons of water? A.—It would depend to a large extent upon how clean your orchard was. If your orchard has very little Codling Moth and has not any other serious biting insect, I would be inclined to use only one pound, but it never hurts to put in a pound and a half to 40 gallons.

Q.—Does it make any difference how you mix it up? A.—If you are using arsenate of lead paste, you have to mix it up until it looks like milk, but using the powder fill your tank up and start your agitator going and pour it on the top gradually, and it will mix.

Q.—Do the second brood of Codling Moth go through the same stages as the first? A.—Yes, it hides underneath the bark of trees and then comes out as a moth and lays its eggs chiefly on the apples, but some on the leaves, and works into the apple.

Q.—What about the time? A.—In the Niagara District we would get them early. You will find them beginning to lay eggs about the first week in August and they would get into your apple about the end of the month or after the apple has started to grow.

Q.—Do you find the worms eat leaves? A.—No. I have never seen the Codling Moth feed out in the open on the leaf; I have in jars when they had nothing else to live on:

## CASEIN SPREADERS.

WILLIAM A. ROSS, ENTOMOLOGIST, VINELAND STATION, ONTARIO.

It appears to be the opinion of most entomologists that the value of Casein Spreaders is not yet proven.

In our own spraying experiments in graperies last year, the addition of calcium caseinate or kayso to Bordeaux mixture was of no advantage so far as we could see, nor did the addition of kayso increase the efficiency of nicotine sulphate in controlling the grape leaf-hopper. I also saw some graperies which had been sprayed with Bordeaux mixture and kayso and Bordeaux mixture alone, and here again I could see no difference between the two blocks.

In view of the fact that I had had so little experience myself with kayso, I thought it advisable to get the benefits of the experience of other entomologists, so I wrote to several men, and this is what they had to say about it:

PROF. CAESAR, O.A.C.: "As to kayso, after using it twice at Simcoe, once for the pre-blossom spray, and next for Codling Moth spray, it caused on the four rows to which it was applied so many little brown areas that I decided that if I were to give another application the leaves would probably almost all dry out and therefore be destroyed. Trees right along side on which there was no difference in spray mixture, except the absence of kayso, were uninjured. Lime-sulphur and arsenate of lead were the substances used. Later in the season the foliage recovered. Kayso lime-sulphur did not adhere any better so far as I could see than the ordinary lime-sulphur, or at any rate did not give any more lasting effect in warding off late scab. I used 2 pounds to 160 gallons."

PROF. P. J. PARROT, Geneva: "Lime-sulphur alone—2.12% scab, 1.95% Codling Worm. Lime-sulphur and Casein—4.82% scab, 2.05% Codling Worm. Check—88.30% scab, 7.66% Codling Worm."

DR. QUAINANCE, U.S. Bureau of Entomology: "Our experience with Casein Spreaders, including kayso, coincides pretty well with that of other entomologists. They do seem to give a more uniform covering on the plants, but, in the case of apples, especially, we have not noted any increase in the efficiency of the spray in Codling Moth control. On the whole we feel that more work must be done before it can be admitted that Casein Spreaders are of particular advantage."

L. A. STEARNS, Associate, State Entomologist, Virginia: "Conclusions based on experiments conducted with Casein and Flour Paste Spreaders on apples and peaches—(1) Neither of the spreaders used increased the efficiency of the spray solution in protecting the fruit from insects and diseases. (2) The same was true in the case of the foliage. (3) It is doubtful that the addition of a spreader such as Casein would pay for the increased cost of the spray. (4) Nicotine-sulphate, 40%, and Casein (kayso) as used were uncongenial."

A. L. LOVETT, Entomologist, Oregon: "As far as the increased efficiency obtained by the use of a spreader in the poison spray solution is concerned, there is room for reasonable doubt and probably in the hands of a careful manipulator there is little to recommend the use of a spreader. They do, however, assist in overcoming the results of a poorly applied or ill-timed spray application. Spreaders are also of particular merit in combination sprays because of their action in retarding the chemical re-action to more nearly its maximum efficiency. They are likewise of merit in the late cover sprays where the heavy, blotchy spray covering, otherwise obtained, and so decidedly undesirable, may be minimized or eradicated entirely."

All this goes to show that Casein Spreaders are still in the experimental stage. In my opinion no one, at the present time, has any right either to recommend them or to condemn them until further work has been done. Those growers who wish to use kayso or some other Casein Spreader would be well advised to try it out only on a small scale, especially in view of the fact that in Caesar's experiments the kayso-lime sulphur caused burning.

Casein Spreaders may prove to be of considerable value in minimizing the blotchy spray on fruit, and they may prove to be of value in other ways, but I am positive that they will never, to quote from a kayso circular, "make a poor job good." In other words, they will never make up to any extent worth while for the lack of thoroughness in spraying.

Q.—Do you use glue at all? A.—No, we have never tried it.

Q.—It has been tried? A.—They use glue with lime-sulphur in making the wettable sulphur, but I think that will be largely dropped now we have the commercial wettable sulphur.

Q.—What is wettable sulphur made of? A.—It is composed of sulphur, hydrated lime and calcium caseinate—8 pounds sulphur, 4 pounds lime,  $\frac{1}{2}$  pound calcium caseinate, that is the regular formula, and 40 gallons of water. You make it up into a thick paste, using superfine sulphur. I would not advise anyone to make wettable sulphur; I would advise them to buy it already prepared.

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## RASPBERRY DISEASES.

J. F. HOCKEY, DOMINION PLANT LABORATORY, ST. CATHARINES.

In introducing the subject of Raspberry Diseases it is my intention to spend most of my time in a discussion of the two diseases, leaf curl and mosaic. Those of you who are most interested in raspberry culture will have copies of bulletins giving in detail the descriptions and controls for the fungous diseases. There are few of these causing any appreciable loss to the growers at present, except in isolated sections of the country. Practically all the fungous diseases are economically controlled in your general cultural practices of cutting out old fruiting canes as soon after picking as possible. Leaf spot, however, will not succumb to such treatment, but only accepts its fate when thorough applications of Bordeaux mixture are made. This disease caused a heavy defoliation of Marlboro in the London District last season (1922), but in the Niagara district it was unimportant.

**LEAF CURL.** Leaf curl is an old enemy recognized by practically all growers as a disease which renders a bush worthless. You will possibly have in mind a plant with small, dark green curled leaves on the sucker growth and a stiff, staring appearance. The leaves on the old canes bronze during midsummer and are much smaller than those of a normal healthy raspberry plant. They also show curling and wrinkling or puckering along the mid-ribs. The only thing to do with leaf curl plants is to dig them up, root and all (this is essential), and burn them. Or, as one grower chooses to put it, "shoot the horse." A systematic inspection of the patches and eradication of leaf curl plants as early in the spring as the diseased plants can be readily identified is the best means of eliminating the disease from your patches. This has been demonstrated by many growers to be not only practicable but economical as well, as several in the Niagara district have completely controlled the disease by this method.

**MOSAIC.** While the mosaic disease is believed to be of similar causal nature, and is controlled by eradication measures only, still it is a much more

difficult proposition to handle. The disease is wide-spread in Ontario and steadily increasing, and not until the growers become more familiar with the symptoms of mosaic can we hope to achieve its control. A good many of you are familiar with the disease; some have confused it with leaf curl, but that makes little difference as far as the control is concerned.

The leaves of a raspberry plant affected with mosaic have the common symptom of mottling. This mottling consists of irregular light and dark green areas scattered over the leaf. On old leaves the darker areas are slightly raised or puckered; on the young leaves this is not so evident. To be certain of the presence of mosaic on a plant care must be taken to note whether all the leaves above the oldest one showing symptoms, also show mottling. If the youngest leaves show no symptoms be careful before you condemn the plant. This season there were many plantations which during wet spells developed leaves having a more or less mottled appearance, whereas those developing later in the season were quite normal. Conditions of this nature increase the difficulty at first, but after one or two seasons' examination of mosaic plants I feel sure that you will find no difficulty in picking out the majority of diseased plants.

The control of this disease is not as yet 100% efficient. Handle diseased bushes the same way I have outlined for raspberry leaf curl, or as Prof. Caesar encourages you to handle peach yellows and little peach with the additional precaution of getting out as much of the entire root system as possible. Why the entire root system? For this reason, every growth that comes from the roots of a diseased plant is diseased and will always be so, as far as we know. Therefore if you leave pieces of the roots in the ground you are running the risk of those roots giving rise to diseased suckers. That sounds like a rather tedious proposition you may think, but if you follow a systematic method as I will outline I am confident that we can soon put raspberry mosaic in the back-ground.

Commence with the source from which you intend to secure plants for setting out a young plantation. Make sure that those plants are from comparatively disease-free stock. How? Last year the Division of Botany, Ottawa, through the St. Catharines' Laboratory, initiated a "certified disease-free raspberry" service, whereby certain plantations were systematically rogued and the grower given a certificate permitting him to sell his raspberry stock under that recommendation. Many of you received a circular letter giving a list of growers who had such stock for sale. (I will deal with this service more fully later on.) That is one way of getting a good brand of stock. Another way is by your own observation. If you are familiar with the disease, you may be able to pick out one of your own or a neighbouring plantation which has little or no mosaic in it. If so, go ahead and dig your plants. But whatever you do, do not take plants from a plantation which you believe has any considerable amount of mosaic in it. If you do you are inviting trouble, and in all probability will see your mistake when your plantation begins to turn out berries.

We will take it for granted that you have now secured the healthiest stock you could get. What time of the year you plant it depends on your own experience, but from the time those plants begin to grow take a good look at them two or three times during the first season and pull out any diseased ones you may find. No man's work can be perfect in identifying this disease, so it is probable that a few diseased plants have been overlooked when the patch from which you got your stock was being rogued, and you want to get those out as soon as you are sure there are any in your patch. Do not forget to dig out all the roots. It is easy to do the first year and will well repay. Any gaps

caused by the removal of diseased plants may be replanted at any time without fear of soil infection.

The following year look over the patch again and dig out the plants that show mosaic symptoms. There should not be any, but you may find a scattered one or two. Since this will be the year to get a good harvest of young suckers from between the rows it will pay you to make a thorough job of your rogueing. Perhaps you want to start a new patch so that you can take out that old patch that is so full of disease. There is your chance. I see no reason why we should experience much difficulty in having a splendid array of healthy plantations throughout our fruit growing districts in a few years' time if every raspberry grower will do his share.

There is a tendency on the part of some growers to lay the blame on the nurserymen. I think I am correct when I say that over 90% of the raspberry stock planted in commercial plantations has come not from the nurserymen but from your own fellow growers. I know for a fact that in some sections of the district 100% of the plantations are planted with stock either from the growers' own patches or their neighbours'. Charity, they say, begins at home, so don't blame the nurserymen, they may be more careful in their selection of plants than you are.

As for the older fruiting plantations which have mosaic in them it is impossible to set a hard and fast rule. If they are over four or five years I should say let them go until such a time as you can get a new plantation of healthy stock in bearing. Not only is it difficult to eradicate the entire root system of the older plants because of their extensive spread, but it will be three years before you will be able to pick fruit from the plants you have put in to fill the gaps caused by rogueing. If, however, you wish to rogue a few rows in order to secure stock for planting from your own patch you may find it profitable to do so. In any plantation over two years old I would not recommend rogueing where there is more than 5% of the plants affected with mosaic.

**CERTIFIED DISEASE-FREE STOCK.** As I have already mentioned this service I would like to add a few words of explanation. Last year was the first season in which this work has been done, and it is therefore in its experimental stages. The reasons for wanting to procure reliable sources of raspberry stock, especially free from leaf curl and mosaic you will readily see from the previous discussion. Briefly, they may be enumerated as:

1. The inadvisability of attempting to rogue fruiting plantations as a control.
2. The necessity of starting a plantation with healthy stock.
3. The difficulty of securing healthy stock.
4. To these may be added the statement that we have not yet been able to get results from spraying to control the spread of mosaic. Let me say that such experiments are as yet a pure speculation, and may offer no relief, but we are hoping to find some means of keeping a plantation healthy after it is once planted with A1 stock.

The urgent necessity of adopting control measures has been seen by many men not only in Ontario but in New York State where the situation is reported to be considerably more serious than it is here. There is no reason why we should wait until our plantations are in the same category as those across the border when we already have all the available information in our own hands. As it is some of our growers are obtaining from one-third to two-thirds less of a crop from their patches than normally. Such patches have from 40 to 90% mosaic in them now, but it does not take more than a few years at the present rate of spread of this disease to bring the percentage of mosaic from 5 or 10 to

50 or more. And while this is going on you are continuing to dig young plants from a diseased patch and carefully transplant them to a young plantation. In such cases you will find, as I have by actual count, that where you had 2, 5, 7 or 10% mosaic in the old patch you have transplanted actually 5, 10, 15 or 20% diseased plants and in some cases more into your new patch. That surely furnishes sufficient proof of the necessity for care in the selection of your stock.

The inspection service for certified stock necessitates two inspections, and makes it necessary that all diseased plants be rogued in the presence of the inspector. Anyone wishing to sell certified stock is advised to apply to the Dominion Laboratory of Plant Pathology, St. Catharines, before May 1st, so that the patches may be carefully inspected in the spring for leaf curl and the general health and vigour of the plants. Last year it was necessary to discard some of the patches at this time, for we want to get the best available and rather than take some mediocre stuff we will do without. The second inspection comes during the summer, last year directly after picking so as not to hinder caneing operations.

There is no guarantee that this stock will be 100% free from disease. That is not humanly possible. But it is a guarantee that the stock is as healthy as we can get it in one year. Some of the plantations are absolutely free from mosaic, but these happened to be the smallest ones and consequently the available stock was soon used up.

There is a necessity for more sources of Cuthberts. These and the Marlboros are most susceptible to mosaic, and the former are by far the most important commercial berry in Ontario, although I will say that some sections find Marlboro or Herberts best suited to their conditions. But the Cuthbert is "the" berry in the Niagara district, and I see no reason why we should discard it if our endeavours to control these diseases are met with the honest support of the growers.

Let me give you a word or two of caution concerning the purchase of stock. Beware of men who try to sell you "government inspected" stock or "inspected" stock or "certified" stock. All men who have stock certified by our service have a certificate stating so, and it is in your interest to see that he has that certificate. If in doubt, write us. We will tell you by return mail whether or not that stock was certified by us, and also give you a list of growers whom we know have good stock for sale.

This year we hope to get a better supply of healthy raspberry stock than last year. We all realize that the first year's results are more or less experimental, and bring out the defects most emphatically. Last year's results were not quite as good as we had hoped, but I am satisfied that the stock which was sold under our recommendations was vastly superior to the average run of stock in so far as the percentage of diseased plants was concerned.

This service is free for the asking, and if you have a young plantation in good condition that will produce a good crop of suckers or nursery stock, and you are desirous of selling such stock, apply to the Dominion Laboratory of Plant Pathology, St. Catharines, for the use of this service.

Q.—How long is required after you inoculated a plant before symptoms of these two raspberry diseases showed? A.—Pronounced symptoms of leaf curl showed in six weeks; with mosaic I had some that showed in three or four weeks.

Q.—May the diseases be brought on due to neglect of the plants? A.—We have not been able to notice any difference between weakly growing plants and strong, vigorous growing plants as far as susceptibility to disease is concerned.

Q.—What about cane yellows? A.—Common yellows as described in

the disease bulletins is a combination of leaf curl and mosaic. It is the fault of some of our own plant entomologists for the confusion of these two diseases; we are trying to eliminate the word "yellow" as quickly as possible. Cane blight is another; it is one of the hardest fungous diseases to control in a raspberry patch. The only thing is to cut out the cane as soon after the fruit is picked as possible.

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### AMENDMENT TO THE CONSTITUTION.

On motion of G. A. ROBERTSON, seconded by L. K. SHOURDS, an amendment to the Constitution was made to the effect that in districts without local organizations the directors to represent them be elected by the Convention, but that the other sections be asked to elect their own directors at home and forward the names to this association to become the Directors of the Fruit Growers' Association of Ontario.

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### THE FERTILIZERS ACT IN RELATION TO FRUIT GROWERS.

G. S. PEART, CHIEF, FERTILIZER DIVISION, OTTAWA.

Whether the fertilizer user happens to be a fruit grower, a vegetable grower, or the grower of any other kind of agricultural crop, he should understand the main provisions of the law which regulates the sale of fertilizer. The law was made to provide him with protection against fraud, and unless he understands it he will not receive the maximum protection it offers. I wish to stress this point because indications are that a great many users still have an indifferent knowledge of the Fertilizers Act, even though copies of the Act with regulations have been widely distributed in this country. Any fruit grower who has not yet received a copy may secure one by writing the Publications Branch, Department of Agriculture, Ottawa.

The only way to purchase fertilizer to advantage is on its value as shown by its analysis, and the law requires that all fertilizer must be sold subject to its analysis of the plant-foods nitrogen, phosphoric acid and potash. I briefly mention this at this time in order to make a general comment that there are indications that many farmers, fruit growers and others do not possess sufficient knowledge of the chemical terms used in connection with the trade in fertilizer to buy on an analysis basis. We may go further and state that some hardly know the meaning of the terms nitrogen, phosphoric acid and potash, let alone the different chemical forms in which they exist in the different brands of fertilizer on the market, and on which forms depend the value of the fertilizer for the crop and soil on which it is to be applied.

These facts are borne out by the character of correspondence we receive from the public. I shall not go into the question as to the kinds of fertilizer on the market in relation to the character of the crop and soil on which they should be used. This is a subject in itself, and properly belongs to those who direct our fertilizer experiments.

Prof. Harcourt, of the Ontario Agricultural College, Guelph; Mr. E. F. Palmer, of the Vineland Experimental Station, and Dr. Frank T. Shutt, Dominion Chemist, of the Experimental Farm, Ottawa, are all authorities of this phase of the question, and their publications and suggestions on the economic uses of fertilizer are for the asking. The results of their work should be studied, however, before the fruit grower will be in a position to use fertilizer with the greatest profit and buy fertilizer on the basis of analysis.

I should say that the time has come also for the fruit grower and other purchasers of fertilizer to stop leaning on the good-natured agent for information. In many districts the agent is still telling the grower what to buy, rather than the grower choosing the fertilizer he needs, using his own knowledge on the subject as his guide. Under such circumstances, it is commendable of the fertilizer agent that he sells as conscientiously as is the case. The grower who buys in this manner, however, deserves to be bitten sometimes. He may as well buy a pig in a bag with the hope of getting a good pig. If it happens to be tankage it may contain some pig at that.

There only are about one dozen materials commonly used in the manufacture of fertilizer, and three important plant foods, nitrogen, phosphoric acid and potash on which basis the value of these materials is determined. The grower should make it a point to learn all about each of these materials, and the different forms in which nitrogen, phosphoric acid and potash exist in each, then buy or make mixtures accordingly, or buy separately to suit the crop and soil. It is a fascinating study, and should yield big returns to the fruit grower. A few evenings with the bulletins of Prof. Harcourt, Mr. E. F. Palmer, and Dr. F. T. Shutt should provide the necessary information to study.

We shall have advanced another step in the use of fertilizers when all our fertilizer users learn to buy on the basis of analysis rather than on tonnage or brand names.

Other things being equal, a fertilizer containing double the amount of plant food is less costly to the purchaser per plant food unit both in actual money outlay and in handling, for he needs to apply only one-half the amount per acre to get the same results; then again, after he has learned to buy on analysis, he will buy with a definite result in mind after taking into consideration the character of crop and soil on which the fertilizer is to be applied; consequently more likely to achieve profitable results. This will allow him sometimes to dispense with paying good money for one or two plant foods which he may not need to secure the result in mind. This, in turn, will lessen fertilizer costs to the fruit grower in relation to results obtained, and increase his profits from the use of fertilizer.

Now, as to the Fertilizers Act. The present Act is comparatively new. It came into effect last August. When it was being made representatives of the manufacturers, fertilizer users and our agricultural chemists were consulted in committee. Mr. B. Leslie Emslie, of Oakville, represented the Ontario Fruit Growers' Association on the committee, and gave useful service. One main idea was kept in mind when the Act was being made, and that was to insure the purchaser of a fertilizer that the manufacturer or dealer would deliver him a fertilizer of at least the same analysis as that which he had bought. It is believed that the enforcement of the Act, as now constituted, will accomplish this, and that it will be the purchaser's fault, not the Government's, if a purchaser does not receive the protection that the Act affords. If he buys intelligently on the analysis basis he is comparatively sure of receiving it.

In section 2 a fertilizer is defined as a processed manure containing nitrogen, phosphoric acid or potash. It must contain one, two or three of these plant foods. By regulation certain materials are not considered fertilizer under the Act even though they contain plant food. These are barnyard manure and similar rough materials. They must not, however, be offered for sale subject to a guarantee of nitrogen, phosphoric acid or potash content. Then under section 5 the use of the term "fertilizer" is not permitted unless it contains at least twelve units of available plant food. Furthermore, the manufacturer is

not permitted to guarantee the nitrogen of a fertilizer unless there is present at least two per cent. in the case of phosphoric acid, at least five per cent. available phosphoric acid, and in the case of potash at least two per cent. potash soluble in water.

As a result of these provisions the lowest grade complete goods permitted for sale must contain at least two per cent. of nitrogen, eight per cent. of available phosphoric acid, and two per cent. of potash soluble in water. In reality all low grade fertilizer formerly sold is not permitted now for sale under the new law. Thus, the purchaser, whether or not he buys on analysis, is assured of at least twelve units of reasonably available plant food. Section 3 provides that all complete brands and most other kinds of fertilizer offered for sale in this country must first be registered with the Department. There are seven exceptions to this provision, namely, nitrate of soda, sulphate of ammonia, acid phosphate, basic slag, natural rock phosphate, sulphate of potash, and muriate of potash. It will be noted that most of these are materials used in the manufacture of fertilizer. They are only exempt from registration, however, provided they carry a certain percentage of minimum plant food, and are sold in a pure state, otherwise they must be registered. All complete goods must be registered as well as those not mentioned in the list that I have just given. The object of registration is to prevent the use of brand names that would tend to deceive or mislead the purchaser with respect to the analysis or the materials from which the fertilizer is made, and it provides the department which enforces the Act with a check on the guaranteed analysis which the manufacturer is required to state on each bag containing the fertilizer, or on a label attached thereto. Some 220 brands have already been registered under the new Act. Under the old Act there were 2,880. This will give some idea as to how low grade brands and brands which would be simply duplications of others have been reduced by the registration provisions of the present Act. Most of the brands registered so far are complete goods, and if used by the purchaser judiciously should give the result the manufacturer claims for them.

Section 4 of the Act is, of course, the most important from the fruit grower's viewpoint. Under this section the manufacturer or dealer is required to print a statement including the guaranteed analysis of the fertilizer on each bag of fertilizer which he delivers to the purchaser, or the statement may be printed on a label attached to the bag. This gives the purchaser the chance to compare the statement of analysis given by the agent when he bought the fertilizer, with the statement as provided by the manufacturer or dealer when the fertilizer is delivered. The guaranteed analysis as given in this statement by the manufacturer must also be precisely the same as that given in his application for registration of the brand in question. Consequently the Department is in a position to see to it that the statement of analysis is a correct one, and that the brand in question has been registered, therefore permitted for sale.

There are some other features of the provisions of section 4 that should be understood. I will read the section, first.

4. (1) No person shall sell, offer, expose or hold for sale in Canada any fertilizer unless each package containing the fertilizer, or a tag or label durably attached thereto, is branded or marked on one side in printed characters in such form and manner as may be prescribed by regulation with the following information only:

- (a) the name and address of the manufacturer or importer;
- (b) brand name;
- (c) registration number and designation of year of issue;
- (d) guaranteed analysis stating separately in minimum percentages only—
  - (i) water soluble nitrogen;
  - (ii) total nitrogen;

- (iii) available phosphoric acid;
- (iv) total phosphoric acid;
- (v) potash soluble in water;
- (vi) in the case of basic slag or natural rock phosphate or a mixture of both, the fineness thereof;
- (vii) whenever present in the fertilizer, the percentage by weight of leather, hoof, horn, hair, wool-waste, peat, garbage, tankage or any similar organic material, unless it has been treated in such a way as to make the nitrogen or potash or phosphoric acid therein available as determined by methods of analysis to be prescribed by regulation.

(2) Provided that when the fertilizer is sold in bulk and is not contained in packages, the prescribed information before mentioned in this section shall be stated on the invoice of sale.

It will be noted first that the bags or labels containing the printed information prescribed in this section, that is, the name of the manufacturer, brand name, registration number and guaranteed analysis, must not have any other information added to it. Consequently, under guaranteed analysis you may expect to find a statement only of the percentages of water soluble nitrogen, total nitrogen, available phosphoric acid, total phosphoric acid, and potash soluble in water, then, in the case of basic slag or natural rock phosphate, the fineness to which it is ground, or, if leather, hoof, horn or such inert materials form part of the ingredients of the fertilizer, and their nitrogen and phosphoric acid have not been reduced to reasonable availability, the percentages of such materials present must be stated also under guaranteed analysis. Such terms as "nitrogen equivalent to ammonia," "available nitrogen," "nitrogen as nitrate," "organic nitrogen" and the like are not permitted to be given in this statement of analysis. I wish to impress on you that only two forms of nitrogen may be given, namely, the percentage by weight of water soluble nitrogen and total nitrogen. You may find that when deliveries of fertilizer are made to you this spring, that water soluble nitrogen is omitted in the analysis. The percentage of total nitrogen alone is stated. When such is the case you may assume that there is little, if any, water soluble nitrogen present in the fertilizer, otherwise the manufacturer would have stated it; for, other things being equal, the water soluble nitrogen has greater commercial value than forms of nitrogen which are not soluble in water. Three forms of nitrogen chiefly comprise the water soluble group, and they are all considered to be reasonably available, with the nitrate form most available; then the ammoniacal and organic. The fruit grower should ascertain from the agent in which form the water soluble nitrogen is present in the fertilizer, and what percentage of the total nitrogen is water soluble. The phosphoric acid which must be stated in the analysis on the label is confined to two forms, the percentage of available phosphoric acid and the total.

To state it in any other manner is a violation of section 4 of the Act. In former days it has been stated as phosphate of lime, phosphate and phosphorus, but no longer does the law permit the public to be confused by the use of more than two terms, namely, available and total phosphoric acid, and the percentage of phosphoric stated must be based on phosphoric anhydride ( $P_2O_5$ ), as in the case of nitrogen, when the percentage of available phosphoric acid is not given, but the total only, it infers that there is little, if any, available  $P_2O_5$  present. The potash must be given in every case as potassium oxide ( $K_2O$ ) soluble in water. The terms "actual potash," "potash as muriate" and the like, which were once used, are no longer permitted.

If it is basic slag or natural rock phosphate which you have purchased, it must be labelled in addition to its phosphoric acid content, with the percentage of fineness to which it is ground. It should be ground to at least 80% fineness to give the best results, and the fineness means the percentage which will pass through a sieve containing 10,000 openings of equal size per square inch. These

are the main features of section 4, and you should find it interesting to check its provisions with the statement of analysis which comes on the label attached to bags of fertilizer which you buy this year.

Another provision of the Act which protects the purchaser of fertilizer is one that prohibits the manufacturer from using fertilizer materials which contain sufficient poisonous constituents that would poison plant life when applied to the soil. This applies particularly to anhydrous borax, which is sometimes found in potash; and in cyanamide which when used too freely in complete goods or alone injures the germination of seeds.

I want to tell you something about the machinery employed by the Government to enforce the Fertilizers Act. We recognize first of all that the public interested in this law are the greatest factor in its enforcement. To protect the public our inspectors must have their best co-operation and support. The purchasing public of fertilizers is asked to apply for the services of Seed Branch inspectors who enforce the Fertilizers Act, and official analysts appointed under the Act, whenever it feels that the manufacturer has delivered fertilizer contrary to the provisions of the Act. A staff of official analysts and inspectors are provided by the Department throughout Canada, and the purchaser of a fertilizer may at any time take an official sample of a fertilizer and submit it to an official analyst, and receive in return a certificate of analysis which is accepted as evidence before a court; or, he may ask the inspector of his district to take an official sample of the fertilizer in order to check the veracity of the manufacturer's statement of analysis. We expect, however, that the purchaser in question will not ask this service from an inspector unless he has reason to believe the law has been violated; otherwise the cost of the service involved would be beyond reason. The following official analysts have been appointed under the Fertilizers Act in Ontario, and will receive samples for analysis at any time: Joslyn Rogers, Department of Chemistry, Toronto University; Prof. R. Harcourt, Ontario Agricultural College, Guelph; Prof. A. C. Neish, Queen's University, Kingston; and the Chief Analyst, Department of Health Laboratory, Ottawa. The analysts charge a fee of five dollars for each sample analyzed.

For inspection purposes the Province of Ontario is divided into two districts, the Eastern and Western. Roughly speaking the divisional line is the Grand Trunk Railway between Toronto and Sault Ste. Marie. In each district a district inspector is in charge of all the inspection work conducted therein. Mr. W. J. W. Lennox is the District Inspector for Western Ontario, with headquarters at 36 Adelaide Street East, Toronto, while Mr. T. G. Raynor, with headquarters at the Seed Branch, Ottawa, is the District Inspector for Eastern Ontario. I am sure that both these officers will be glad at any time to investigate and take the necessary action when notified by growers who have purchased fertilizer that they have reason to believe that the fertilizer delivered them does not comply with the provisions of the Act.

Q.—What do you mean by low grade? A.—Under the present Act the lowest grade fertilizer is 2-8-2; 2% nitrogen, 8% phosphoric acid, 2% potash soluble in water. That is not actually a low grade fertilizer when we compare it with fertilizers which were absolutely low grade and which were prepared to be sold under the old Act, but this is the lowest grade that may be operative under the present Act.

Q.—What preparation would you recommend? A.—Of course it would depend on the purpose for which it is used. I would say a high grade for potatoes on sandy land, 4-10-8.

Q.—What about clay soil? A.—On clay soil I would reduce the potash

and make it 4-10-4. I did not intend to go into that phase of it but that is my own personal opinion.

Q.—That would be phosphoric acid and potash? A.—Four per cent. nitrogen, not ammonia. We have had considerable trouble with some manufacturers during the past two weeks concerning the use of ammonia in the sale of fertilizers. Under the Act as it now stands the term "ammonia" must not be used in the statement of analysis which is supplied to the purchaser when the fertilizer is delivered. Some manufacturers have seen fit to use it in their advertising matter, knowing perfectly well that they could not use it when they delivered the fertilizer, and we believe it gave a wrong impression to the public because ammonia relativity to nitrogen is 17 as to 14 and it gives the impression that there is a larger percentage there than there actually is.

Q.—As a usual thing what is the soil most lacking in of these three? A.—Of course the one that is most likely to pass out is nitrogen.

Q.—Can bonemeal be used? A.—Bonemeal can be offered provided the available phosphoric acid content is high enough to insure 12%, but if the bonemeal contains 1% of nitrogen only, the manufacturer, under the law, would not be permitted to guarantee it.

Nitrate of soda must contain at least 15% of nitrogen to be sold without registration; if it contains 14% it must be registered. That same principle applies to nitrate of soda, sulphate of ammonia, acid phosphate, basic slag, natural rock phosphate, sulphate of potash, and muriate of potash. All other fertilizers must be registered.

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## THE GRADING AND PACKING OF OUR FRUITS.

R. W. REES, ROCHESTER, N.Y.

I want to say a few words first in regard to my personal impressions of your fruit show. One of the things which struck me at first was the size and extent of the show. For your first year's show I think you certainly had a wonderful lot of entries, indicating a good strong industry, and I am sure the visitor could not help but be impressed with the importance of the fruit industry in Canada. The next thing of importance was the fine quality, running as high as it did throughout the show; the quality was good as shows go, and for the most part excellent.

If I were to criticize the quality, it would be on the matter of condition. There were some lots in the show that were not in very prime condition either for exhibition or commercial purposes. That was due partly to seasonal conditions perhaps, to transportation conditions and possibly some others. That was more particularly true with exhibits from a distance than those from Ontario. This fruit had been held in common storage rather than cold storage. So condition, I think, is one of the things which might be improved.

In the matter of freedom from blemish the fruit as a whole ran very clean so far as fungus diseases or insect injuries were concerned. In some classes, the Baldwins particularly, there was a little russetting and a little bit higher percentage of fruit which was not quite up to standard on finish.

Colour, I think, for the most part was excellent. There were, of course, some individual cases where it was not up to the mark, but it was really surprising to me in going over the varieties to find the colour standard as high as it was. It was really very fine.

Another matter which impressed me was the list of varieties in box classes—

the fact that practically everything was of commercial value. In a great many shows you will find a much wider range of varieties than you had in this show, and a number of prizes for the other varieties which should not be encouraged. I think if there is one fault with our commercial apple industry, it is too many varieties, and I believe it is a function of your Winter Fair to encourage only varieties which are of commercial value in the Dominion, or new varieties of very promising commercial character, but there are a number of old varieties which have lost their place commercially that certainly should not be fostered, and I was glad to see the stand which the management had taken on this subject. They had a very much better list of varieties than one ordinarily finds in a show of that type.

I believe that your exhibitors were of varying degrees of experience. You had exhibits packed by some men who had had a considerable amount of experience in packing for exhibition purposes; you also had exhibits packed by men who were putting up their first exhibition packs. A man learns considerable about exhibits by going through the mill a few times, not only in the selection of the quality of fruit, but also in the packing. I want to say one word to the new exhibitors in regard to the selection of fruit for exhibition. It begins with growing the right kind of fruit for exhibition purposes. In the single box classes and for sweepstake boxes, it is very important to make a careful selection of fruit. Most of you know certain trees in your orchard which year after year give you a better formed, better coloured and finer textured fruit than the general run of trees of that same variety. In almost every orchard there are some trees which grow better exhibition apples than others, and for the single box classes and sweepstakes, we have to pick out early in the growing season the tree or trees from which we are going to get that fruit; see that that fruit is properly thinned so that it has a chance to colour well all around, and a chance for good development. In that thinning you will also do a considerable amount of culling because you will be removing defective fruits, and your best fruit will have a chance to develop up to its highest degree of perfection. Along with thinning, of course, comes the matter of proper spraying. I do not want to go into that broad subject, but in getting ready for a show begin in the orchard; grow the right stuff and you won't have very much trouble in putting out a high quality pack.

When it comes to the matter of packing for exhibition purposes it is important first to note the type of pack which is most desirable for certain sized apples. There were this year in the show some apples which were packed in three-two, where they were too large to pack properly in a three-two style of pack. They would have packed in two-two packs and have made a much more attractive package. It is rather hard to go into a discussion of packing here from the standpoint of sizes and styles; it is a matter upon which you can get information from your various inspectors, but the matter of proper style for proper sizes is one worth considering in the show.

It is always important to have a tight pack, that is a pack about as tight as you can get it without bruising. There are some tight packs which are due to a little lack of uniformity in size and colour, and the irregularity in the swell or bulge does not look attractive at all at a distance. You want to get a smooth, even, attractive, tight pack, and when you have that backed up by high quality stuff you stand a pretty good chance of coming into the money.

Another thing which I think goes without saying in an exhibition where you have as close competition as you had in this show, that it does not help very much to put the best apples on top of the package, because most of the boxes

are going to be seen pretty well to the bottom of the pack, and it is necessary to use good quality fruit from the bottom to the top. This year in going through several hundred boxes we found very little attempt at misrepresentation by over-facing, and in most of the cases where we did there were very few in number, and they were from exhibitors who had not had much experience in exhibition work. There were no cases of bad over-facing.

I believe the management of the show have it in mind that another year it will be a good idea in the permanent list to print a score card for plates and another for boxes by which that fruit is to be judged, showing the relative value in box work that will be placed on the fruit itself, taking into consideration such points as colour, size, freedom from blemish, condition, and the packing of that fruit. And I think in connection with that, a list can be made up as to what is the most desirable exhibition size for the different varieties. This would be of great value both to the exhibitor and to the judge; the exhibitor knows what is the ideal size, and the main points to be considered in judging the fruit, and it gives him a chance to work with some definite object in mind. It also gives the judge a chance to have a definite standard and measure all exhibits by that standard. Judging is pretty largely a matter of individual opinion. When a judge goes in he has his own idea of about what the ideal size for a variety is, its colour requirements and how much relative weight he should give to size and colour and freedom from blemish and condition and all of these things. The next year there may be another judge who is just as good a judge in every respect, but his personal opinion of the relative values is different, and it might throw decisions quite a little distance. The only way that can be unified and standardized is by a definite set of rules which will be followed whoever is doing the judging.

I have noticed that more particularly in the matter of size, particularly on plate displays. Take a variety like the McIntosh, which is primarily a dessert apple, one judge may judge that from the standpoint of high quality dessert apple where he wants very small, fine textured and high coloured and very smooth finish. Another judge may look at the McIntosh, and if he comes from the States he would think of it as an apple wanted on the markets of Boston or New York which ask for a comparatively large McIntosh, and he bases his whole judgment of size on the special demands of certain markets than on the general demand. Those are some of the things I want to leave with you for consideration on this subject.

Q.—Do you find judges vary greatly on their preference as to the style of pack? A.—There is quite a little variation, I think, among certain judges. In the three-two style of pack some sizes and some varieties pack up very much more readily on end with the stem end up than with the cheek up, and that is a question which has very often arisen in judging. This last season the judges were instructed not to differentiate on those two styles but give them equal value. That is a matter which should be made public to exhibitors before they place their exhibits, whether there is a preference for one style or the other.

Q.—What does the market say about these different styles of packs? A.—The market does not say a great deal on that subject. It is not as critical of the style of pack as whether or not that pack will carry through in good condition. A large proportion of the boxed apples are sold out of the boxes rather than the entire box to one customer. In a great many cases the purchaser does not see the box at all.

Q.—In your judgment which style of pack will carry best to long distant markets? A.—That is a little bit difficult to answer, but I would say for the

flat varieties like the Golden Russet, and our rather round varieties like the Baldwin, they will go on stem end in very good shape. The long-shaped varieties such as the Spitzenbergs will go on cheek better. It is a matter of shape of apple.

Q.—What relative value do you give fruit and pack? A.—In a general way they are putting about 60% on fruit and 40% on pack.

Q.—What are the qualities of the fruit itself that are considered? A.—There is colour, size, freedom from blemish, condition; then in some cases they use a separate score for uniformity. Personally I prefer not to have uniformity put on the score card, but to score that under the various headings of uniformity of colour, uniformity of size, etc.

Q.—Does condition include texture and finish? A.—Condition really would take into consideration, primarily the degree of ripeness or immaturity.

Q.—Then you give nothing for texture? A.—Texture is put in on a good many score cards. Texture and quality are sometimes put in on a score card, and they are real points in close decisions which are well worth while. I, however, often consider finish in connection with colour.

Q.—Then the next question is the relative value of these; put them in percentages? A.—If I had known that question was coming I would have figured that out in advance. Colour about 20%; size 15%; freedom from blemishes around 25%. Condition 20% to 25%. Whatever you have left would go under the head of texture, about 15%. I might revise that a little bit if I were to look it over and balance these up, but off-hand that would be somewhat approximate it.

Q.—That is 100% for quality? A.—Yes.

Q.—40% pack and 60% for quality, you would have to change the percentage? A.—Yes. In the case of the New England Show, they score on a basis of 1,000 points, and put 600 points on fruit and 400 on pack; it breaks away from any fractions.

Q.—In commercial graders, what do you prefer? A.—In my work with the Western New York Fruit Growers, who are operating a string of 40 packing houses through Western New York, in the last three years we have tried out quite a number of sizers of various kinds. All of our apples are sized in quarter-inch sizes— $2\frac{1}{4}$ ,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$  and 3 inches. As to what is the best sizer is a problem that is entirely unsolved. We have not found any one yet entirely satisfactory.

The speaker then described a number of fruit grading machines in use in packing-houses.

When we first packed barrels in sizes, the trade was not prepared for it, but we have built up a very nice trade and go to two or three of the large chain stores which we can count on for two or three cars a week during the season. They insist that the  $2\frac{3}{4}$  inch and 3 inch sizes be separated. Generally when a woman comes in to do her marketing, she picks out her apples herself; she does not leave that to the clerk, and if you have  $2\frac{3}{4}$  inch and 3 inch apples in the same barrel, she picks out the three inch apples, and she paws around in the barrel to make sure there is nothing larger, and the damage to the fruit is quite material where they are raked over for every 25c. worth of apples. This year we put some  $2\frac{3}{4}$  inch and 3 inch fruit in the same barrel, and the chain store would not give us within 50c. a barrel as much as they would for a carload packed 50% of  $2\frac{3}{4}$  apples and 50% 3 inch apples, but in separate barrels.

Q.—Are the sizes packed mostly in barrels or boxes? A.—Our packing is

entirely in round bushel baskets and in barrels. We have not gone into the box pack at all in our Association.

Q.—Do you find any bruising in the hampers? A.—We do get some bruising in the hampers. We use these primarily on Duchess and the early varieties; they are shipped out in car lots.

Q.—Not for long distances? A.—Yes, as far as Chicago, St. Louis, New York, Philadelphia. They pack within one layer of the top; then a cone-shaped top put down so as to give a good foundation.

Q.—A year or so ago your markets established a standard which they submitted to the Federal Government; was that passed on at all? A.—Never was passed on.

Q.—Your number of grades are confusing? A.—Yes, on our statute we have Fancy, A, B, C and Unclassified. The grades which most dealers are packing in Western New York are A and unclassified. The grades which the associations are packing are A and B: C grade is not used at all.

Q.—You handle the bushel package much faster than the box? A.—We handle that package much faster than the box pack.

Q.—Three bushels cost more than a barrel? A.—Bushels and barrels usually run very close together on price. You will buy bushels anywhere from \$1.40 to \$1.85 a dozen.

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### TRANSPORTATION RATES.

GEO. E. MCINTOSH, FRUIT COMMISSIONER, OTTAWA.

I am going to ask the Chairman's permission to divide my time with Major Wheeler who is now our Transportation Specialist. I will only take a few moments in an introductory talk. The subject which has been allotted to me, Transportation Rates, is one which is receiving very wide attention throughout Canada, one which is attracting attention by almost every industry, and therefore, in order to talk in regard to it intelligently, it requires a very careful analysis of tariffs and regulations. It has been my privilege to go into the matter with Major Wheeler who has been recently appointed to the position of Freight Transportation Specialist for Canada; he has been attending your sessions and has been in conference with the gentlemen of the Transportation Committee of the Ontario Fruit Growers' Association and the Niagara Peninsula Fruit Growers' Association, and for this reason and because that committee will meet at noon, I ask the Chairman for the privilege of permitting Major Wheeler to present to the meeting in the way of a paper our opinion after having given the matter very careful consideration.

It has always been my policy since taking on transportation work on behalf of the fruit interests some 15 years ago, to endeavour to conduct that work fairly at all times with the railway and express companies, realizing that they had arguments just the same as we had arguments as fruit growers. That policy, I believe you will admit, has been fairly satisfactory. We have obtained in many instances concessions which have been of great benefit to the industry, and we have obtained those concessions by close co-operation with the carrying companies rather than by appeals to the Board of Railway Commissioners. That policy, I believe, is in the best interests of the fruit industry of Canada to-day.

As to the question of rates, the receipts of the railways have advanced 40%, the operating expenses of the railways have advanced 68%; the gross earnings

per mile of road have advanced 36%. In 1917, it cost a railway \$71.71 to earn \$100; in 1921, it cost \$92.30 to earn \$100; in 1922, the tide had turned, and it cost the railways \$89.30 to earn \$100. Now, the point simmers down to this; that from a transportation standpoint, that is the situation, and when that condition exists, you cannot reasonable expect that there is going to be a general revision downward on freight rates. When I say general revision I mean by one order of the Railway Commissioners, it would not be in the interests of Canada and it would not be in the interests of the fruit growing industry of Canada for this general fall of rate. If the transportation companies are not successful, the fruit industry cannot be successful. I doubt if there are any two industries more closely allied than the fruit industry and the transportation industry. Injure one and you injure the other, and I believe from the many conferences I have had with the railway officials that they appreciate that fact too.

In the last few years we have found a desire on the part of railway officials to confer, to obtain information and to do everything reasonably possible to assist the fruit growers.

When I say we cannot expect a general revision of rates, I do believe, however, that there are certain industries where consideration must be given, certain industries which are not in a prosperous condition, and which are being injured by the excessive railway rates. In such cases, I believe the railway officials will be prepared to receive a delegation and hear the facts and give a decision just as was done in the case of live stock, and in the case of potatoes. I believe from that standpoint that we as fruit growers are justified at the present time in going before the railway officials. I find that railway rates to-day from Ontario shipping points are 82.5% higher than they were in 1917. The situation is somewhat different in British Columbia, but I am not going to take up time now in referring to them.

In 1917, the wholesale price of Canadian fruits as a whole was 31% higher than in 1915; in 1919, 46% lower; in 1921, 38% lower. In other words, the price of fruit has fallen to 38% lower than it was in 1915, and carrying charges have advanced 82.5%. That is the situation and while that situation exists, from the standpoint of assistance to an industry that represents what the fruit industry represents to Canada—roughly I think around \$150,000,000 have been invested—from that standpoint, I believe there is a sound reasonable case for approaching the Railway officials.

I do not think it is advisable to rush immediately before the Board of Railway Commissioners. My advice, briefly, would be to go into this matter carefully with Maj. Wheeler along with your committee and consider also the interests of other producing provinces, and arrange for an interview with the railway officials and discuss the matter in that way.

I want to refer to the condition of tender fruits in the Niagara Peninsula during the last season. In a co-operative way, arrangements were made whereby particular attention was given to the handling of fruits from the Niagara Peninsula. The result was approximately 5,000 cars of fruit moved out of that territory by freight, for the first time in the many years of my experience, and not one complaint came to Ottawa because of the shortage of cars, because of improper icing conditions or because of extreme delays in transit to the Western Provinces. I believe, Mr. Chairman, that the officials of these railways are to be commended and in this one instance they are deserving of a resolution of thanks. While we sat around these meetings and heard these matters discussed, we did not realize just what it meant to handle 147 carloads of tender fruit in one day

by refrigerator cars in that territory by one railway. We do not realize what it means to assemble cars; we do not realize what it means to supply 300 cars to a foreign railway in order to take care of our shipments, and that is what happened in that territory last season. (Applause)

The arrangements under which your fruit was handled in the Niagara District, were the nearest to perfection that we have yet had in Canada. In the past with the different types of refrigerator cars, we found it was almost impossible to handle successfully from Ontario, heavy producing sections, car-load shipments which would reach any distant market in proper condition, for the reason that cars had to be iced at a distant point—sometimes Toronto, sometimes Hamilton—then taken into the territory to be loaded, and if the train was late, they never got back into Hamilton for re-icing, and the fruit went into the markets absolutely ruined and before getting very far from the shipping point. It was my privilege to take that matter up with the representatives of the railways and by co-operation there was established in that district last year, an ice-manufacturing plant, and everyone of the cars nearly was iced before it was placed, and re-iced before it left the territory, and for that reason your fruit arrived in the markets in a much better condition.

In regard to express rates, they have advanced 20% on fruit over pre-war conditions. Express rates on first-class merchandise have advanced 57 or 59 per cent. so that consideration has been given to the fruit interests. By way of comparison I might refer you to Saunders, New York, which is not very far from Niagara Falls; there the rates are \$1.51, and in carloads \$1.23, for a distance of 437 miles; while from St. Catharines, a typical point in the Niagara District, to Montreal, a distance of 407 miles, they were 95c. That shows the condition of your express rates as compared with the express rates from shipping points in New York State.

There are one or two matters that I would like placed before the meeting. As you are aware, there was a fruit conference held last year. At that conference, there were many recommendations passed regarding the amendments to the Fruit Marks Act. In accordance with these recommendations, and in view of the fact that the Fruit Marks Act and Part 9 of the Inspection and Sales Act had many amendments to it, it was thought advisable to bring down a new act consolidated, as it were. That Act has been before Parliament this session, and it has had its second reading. Within the past few days I had advice from Nova Scotia that a resolution was passed at the Nova Scotia Fruit Growers' Association recommending that the domestic grade should read "90% free from worm holes," instead of 80% free from worm holes. The New Brunswick Association have also expressed themselves as being favourable to some improvement being made in that regard. I want to leave that thought before you, and if this meeting feels like following along the same lines, I would appreciate an expression of it, because as I said before the bill has now had its second reading and will be printed almost any day, and for that reason I would like to know how the Ontario Fruit Growers' feel about it.

I wish to take this opportunity to congratulate the Ontario Growers' who participated in supplying fruit for the Imperial Show, and to congratulate them also on their success at the Winter Fair in Toronto. The fruit exhibit by the Province of Ontario was an outstanding feature at the Imperial Show; Ontario was the only Province to attempt an exhibit of that kind there this year. Advice reached me just yesterday that a slight change has been made in that the dates for the show for the coming year have been fixed for October 26th to November 3rd. I sincerely hope that Ontario will again be well represented there.

In closing I want to impress upon you, as a last thought, the necessity of close co-operation in the matter of transportation. I still feel that transportation is one of the big things to be considered in advancing the interests of the fruit growers of Canada. I have just returned from British Columbia, and I have been greatly impressed with the contention of their fruit growers that there has got to be co-operation, when I refer to this co-operation, I am not criticizing private interests, because we need some of them as well, but nobody who has been in British Columbia and has seen the conditions could help but be impressed with the absolute necessity for strong co-operation among the fruit growers, not only of that Province but of Canada as a whole.

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### SUGGESTIONS FOR DISCUSSION OF FREIGHT RATES ON FRUITS AND VEGETABLES.

MAJOR R. L. WHEELER, FRUIT TRANSPORTATION SPECIALIST, FRUIT BRANCH, OTTAWA.

In early war years when the railways sought increases in rates, they contended that rates should be based on what the respective commodities would bear, considered together with cost of service. They showed that increases in wages and material costs were increasing their operating expenses, and pointed out that general increases in prices made it easily possible for traffic to bear higher freight rates.

The spokesmen of the shippers almost unanimously repudiated and denounced the theory that rates should be based on what the traffic would bear, and that increase in prices afforded any justification for advancing the rates. They contended that rates should be based almost entirely on the cost of rendering transportation service. They contended that all a railway was entitled to earn was enough to pay its operating expenses and taxes and a fair return upon its valuation, and that as long as it did this it had no legal or moral right to complain if its rates were not advanced when prices increased. On this basis the railways were denied any share in the general increases of the first war years, until when they obtained their first advance in the spring of 1917, the average wholesale price of all commodities had risen to 76 per cent. higher than 1913 prices. From 1917 onward the principle of basing rates on the cost of the service was strictly applied, and both railway rates and wholesale prices advanced rapidly, but not necessarily in step.

Following the 40 per cent. advance of 1920 came a rapid decline in prices, but not in railway operating costs, since there had been no downward revision in wages. The spokesmen of the shippers then reversed their attitude, claiming that the decline in prices, not being accompanied by any reduction in freight rates, had made the rates on many commodities relatively much higher than prices. They took the position, which was exactly the opposite of that which they had maintained for years, that the rates should be based on what the traffic would bear.

I have reviewed this situation to you because it has a close relation to your present attitude towards freight rates. If you decide to seek a reduction in the freight rates under which fruit and vegetables move let your application be free of any such inconsistency as I have outlined. If you openly ask the railways to handle your product at rates lower than operating costs plus their legitimate profit you are virtually admitting them to an interest in your profits.

Let us consider the causes of low prices to the producer of fruit and vege-

tables in the past season. Is it not the case that for a certain period each product found a wholesale price that represented a profit to producer and jobber after railway rates were paid? That was the period when the demand at least equalled the supply, or in other words when the supply controlled the market price. At that time the railway proportion was not unfair; I will venture to say that in the early marketing period of any season the wholesale price could "reasonably bear" a higher freight rate. Later there comes a time when the producer overloads every available market, in some seasons worse than others because weather conditions ripen the bulk of your crop within a week, then overloaded markets create a condition where railway rates are an unfair proportion of wholesale prices. I think though, that is a state of affairs from which you must excuse the railways any responsibility, since they may point out to you the possibility of so regulating the flow of your products to the markets that railway charges will never be an unfair proportion of wholesale prices. Just now we are discussing transportation, but I know you have under consideration every possibility for regulating the movement of your products as they ripen—dehydrating, canning and jam-making, together with pre-cooling and developing of new markets.

There is still a feature of the railway rates question well worth your consideration, and that is to ascertain if you can claim unreasonableness or discrimination in your rates as compared to other fruit-growing areas of Canada. You will notice that with a net increase in western class rates of 50 per cent. the commodity tariff under which British Columbia fruit and vegetables move to Vancouver market shows an average increase of only 45 per cent., and from various British Columbia points to various prairie points shows an increase of only 40 per cent., though the increase in third, fourth and fifth class rates to Winnipeg and Moose Jaw is exactly 50 per cent. On the other hand the purely eastern rates shown in a representative table of increases shows an increase of 82.5 per cent., though the increase in class tariffs is only 80 per cent. The lowest effective rate for Ontario fruit and vegetables is a specific commodity rate to Winnipeg, Portage and Brandon, which shows an increase of only 61 per cent. This rate became effective through an order of the Board of Railway Commissioners, and is one with which the railways are far from satisfied. The percentage of increase, lake and rail, on apples to Winnipeg is 72 per cent., dividing the above-mentioned 61 per cent. increase, and the 82.5 per cent. increase in purely eastern rates. The essence of all this is that fruit and vegetables in British Columbia are slightly favoured in their commodity tariff in comparison with class tariffs and the general increase, but this is evidently not the case in Ontario, where practically without exception fruit and vegetables move under class tariffs. I am sure though that if railway traffic officials are asked to explain this they will detail the construction of western rates on fruit and vegetables, and explain that the British Columbia product must be hauled a considerable distance to its markets, either to British Columbia or prairie points, while Ontario producing areas are in and adjacent to a more densely populated province and large markets. For some such reason it will be explained that British Columbia fruit and vegetables have always been favoured with commodity tariffs.

Presumably you are familiar with the evolution of rates that produced an increase of 80 per cent. in the east, but only 50 per cent. in the west. The first general increase of 15 per cent. in March 1918, worked a hardship on western producers, since there was no similar increase in the Western States, and our western producers were suffering in competition. Therefore, the 25 per cent.

increase in August the same year was additional in the east, but inclusive of the earlier increase in the west. Then from August 1918, to September 1920, western rates were only 25 per cent. advanced, while eastern rates were  $43\frac{3}{4}$  per cent. advanced, developing with subsequent adjustments into the present 50 per cent. and 80 per cent. advances respectively.

One word about express rates. I am leaving with your Transportation Committee copies of all rate tables I have referred to, including tables of representative express rates which show that the average increase both east and west is almost exactly 20 per cent.

Following is a summary of a table of statistics other than those of freight rates:

Average freight receipts for Canadian railways, comparing 1922 with 1917, have advanced 40%; operating expenses per mile of road have advanced 68%; gross earnings per mile of road have advanced 36%; operating ratio advanced 25%, or in other words where in 1917, \$100.00 operating revenue was earned with \$71.70 operating expenses, in 1922 it took \$89.30, though 1921 was \$92.30 and 1920, \$97.20. Into this table are inserted Canadian Pacific figures separately, it being conceded at various sittings of the Board of Railway Commissioners that they exemplify the greatest economy in Canadian railroading to-day, but they make practically no change other than in the lower operating ratio.

Another table shows that, comparing 1921 with 1917, salaries and wages advanced 91% on railways; locomotive fuel advanced 76% and railway ties advanced 99%. Operating expenses per mile of road were 84% higher in 1921 and in 1917.

One table of statistics from the Report of the Commission of Agricultural Enquiry, U.S.A., gives a subdivision of the wholesale prices of fruits and vegetables at principal eastern markets. This shows that the shipper received 59.64%; transportation, including 3% government transportation tax, 32.79%; miscellaneous handling costs 4.43%, and receiving distributors' gross profit 3.17%. This covers 6,237 cars over distances 400 to 3,000 miles.

I think the most interesting statistics are the wholesale prices of commodities with fruit and vegetables in detail, from December 1913 to 1922, as compiled for the Canadian Labour Gazette. These show that, compared with 1913, native fresh fruits advanced 33%, but foreign fruits advanced 125% and dried fruits advanced 92%; fresh vegetables dropped 16%, but canned vegetables advanced 53% over the same period. These figures are followed by tables giving the 1922 percentages of 1913 prices for each month from May to December. Dried fruits show an enviable stability, climbing slowly from 210.4% of 1890-1899 average, or 187.5% of 1913 prices in May to 224.5% or 192% of 1913 prices in December. Foreign fresh fruits were lowest in September at 207.3% or 203.6% of 1913 prices, and highest in July 241.2% or 236% of 1913 prices. But native fresh fruits were low in September, at 88.5% or 96.9% of 1913, August 114% or 117.6% of 1913, October 111.1% or 126.7% of 1913, although May was 376.8% of the 1890-1899 average, or 303.6% of 1913 prices. In vegetables, too, the canned article in these eight months ranges only from 136% to 158% of 1913 prices, while fresh vegetables were 93.6% in December, 98.1% in September, and 103.2% in November of 1913 prices, though May was 236.3%, July 173.5%, and August 150.2%.

The comparative stability of canned vegetables and dried fruits is easily understood, but surely only controlled marketing makes possible such stability in foreign fresh fruits, which in these eight months runs no higher than 241.2%

and no lower than 207.3%. Though this table of averages does not prove that every carload of imported fruit was marketed at a profit, it shows a satisfactorily high average each and every month, and proves that very little over-matured or low-grade fruit is allowed to reach the wholesaler.

The effect of increased labour costs shows clearly throughout all these tables wherever any labour is involved. Perhaps the higher prices of dried fruits or canned vegetables owe less to labour costs than to the stability of the article, but I have included an Animal Products table showing that hides and tallow at 135% were 71.4% of 1913 prices; leather at 169.2% was 111.8% of 1913; boots and shoes at 207.7% were 133.6% of 1913. Other high spots are—house furnishings 275.5%, or 215% of 1913; building materials 263.8% or 186.2% of 1913; fuel and lighting 265.4% or 232% of 1913. You are interested in these commodities, though you buy them instead of producing them. The price you pay provides for involved labour, they are marketable the year around, and they do not spoil in transit. Labour costs have just as big a share in keeping these requirements high as in keeping railway rates high, but in each case a price can be set which practically guarantees all production costs, while your perishables must be sold for what they will bring when they reach the market.

Tables of wholesale prices on Montreal, Ottawa and Toronto markets for September 1915 to 1922, give the low, high and average prices of pears, plums, peaches and barreled apples. With one exception the September 1922 average was an improvement over the 1915 figure, the totals showing 31 per cent. of improvement, but is only 54 per cent. of 1919 average and 62 per cent. of 1921 average for September. The spread between 1919 and 1922 on 11-quart basket of plums in Ottawa (\$2.15 to 40c.) would exactly pay the carload freight proportion on 20 such baskets, Burlington to Ottawa (8¾ cents each). We are quite accustomed to hearing the old saying that figures cannot lie. These figures have shown a spread on the Ottawa market in three years of twenty times the freight charges on the article from its point of production, and venture to say a railway traffic official would ask no better figure to prove that railway rates exert practically no effect over wholesale prices of perishables.

However, the most favourable comparisons we have show only a 31 per cent. improvement in wholesale prices of fresh fruits since 1915, with a very rapid decline from 1919 and 1921 averages. Considering this, together with the increase of 82.5 per cent. in representative local rates it seems reasonably fair that the fruit growers of Ontario would be justified in approaching the railway companies for a more favourable adjustment of rates, and your representations would be strengthened with your financial statements which show, I know, a general loss in the industry.

Though in addressing you I have tried to produce both sides of the question, I want to assure you in closing that the Fruit Branch stands ready to give you any assistance in our power, and that if you decide to make an appeal for rate adjustments I will be glad to arrange an interview with representatives of the railways and give your Transportation Committee all possible assistance.

MR. FLETCHER: Can you give us the ratio of express rates?

MAJ. WHEELER: I was not expecting any criticism of the express rate increase which is remarkably low. Express rates increased 20 per cent. over the 1914 rate all around, and the freight rates are considerably greater.

MR. FLETCHER: The reason I ask that question is because a grower, for instance, shipping to Toronto, is charged for delivery by the Express Company and charged for delivery by the Commission House, and there should be a distinction between shipments that are delivered by the Express Company and

shipments that are merely shipped into the fruit market. The Railway Board have not made that distinction, I do not know why, but I do not think pressure has been brought to bear.

MAJ. WHEELER: The only distinction made is that a carload rate assumes your own delivery, and the L.C.L. rate compels company delivery, so if you ship forty baskets to Toronto, the Express Company would place it, but if you ship a carload, you ship at a lower rate and you deliver for yourself.

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### REPORT OF NOMINATING COMMITTEE.

MR. FLETCHER: Your Nominating Committee taking into account the change made in the constitution recommends as follows:

That the following directors be elected from Divisions not now organized:

No. 1—Justus Jones, Prescottt.

No. 9—H. S. Howell, St. George.

No. 10—Dr. Moore, Thornbury.

We find that the following divisions have organizations in affiliation with the Ontario Fruit Growers' Association as follows:

No. 2—Northumberland and Durham Apple Growers' Association.

No. 3—Clarkson Fruit Growers' Association.

No. 4—Burlington Fruit Growers' Association.

No. 5—Niagara District Fruit Growers' Association.

No. 6—Norfolk Fruit Growers' Association.

No. 7—Lambton Fruit Growers' Association.

No. 8—London and Caradoc Fruit Growers' Associations.

and further that these Associations be requested to appoint this year's directors before March 15th, 1923.

Moved by Mr. Fletcher, seconded by Mr. Winters that the report of the Nominating Committee be adopted. Carried.

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### CERTIFICATION OF NURSERY STOCK.

E. F. PALMER, VINELAND STATION.

One of the difficulties encountered by the fruit grower is that of finding that many of his trees prove untrue to name. He feels that he has lost money when, after waiting several years for fruit trees to come into bearing, a percentage turn out to be untrue to name. Replacement of the trees by the nursery does not make up for the lost years.

The whole matter of incorrect naming of nursery stock has been considered of sufficient importance to warrant an attempt to draw up protective legislation. Unfortunately, however, it has seemed impossible to frame legislation which would give protection to the purchaser of nursery stock and which at the same time would be fair to the nursery business.

In an endeavour to solve the problem in another way, Dr. J. K. Shaw, of Massachusetts Agricultural College, has recently completed some investigational work on the identification of varieties of apples. Dr. Shaw has been able to demonstrate that apple varieties can be identified by leaf characters mainly, with a reasonable degree of certainty by an inspection during the growing season of the young trees in the nursery row. This method of identification has been put into effect in Massachusetts during the past two years. The plan as carried out there is as follows:

The Massachusetts Fruit Growers' Association offers certification of twelve leading varieties of apples to any nursery in the State, or of any trees to be purchased by growers or dealers in the State. On application to the Association a representative of the Experiment Station examines the trees, and if satisfied that they are true to name, a hole is drilled in a branch of the tree and an ordinary lead seal is inserted and sealed with a hand seal press. The seal bears the letters "M.F.G.A. 1922" (or any year in which the work is done) and on the reverse, "Certified to be Baldwin" or any other of the twelve varieties. The cost of work is paid by the applicant and has amounted to from two to three cents per tree.

In 1921 about 3,000 trees were examined of which a little less than 10% were found misnamed and refused certification. In 1922 a little less than 10,000 trees were examined and several hundred misnamed trees were eliminated from the nursery trade.

Of course so long as this plan is limited to Massachusetts, or any one State it does not solve the problem. The nursery trade is an interstate business. At the present time negotiations are pending for the certification next year of many thousands of trees in a nursery in another State, and other nurseries are inquiring about the scheme. The Massachusetts Fruit Growers' Association seems to be willing to sponsor this extension of the work as a temporary arrangement pending the time it may be taken over by a national organization.

During the past few weeks I have placed the above plan before the two largest nurseries in Ontario. Several reasonable objections to Dr. Shaw's plan of certification have been made and may be here stated.

1. The expense of certification, which must be passed on to the purchaser. There is not only the initial cost of certification, but other costs arising out of this certification. It is estimated that one-third of all the trees that would be certified would never reach the packing table, as no matter how experienced a nurseryman may be, there will always be a large quantity of trees unsold that eventually find their way to the brush heap, besides defective trees from various causes. The cost of certification of these would have to be borne by the stock sold.

Is the grower willing to pay the total costs of certification which may amount to 5 or 6 cents per tree? The opinion of nurserymen is that a small percentage only of fruit growers would avail themselves of purchasing certified stock, when other trees could be sold at considerably less cost. Ontario nurseries would thus be at a disadvantage in competition with imported stock.

2. Eighty-five per cent. of the nurseryman's business is in the small order business—the supplying of stock in small lots to purchasers, most of whom probably do not know one variety from another, and are not particularly interested so long as the tree lives and bears fruit. Unless uncertified as well as certified stock were kept, (which might prove burdensome), this 85% of the business, not interested in certification and not desiring it would have to pay just the same.

One point, however, is worthy of note. While only 15% of the nurseryman's total business is with the commercial grower, yet commercial growers take the bulk of the commercial varieties, and it is to commercial varieties only that certification would be extended in any case. The purchaser of stock, in small quantities, would not be affected to as great extent in increased cost of stock as would at first appear.

3. In apples, an experienced nurseryman can identify with certainty in the dormant stage, upwards of fifty apple varieties, including practically all of those

generally recommended. A careful nurseryman, who rogues his plantation, and who inspects stock before shipment, would have little or no stock going out untrue to name. Certification would add an unnecessary expense, and would deprive the careful nurseryman of the advantages of care and honesty, in meeting competition.

For the reasons just stated, I am personally of the opinion that for most commercial varieties of apples, and probably for some other kinds of fruits also, mixing need not occur in shipments leaving the nursery if reasonable precautions are taken. Such dormant identification depends of course, on the possession by a nursery of a percentage of experienced and permanent workmen, men who are interested in their work apart from purely monetary reasons. Such permanent, experienced, interested nursery employees are probably rare and especially so where nurseries are situated near cities. A permanent staff of workmen under such conditions is practically impossible.

4. The nurseryman at present contracts to replace stock proving untrue to name. If the plan of certification as outlined, proves inaccurate either in principle, or in practice through inefficiency, what agency would accept responsibility and guarantee replacement? In this connection, Dr. Shaw states that identification is practically certain, and that two weeks instruction to a man of ordinary ability is sufficient training to insure accuracy of work. A lifetime of nursery experience is not necessary.

An alternative to the certification of stock in the nursery row, and one which has no objections from the nurseryman's viewpoint, has been suggested. This alternative is that identification be carried out in the grower's orchard within a year or two after planting out, adjustment being made immediately between grower and nursery on the basis of this identification for any incorrectly named trees, replacement thus being made several years before bearing age.

There are objections to this plan also. Probably few growers would apply for certification. The expense would be considerable owing to the necessity of visiting orchards in various parts of the Province. The certification is primarily for the grower's benefit, but it is doubtful if he would feel inclined to pay these costs unless he were setting out a fairly large acreage, with therefore, sufficient at stake to justify the expense. The Department might bear the expense, but such an arrangement is naturally open to question. Viewed in one way it might be justified. As previously stated, certification would only be extended to a small recommended list of varieties. As a Province we are at a disadvantage in having far too many varieties of apples. If a select, carefully drawn up list were certified before planting out, and sold to growers by the nurseries at the usual cost, exclusive of cost of certification, there should be a strong tendency on the part of growers to plant to these certified varieties only. The planting of other varieties would be discouraged, a condition of advantage and benefit to the Province generally.

There is this further to be said for the Government bearing the cost of certification. There would be no hardship to the nurseryman in having certification carried out in the nursery. The work could therefore, be concentrated in a relatively small area with considerably reduced expense. Moreover, the total stock of the recommended varieties could be certified, instead of a small percentage here and there over the Province where growers had applied for certification.

One source of nursery stock could not be taken care of—imported stock,

mainly from the United States. It might be possible to have dormant inspection of this by a competent nurseryman, appointed for the purpose.

Thus far in this paper reference has been mainly to apples. The problem of nursery stock untrue to name, is, however, equally as serious with other fruits. It is only with apples though, that investigational work has been carried to the point where identification from leaf characters has been shown to be possible and practicable. For the Niagara District peaches in particular, present a very serious problem. An experienced nurseryman can identify a considerable number of apple varieties in the dormant state. With peaches, however, this dormant identification is not possible to any reasonable extent. It is hoped that a study of leaf characters may show some certain means of identification for peaches and also other fruits other than the apple.

It is for this convention of fruit growers to state its views on the importance of the question brought up in this paper, and, if it thinks advisable, initiate a movement to have immediate certification of apple varieties, (possibly only in an experimental way at first) and to have investigational work carried on with other fruits with a view to future certification of such fruits. It would be of undoubted value to have sufficient certification carried out with apples in 1923 to determine roughly the percentage of incorrectly named stock which is being disseminated. In Massachusetts about 10 per cent. of stock was found to be untrue to name. If this percentage in Ontario were found to be negligible nothing further need be done. If it were considerable, certification could be extended.

Q.—Would not it be advisable to certify varieties of peaches, pears and plums? A.—We cannot certify anything but apples at the present time, because there is no means of identification.

If you as growers are not interested in getting varieties true to name, let us drop the subject, but if you think the thing is worth while, let us discuss it and get to the point where we can make some definite recommendations so that we can get some action.

MR. ROBERSTON: This matter came up some years ago, and there was quite a little bit of discussion. At that time there were quite a number of nurserymen here, and the discussion became quite heated.

It used to be the custom in some nurseries if they had not the variety asked for, they gave the next best thing, and there has been a lot of damage done. There has been a laxity all along the line both in the budding stocks and everything else. With fruits that bear in a year or two, it is not a serious matter, but with other fruits, which take ten years to mature, we suffer severely. We tried to make some recommendations there, but it is like recommending and showing a man how to pack his fruits; if he is not straight and honest, he does not make any attempt. You have to make some rules so that he won't have a chance to be dishonest. I do not know what recommendations we should make, but this is a thing that should be taken into consideration and discussed. As to how to make a man honest who is crooked, we will have to get the Act settled first.

MR. HODGETTS: I think on two different occasions this Association has made recommendations in reference to the Nursery Control Bill. On the first occasion, a committee was appointed to meet with the nurserymen and discuss the matter and draft an Act. It was brought before the Association the following year and it was found not workable. The matter was dropped until three years ago, where Mr. Bragg brought in a new Act which was presented to this Association and to the House. It was printed by the Ontario Government and

dropped for that session with a recommendation by the Agricultural Committee of the House that a committee of Nurserymen and representatives of the Ontario Fruit Growers' Association would consider the matter to see if they could make it workable. We held several meetings, finally drafting an Act which we published so that it could be discussed by the different parties interested, but we found we could not get a workable Act to make men responsible. That last Act is now in abeyance, and I doubt whether it will be resurrected. The nurserymen did their part to make it workable, but it seems almost impossible to get any legislation to overcome this trouble. We went through the legislation on the books of the States of the Union, on bonding salesman and everything under the sun, but there was no perfect Act over there, so we gave it up as hopeless.

PROF. MACOUN: We have been studying identification of apple varieties for the last three seasons, and I feel confident that the well-known varieties can be identified quite well by their leaf when the trees are young. Every fruit grower knows that he can, at a distance, recognize a Ben Davis apple tree from a Wealthy or a Duchess, or practically any variety of apple tree; he can tell it one hundred yards away, and I think if these fruit growers would look more closely at the foliage of their young trees, they could identify these trees just as readily when the trees are young as they can when they are bearing fruit. We have made application to the Federal Government this year for a certain amount from our estimates to employ a man who would become an expert in this line and who would go out to young orchards at the request of the fruit grower and pick out the trees that were not true to name. It seems to me, in an orchard that has been planted a year or two or even three years, a nurseryman would be only too glad to replace any trees that were found not true to name. I think that would be a great step in advance. It would still be a greater step in advance if the trees could be certified in the nursery and seals put on them as they are doing in Massachusetts. We feel that this is a feasible scheme and Dr. Shaw has proven it to be so in Massachusetts, and I hope some action will be taken by this Association along this line.

MR. PAUL FISHER, BURLINGTON: It is not alone with regard to apples that we have troubles. In 1912, we bought 1,000 cherry trees that were supposed to be Morellos; there were 800 Morellos in the lot, 100 Early Richmonds, and about 100 other varieties that were totally useless. The following year we bought 200 Monarch plum trees; 120 of them turned out to be Green Gages. In 1916, we bought 500 pear trees, intended to be Bartletts, and about 15% were Boscs. These are instances in which we have bought stock and been stung in a large way. We have, of course, been stung many times in a smaller way. I consider it is much more necessary that these other lines of fruit should be certified than the apples, because even if you did find that your apple trees were not right at the end of seven or eight or ten years, you could graft; but you cannot do that with a cherry tree, nor a plum, nor a pear tree; it is a total loss, and they are much harder to tell in many cases. In fact, I feel very confident that I could tell any standard variety of apple tree in dormant state, but I cannot do that with cherry, plum and pear trees. We need more protection in these cases than with the apple.

MR. PALMER: I would like to point out in that connection that there are no means of identification of any fruit but the apple, and one point I am trying to make is that support should be tendered other investigational work which would determine whether these varieties of pears, plums and so on might not be identified in the same way. In the second place, a great deal of the mixing

which occurs in the nurseries is probably unavoidable. That is, it is human weakness, the mixing of the scions.

MAJ. ARMAND SMITH: I think possibly a word ought to be said from the point of view of the nurseryman. No doubt there are nurserymen who are not as honest as they should be. Possibly it would be best then to only deal with the nurserymen who have a reputation to uphold, I hardly think any nurseryman who is jealous of his reputation would deliberately give stock untrue to name. It costs too much money to replace it, and it hurts his reputation too much. That is one thing a good nurseryman does not want to do.

This discussion of Mr. Palmer's is very interesting, but it has come out of the blue as it were, and we have not gone into it very thoroughly. It has aspects that I would think would be of great benefit to nurserymen and fruit growers if proper co-operation could be brought between them.

I would like to ask Mr. Palmer several questions: In the first place, will the grower pay for the extra cost of labelling these trees? There is another cost besides putting the labels on the trees. We often have a block of 10,000 Spies, and 5,000 only are sold; the balance would have to be burnt. There would be the cost of labelling the extra 5,000 Spies, so that that cost would have to be added to the cost of the trees sold to the grower.

I presume none of the growers want to do away with Canadian nurserymen, and they would want to give us a fair deal with American concerns, but if we were forced to label all of the trees, would the growers buy American stock which would be considerably cheaper than our Canadian stock which was registered?

In the third place, would Mr. Palmer's men be thoroughly reliable? They might go through a block of apples, and if they were not sure, they would want to err on the side of safety and might throw out half a block of Spies, whereas in reality, those Spies might be all right. But the nurseryman would have to burn those trees.

I think it is a good thing to get started on this and to have a discussion, and if there is anything we can do, we will be delighted to co-operate in every way possible.

The following committee was appointed to take up the matter with the Government with power to act: Mr. Paul Fisher, Convener; Mr. E. P. Palmer, Maj. Armand Smith, Mr. W. T. Macoun, Mr. W. H. Gibson.

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## FRUIT COLD STORAGE AT BRIGHTON.

ANDREW FULTON, BRIGHTON.

The Government Cold Storage, Brighton, has amply demonstrated to the fruit growers, that fruit will hold up in excellent condition if properly handled from the orchard to the cold room.

COLD STORAGE TEACHINGS: During two years that the cold storage has been in operation we have derived some very simple, common-sense conclusions. The following are some of the lessons that cold storage has taught the growers to observe for successful storing:

(1) That cold storage will not adopt itself to the grower's ways, but the grower must adopt himself to the requirements of cold storage.

The importance of this statement is that successful cold storage of orchard products is based on the grower, forgetting the old methods of storing fruit and adopting the new. This means that our whole system of handling fruit must be changed, otherwise cold storage will be a profitless investment.

(2) Cold storage has shown the great necessity for more thorough spraying of the orchards. As growers of fruit, you have got to take your coats off and get down to actual work in the orchards, and be on the job the entire spraying season. The time has arrived to quit blaming the hired help, faulty spraying machines, or the material that is recommended. It is just human nature that the one to take the most interest in the orchard is the "grower."

It is needless to mention that cold storage is not a place for scabby and wormy apples, but it is most disheartening to witness the amount of low grade fruit that is sent forward to the various cold storages in the country. The Government Cold Storage has received its quota of poor stuff as the following figures will show: 1921-22, 68.5 per cent. No. 3; 1922-23, 64.0 per cent. No. 3.

If these figures represent the quality of fruit produced along the north shore of Lake Ontario, it is time that drastic measures were taken by the growers to improve the situation, otherwise quit the business.

(3) The time has arrived that greater emphasis must be made on the more urgent need of careful handling of fruit. It must be admitted that the picking season is a busy one, and that experienced orchard help is scarce, but there is no excuse for the excessive bruising of our fruits during the picking and packing operations. Careful handling must start in the orchards and packing houses, then the grower will have a good argument with which to get after and insist on the Transportation Companies to exercise greater care, and avoid the great loss that is experienced each year from this source.

The fruit industry in the past has lacked proper supervision. Our motto should be, "Handle the same as Eggs."

To bring out this point more clearly, our cold storage has shown that bruised fruit is the start of a great deal of our rots. Bruises on certain varieties will take on a sunken appearance and remain hard deformities, such as most of the winter apples, while the fall kinds will turn soft and rot at the bruised areas. A No. 1 apple after it is bruised can no longer be termed a No. 1, as there is so much waste in the fruit.

(4) The stage of maturity of fruit at picking time is very important to the keeping quality of our orchard products in cold storage. All fruits, especially apples, should be well matured, not ripe, at the time of picking. Maturity is indicated by the fruit being well coloured for the variety. That is, for red varieties that are not colouring up the best, the back-ground is used as an indication, which should be just turning yellow.

To explain the importance of maturity, let us consider an apple as it develops on the tree up to the time of picking. There are certain well defined changes taking place. The most obvious ones are the increase in size, and an increase in the colouring of the fruit. Associated with these changes is the decrease of acidity and the increase of sugars.

The most important of these changes from the cold storage viewpoint, are the changes that occur in the skin of the fruit. During the apple's growth on the tree there are certain small openings or pores through the skin that are used for breathing and moisture purposes. As the fruit approaches maturity these pores or lenticals become sealed over, which leaves the skin in a waxy condition. Consequently, when the apple is matured and ready for picking, the skin is practically an impermeable coating. This waxy covering will only allow moisture to pass through very slowly. The waxing of the skin is correlated with proper colour development.

It has been observed at the Brighton Cold Storage, that red varieties such as Wealthy, Snow, and MacIntosh, which are only 50 per cent. coloured, the

remainder of the fruit green, will wilt very badly on the green side, while the red or blushed side is quite firm and crisp.

Apple scald is another trouble experienced in cold storage caused through the storing of immature fruit. The green side of the fruit always scald first and in bad cases, spreads over the entire apple. Our experience has been that certain varieties are attacked more than others. Such varieties as Stark, Bethel, Baldwin and Mann have been affected the worse.

The importance of maturity cannot be over estimated, which means that each grower should study his own fruit and his own conditions in order to determine the proper picking stage. It is quite obvious from what has been stated that fall varieties of apples should have, at least, two or three pickings to obtain an even maturity and ideal keeping qualities.

(5) The prompt storage of fruit after picking plays an important role in the keeping qualities of fruit. There is a marked difference in the condition between fruit stored promptly after picking, say, not more than two days later, and otherwise comparable lots of which the storage is delayed ten days or more. Such delay is especially injurious during a period of warm, humid weather. The delayed fruit at withdrawal from storage is riper, yellower, and duller than the corresponding "immediate" stored fruit, and in addition develops more serious scald and decay.

Summarizing the importance of prompt storage, there is only one place for a grower's cold storage and that is at the point of production.

From what has been stated the grower must readjust himself to the conditions as they are presented. With the advancement in horticultural science one is apt to look to this source for the solution of his problems. This is quite right, especially as our problems are so numerous, but at the same time if the common every day orchard practices are going to be cast aside, the fundament which science teaches us is going to be neglected.

Q.—Does the scab develop after the fruit is put in cold storage? A.—So far it has not. Q.—You have made experiments to show that? A.—Yes; we will get a white or pink mould, but scab will not develop.

Q.—Will it extend? A.—It will not extend if held at the right temperature. If you hold apples away on in June, you may have some spreading, but our experience is we have very little spreading.

THE CHAIRMAN: I had occasion to be in Montreal and I visited one of the brokers; he had just had some Spies shipped in from the Brighton Cold Storage. They were crisp and fine, and as nice as anything you could wish to see, and he made the remark, "The apples from Brighton have been so satisfactory to us at the present time."

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## REPORT OF THE RESOLUTIONS COMMITTEE

The report was presented by W. H. Gibson, Chairman:

1. We recommend that this Association urge upon the Departments of Agriculture, both Provincial and Dominion, the necessity of more educational work for the fruit industry, and especially through the fruit inspectors, and not only in the packing of fruit, but also advice on the proper pruning, spraying and general care of the orchards.—Carried.

2. That we reaffirm the position taken at the last Annual Meeting of the Ontario Fruit Growers' Association with regard to the need of a suitable Testing Station at which all promising new varieties of apples or newly created apple seedlings may be tested under careful supervision in an apple growing district,

and that we recommend that such a station could be most suitably located in the Lake Ontario Apple District, east of Toronto.—Carried.

3. We recommend that the following Standing Committee of the Ontario Fruit Growers' Association be appointed on tariffs and taxation: Convener, Jas. E. Johnson, W. A. Fraser, and W. F. Fisher, with special reference at the present time to having exemptions from duty granted on fruit and vegetable grading machinery, and also adjustments to the Sales Tax on fruit packages, spraying and dusting materials.—Carried.

4. This is a resolution forwarded from the Ontario Horticultural Association with the idea that this Association should also act on it:

Whereas in view of the increasing interest in the culture of nut trees as food producing and ornamental trees, and of the great increase in the volume and value of nuts imported into Canada for domestic consumption, we would suggest that a competent man be appointed to investigate the nut-producing possibilities of Canada with a view to determining the most suitable species for the various sections of our country and encouraging the wider planting of the best hardy and exotic species.—Carried.

5. That the Highways Department of Ontario be urged to use fruit and nut trees along the new Queenston Highways from Hamilton to Niagara River in place of the forest trees at present being planted along other roads in the Province.—Carried.

6. That a hearty vote of thanks be tendered by the Fruit Growers assembled in convention, to the carriers, that is the railways, for the successful efforts made by them to handle the heavy crop of fruit during the year 1922.—Carried.

7. In past years a number of resolutions have been passed by this Association and have been lost sight of. It is recommended that the following committee be appointed to follow up these and any other resolutions that may be passed by this Association at this Convention: W. H. Gibson, Chairman; W. J. Bragg, M.P.P., C. W. Baxter, H. Sirett, J. E. Johnson.

MR. W. F. FISHER: It has been suggested that the number on the executive of the Royal Agricultural Winter Fair be increased. As it stands now, there are only five, and it is quite probable that that number will be increased. In view of that I would suggest, in case this is done, that we request that Board to give the fruit and vegetable growers one representative. The executive is made up of representatives of certain sections in various branches of agriculture, and I would move: "That this Association recommend that one representative from the fruit and vegetable growers be appointed to the executive of the Royal Winter Fair."

Q.—What about the Beekeepers? A.—I will leave that with the Beekeepers.

The motion, seconded by Mr. Atkin, Bronte, was carried.

## THE RELATION OF THE CANNED AND DRIED FRUIT INDUSTRY TO THE FRUIT AND-VEGETABLE GROWER.

C. S. MCGILLIVRAY, CHIEF CANNING INSPECTOR, DEPARTMENT OF AGRICULTURE,  
OTTAWA.

There is not a man in my hearing who does not know that there are many varieties of fruits grown to-day which are absolutely valueless except to look at on the tree. Every fruit grower knows full well which fruits suit his own taste and which ones do not. He knows equally well that if a certain variety

of fruit in its prime, fresh condition is not desirable for food for himself that there is little chance for it to meet favour with other people regardless of how it is prepared.

Marketing means buying and selling. There may be a dozen or more parties participating in the marketing of any line of produce, but there are only two principals. Before any article can be marketed there must be a Producer and a Consumer. Without both of these no business can be done.

The first record we have in direct marketing was when Jacob sold his pottage to Esau. Later we find the principle of indirect marketing or the plan of conservation and distribution being introduced when Joseph wisely profited by a direct tip on the Egyptian Corn Market.

However, the problem which is confronting you to-day is how you are best going to feed to the consuming public the increased amount of fruits which you are producing.

When the fruit growing industry was in its infancy the grower could dispose of his crop direct to the consumer and it did not take much to glut the market. As the orchards began to yield greater crops than the local demand required, the grower had to call in the distributor to find new markets and modern methods of distribution and collection.

The distributor has answered to the call and large packing houses, pre-coolers, refrigerator cars, etc., have been provided while a staff of the most expert men available have been obtained to place the product of your orchards, as far as possible, on every market of this land as well as on the markets of other lands.

Still you find that you are having a surplus, still you find that the increased production is far outstripping the increased demand, and you are getting alarmed for the future. You have outgrown your marketing facilities.

I need not remind you that there are only two ways in which your crop can be marketed, either in the fresh state or in some preserved condition such as canned fruits, dried fruits or jams. Other large fruit growing countries have passed through the same difficulties. You can profit by their experience.

For instance, it is only a few years ago since California, acknowledged to be the greatest fruit state in the world, was in the same position which you are now. What did they do? They decided that they would have to give canning and evaporating an equal place in the sun with fresh fruit packing. What is the result? Statistics show that in 1921 over 80% of all the fruit grown in California (except citrus fruits) were either canned or evaporated. Washington and Oregon tell similar stories.

I am not going to say much about the canned fruit industry as it has been obtained in Canada in the past. There are some features about it which we would be glad to forget. I will say, however, that the canners of Canada have packed sufficient high grade fruits to demonstrate that the highest quality can be packed here in Canada, if they can get the right kind of raw material from which to pack.

As far as the dried or evaporated product is concerned, the Government's efforts have been directed almost entirely to apples, and we are glad to say that the standard of Canadian evaporated apples has been raised out of the pit, where it was fifteen years ago, to the equal of the best in the world to-day.

In the past the bulk of your fruit has been distributed in the fresh state. You have outgrown the conditions which made this distribution possible. Surely you are wise enough to see that any attempt to market any considerable crop of fruit in its fresh state over the vast, thinly populated parts of our country

during the short season of prime, fresh condition, is an absolute impossibility. Surely you must know that there are millions of people in Canada who never get the opportunity or possibly the price to buy a pound of your fresh fruit. Surely you will agree with me that the attempt to distribute your crop in this way is not good marketing.

Suppose you turn to the conservation of your fruit, what relief can you expect to get from that source? The canner can take a large portion of your crop, but it is essential that he get the very best quality possible to produce, otherwise he cannot pack a quality of goods to meet competition with the U.S.A. The canner can take some of your poorer quality of fruit for his cheaper grades but without the higher grades he cannot sell his cheaper ones.

The dried fruit industry can be developed to take care of the needs of our own people, but it cannot be built up on culls nor on bumper crops alone.

The jam and jelly industry can take care of a great amount of fruit, but they will expect to get a certain percentage of your crop at a fair price each year, regardless of whether the fresh fruit market goes up and down.

Statistics are generally dry reading, but every time I compare the statistics concerning the home manufacturing of canned and dried fruits with the imports of similar fruits from the United States I get disgusted with our Canadian system of marketing. Can you explain to me why that in 1918, the total value of our Canadian peach pack was only \$113,944, while during the same period we imported from the U.S. \$226,870 worth of dried peaches and \$183,310 worth of canned peaches, a total of \$413,180, or over three and a half times as much as we manufactured? In 1919, we imported \$862,257 worth and in 1920, \$932,124 worth. Nor were peaches the only fruits which we grow ourselves and which we imported more than we packed. Why is it that out of about \$1,000,000 worth of canned pears packed in Canada in 1920 about 75% were packed from fruit grown in Washington and New York? Why is it that a large percentage of our jam is made from fruits imported from other countries? Why did a certain manufacturer in Canada find it either necessary or profitable to import, during the month of November last, considerably over a million pounds of dried apple pomace, the dried product of about 315 carloads of cider apples with the cider removed and the residue dried?

Particular interest is attached to this as it is used to make a perfectly good food product, which may be bought in almost any store in any town or city in Canada, United States or Great Britain. This product is used by the jam maker and the housewife, and one pound of it in jam or jelly making will replace three pounds of fresh fruit.

Did anyone ever have the nerve to tell you that the distribution of any excessive amount of fruit in its fresh state is economic waste? If you have never been told this before I tell it to you now and I stand ready to defend my statement anywhere.

Do you realize that your highest quality of fruit can be placed on the table of 75% of the people of Canada at a cheaper price to them than they are paying for an inferior quality of fresh fruit.

Both Federal and Provincial Governments have done everything in their power to help the growing and marketing of fresh fruits. If there is anything left undone it must be for the reason that it has never been thought of. I have not heard of anything progressive being done by any of the Provincial Governments to aid the canning, evaporating or jam trade.

The Federal Government may take credit for making the evaporated apple industry what it is. We are glad to say that Canada has a place of her own in

the marketing of evaporated apples. When the British Ministry of Food called for 1,500,000 pounds of evaporated apples from America, Canada was able to secure 1,120,000 pounds of the order and at an average of one-quarter of a cent per pound in advance over the U.S. for similar quality.

The Federal Government has foreseen for some time the possibility, as well as the necessity, for building up the canning industry in Canada. They have made a careful survey of the territory, have investigated the methods followed in Canada as well as those followed in the U.S.A. They have conducted experiments and carried on considerable educational work with both manufacturer and wholesaler.

Government standards of quality and quantity have been established. Standards which, we are glad to say, are acknowledged by other countries to be the most practical in the world.

There are four legally defined grades of canned foods: Fancy Quality, Choice Quality, Standard Quality, Second Quality. Each grade or quality has a place of its own in the housewife's larder. These grades or qualities are plainly marked on the label.

The packer has commenced to find out that he is no longer selling labels; he is selling foods. He is finding out that the label is not just a wrapper for the can, but that it must tell the truth about the contents of the can and tell that truth in a legally defined language.

The standards are so simple and so practical that any honest, intelligent person can pack to them. If the packer is not honest he will have to be driven out of the business; if he is not intelligent, he will have to make room for one who is.

Do not countenance any rivalry between the fresh fruit distributor and the canner and drier. It is your fruit that they are all trying to market, and it is the same consumer that they are striving to feed, but each in his own way. There was never a time when co-operation was in greater demand, nor do I think that there was ever a time when the foundation for co-operative marketing was better laid.

It seems to me that with the assistance of the Commercial Intelligence Bureau, the weekly crop reports, the market reports and the transportation assistance rendered by the Government, that you, through your growers' organizations, should be able to apportion your crop through the various channels referred to herein, that there should be the greatest delivery and the least possible loss between the grower and the consumer.

Let us hope that you will feed Canadians on Canadian fruits and not feed them on fruits 75% of which have their origin in other countries.

With active co-operation between the grower, the fresh fruit distributor, the canner and dehydrator and the consumer, the fruit trade in Canada should be at least doubled in five years.

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## VARIETIES OF FRUIT FOR PLANTING.

### THE DEALER'S VIEWPOINT.

CHAS. DAWSON, DAWSON ELLIOTT COMPANY, TORONTO.

In speaking of the varieties of fruits for planting from the dealer's viewpoint; I would suggest in strawberries, Parsons, first, and then the Glen Mary. The majority of people neglect to get a good package to put strawberries in for market, and that is the principal thing for marketing and shipping. Strawberries should be fully ripened before they are picked and packed. It is a good idea to have a

cold storage at most shipping points and have the fruit pre-cooled. From our experience, the fruit from the South will keep two or three days after it lands even better than our own local fruit that only comes a few miles. I think the Government would be wise in helping growers to establish cold storages at shipping points.

For raspberries I would suggest Cuthbert, which is really the only variety there is, although the King is very good. Black caps supply the best sale on our Toronto market.

Red currants are very profitable, too, and the cherry is one of the best kinds. In gooseberries, of course, the larger the variety the better price you get. I would advise the Downing. In cherries we have the Richmond, the Montmorency; and the Morellos are very promising. Since we have had prohibition the Jews are great for buying Morellos to make cherry brandy.

Plums: We have many varieties of plums. I think the growers are foolish to grow Abundance and a lot of other early varieties. Some of the largest ones come on the market and command a fair price. The consumers buy them and put them up, and there is nothing worth while about them. They are often sold for Lombards as they resemble them in colour, but they are a disappointment to the consumer, and by the time the good plums come in the consumers do not care to buy any more. I would advise growing the later kinds, and I would cut out some of the early Japanese varieties. The Shropshire Damson is one of the best varieties to grow.

Pears: The Bartlett is about the best pear to raise, although there is the Anjou which if it had proper cold storage would be all right for winter consumption instead of the American pears.

The apple is the king of all fruits. I think if we had stayed with a lot of our old varieties instead of some of the new ones it would have been better for us. For the early varieties I would suggest the Astrachan, then the Duchess, the Wealthy and the Peerless. I bought a lot of Snows from the Government Cold Storage at Brighton, and I think they are as nice and have as good flavour as one would wish for, and they can be kept until any time desired. Those apples have been up at our warehouse a month and they command about \$7.00 and \$8.00 a barrel. The great thing in handling fruit is getting it into cold storage at the proper time. They should be put in the day they are picked, if possible. Spies always command a price even in a year like this when apples have been a glut.

Peaches: There are a lot of early varieties of peaches that spoil the market, yet command a better price than the better varieties that come in later like the Fitzgerald, St. John, Reeves and Crawford. I think the growers are overdoing the Elbertas.

Q.—Does the Rochester give satisfaction? A.—Very good, but if we get favourable weather the St. John is one of the best peaches we can grow.

Q.—In regard to apples, does the McIntosh compare with the Snow? A.—I think we can produce McIntoshes and Jonathans as well in Ontario as any place in the world. This year we brought in ten or twelve cars of British Columbia apples and ten or twelve cars of American apples, but I think Ontario can produce the best flavoured apples in the world.

Q.—Why did you have to bring these others in? A.—The residents call for a large apple and we could not get them packed in uniform size here in Ontario, and we had to go outside to get what the trade wanted.

Q.—Is it possible to overplant McIntoshes? A.—I do not think it is if proper cold storage facilities are available, and it will do away with bringing

apples from British Columbia and the United States. We unloaded a car of beauties from Washington not long ago; we could not get apples large enough to suit some of our best restaurants in the city. I prefer to handle Ontario apples to foreign apples.

Q.—What can the storage do for the ordinary farmer? A.—We have several growers down east who are putting their apples in cold storage, and they are going to come out on top. I think if we grew enough varieties and had enough cold storage plants here, we would not need to bring any apples in from any country. We could keep our own market supplied. Toronto is becoming one of the greatest centres on the continent for consuming fruit. About fifty or sixty full cars of American strawberries came in last spring, and likely the same will happen this spring. Of course we have to bring in what the people want and what they have the money to pay for.

Q.—What condition does the cherry from local points arrive in? A.—They land in good condition, most of them; they carry well.

Q.—They do not show signs of very bad handling? A.—No, except some of the white varieties. I do not think it is wise to grow many of them. Tartarians and Windsor have always a good market. We do not get enough of the better classes later in the season.

Q.—What apples are preferred for restaurant trade? A.—They like Greenings and Kings. I would not advise much planting of Wolf River; it is not well liked.

Q.—Which variety of Canadian apple suits the trade best? A.—I think the Blenheim for an early apple is one of the best, and Spy for winter use.

Q.—Will they take Spies in preference to Western apples? A.—They take Spies if they can get them packed in uniform size in preference to anything.

Q.—In preference to Rome Beauties? A.—Yes; restaurants do not want them in barrels.

Q.—What does that class of apple run in price? A.—Rome Beauty from \$2.50 to \$2.75 a box; that is the large sizes.

Q.—How do you account for the Toronto market being so low compared with what other markets are in the fall and winter? A.—So many trucks go out through the country and bring in all sorts of windfalls and peddle them around at a low price that it makes our market low. Snow apples are always good and command a price. The Golden Russet is a very good apple.

Q.—Speaking about grapes, what do you say about the Champion grape? A.—I think the Champion grape does a great injury to the grape market in Toronto. A few thousand baskets of Champions come in; they go around the trade and it sets the people against them, and when the other grapes come in the people are not ready for them.

Q.—Do they fix the price for the balance? A.—Yes. I would advise Moore Early, Worden, Concord and Rogers.

Q.—Is it possible to overdo the market with white grapes? A.—The market will only take a limited quantity. The Jews won't buy white grapes at all; there is a great demand for grapes for wine just the same as cherries.

Q.—What is the reason you can get \$3 a bushel for American Transparents and as soon as our Canadians come in they drop to \$1.50? A.—The supply makes the price. I am in the commission business; we are one of the necessary evils, I suppose. Shipping so much poor stuff on the market causes the low prices; it should be fed to the hogs. The peddlers get it and sell it and it affects the price of the good stuff.

## VARIETIES OF FRUITS FOR PLANTING.

THE NURSERYMAN'S VIEWPOINT.

MAJOR ARMAND SMITH, WINONA.

It is rather hard to get the consensus of opinion on what are the best varieties to plant. If we could get such from growers I am sure the nurserymen would be only too glad to co-operate along the lines suggested. Undoubtedly there have been too many poor varieties planted in the past, varieties that have proven useless on the market, and some growers have planted varieties that have not been hardy enough and have not been of value to them.

We, as nurserymen, although there are exceptions, I think, wish to recommend those varieties which are the best. It is not to our benefit to get a lot of poor trash on the market because in time it would redound to our disadvantage. If there is a lot of poor trash on the market the sale of nursery stock decreases. So that we come to the point of how best can we help. In this respect someone might bring up the point: Why not legislate to have the Canadian nurserymen plant only certain varieties? This is hardly feasible for several reasons: In the first place you could not legislate against the Canadian nurserymen very well if you allowed nursery stock to come in here not under legislation. The grower who could not get the varieties from Canadian nurserymen would get them from American. If you stopped these varieties coming in from the States, and allowed only the varieties that you wished to come in, the grower who wanted a variety that because of its scarcity on the market commanded a big price, could get it under another name from an American or Canadian nursery or grow the stock himself, so it seems to us the line of procedure is one of education.

Experimental farms and nurserymen have done something along this line, and of course growers, like yourselves who take an interest, know pretty well what to do, but there are a great many growers who do need to be educated. They do not take papers and they do not go to meetings. If we could only devise some means of education for these people I think it would be a very good thing. I was wondering whether there could be such a thing as a Committee on Varieties. If we had a committee of good strong men who represented Ontario and who knew the different communities and sifted down the recommendations of sub-committees, they would possibly get a list of varieties that would be the best; it might be fairly large, but it would be a great deal better than the present condition of affairs. If that committee could act in conjunction with the nurserymen, the nurserymen, through their agents, could go on, recommend these varieties and push them. It is of benefit to us to cut down the list of varieties. We do not make any more money out of growing poor varieties than good ones. We would rather get down to some standard varieties, if we had some general idea of what the grower is going to want. Now, we hardly know what he will want a few years hence, and as a result we have a surplus of one kind of stock which we have to burn up, and a shortage of another.

I thought it might be of interest to the growers to know what, from our standpoint, we have sold in the past years in the largest numbers in the different fruits:

APPLES: We have sold more McIntosh and Spy than any other varieties. Second in number come Wealthy and Duchess; then Snow and Delicious, and other varieties coming long behind. In Nova Scotia it is somewhat different; they are still having a large call for Ben Davis and Baldwin and Wagner.

PEACHES: Elberta still leading, then St. John, Fitzgerald, Garfield and Early Crawford.

WHITE FLESH PEACHES: Greensboro.

Q.—Any Mountain Rose? A.—Very few. Last year we had several customers wanted Mountain Rose peaches and we had difficulty in getting them; they were very scarce.

GRAPES: Concord.

Q.—Any demand for Campbell? A.—Yes, and Moore.

Q.—You ought to recommend that; it is very productive on light sandy soil.

PLUMS: Reine Claude, then Damson and Prune; third, Burbank, Bradshaw and Duke.

PEARS: Bartlett, first; then Anjou, Clapp and Keiffer.

Q.—How is the demand for Beurre Bosc? A.—Very little.

RASPBERRIES: Cuthbert, then Columbia for home plants.

BLACK CURRANTS: Black Champion.

RED CURRANTS: Cherry and Fay.

GOOSEBERRIES: Downing and Red Jacket.

CHERRIES: Montmorency practically entirely; a very few Early Richmond being sold at the present time, and it might be a good thing if more Richmond were planted. If there are no Early Richmond planted, in a short time there will not be any on the market.

Q.—Are Royal Annes used? A.—Very little.

Q.—Won't they grow? A.—No calls.

Q.—The St. Catharines factory prefer Richmond to Montmorency for canning purposes? A.—Yes, a good many canning factories do, but generally because the price is cheaper.

SWEET CHERRIES (Black): Windsor, first; then Black Tart, then Bing and Schmitz Biggareau.

SWEET CHERRIES (White): Napoleon, and then a few Governor Wood.

Mr. McGillivray spoke about so many peaches being brought into this country from the States, and it being a shame we had to meet that competition. That is quite true. The reason why those peaches are brought in and wanted by the consumer is that the California peach is a very dry peach, and the consumer can take that peach and throw it around a little and put it back in the can, and the edge would still be clear and distinct. Our peach is very much more luscious and tastes a great deal better, but it has not the appearance to the eye, and although the American canned peach in Winnipeg sells a little higher than our peach, nevertheless the public seem to want it. The only way to protect ourselves on that is to have a higher tariff.

Q.—Is not it the method of peeling peaches that causes that? A.—No, it is the peach itself; it is drier.

Q.—Is not it a fact that our Canadian free-stone would peel as well as the California free-stone? A.—I would not say so.

A MEMBER: It would be well to have all of our fruit labelled Ontario. There are so many Ontario people in the West that the word "Ontario" pretty nearly sells itself, if the quality is there.

MAJOR SMITH: It would help a great deal, but I must say there is a great sentiment in favour of British Columbia, in the West.

Q.—Is not it the habit of the canning factories to take peaches a little over-ripe that cannot be shipped, and consequently the peach is too soft? A.—The canning factory will not do that, but the jam manufacturer does take peaches that way, and as long as there is no waste in the peach itself, and he can cut away any spots, it is all right.

## VARIETIES OF FRUITS FOR PLANTING.

### THE GROWERS' VIEWPOINT.

GEORGE WILSON, ST. CATHARINES.

In selecting varieties to recommend, it is very much like judging girls in a beauty contest; there is a great difference of opinion. A series of meetings have been held in the Niagara Peninsula to discuss this matter, and it was clearly pointed out that there are a lot of inferior varieties of fruits which simply spoil the sale of the good fruits. It is too bad that many of these inferior varieties are put into cans or disposed of when we had such good varieties that were allowed to spoil.

After holding these meetings, committees were appointed, and these committees made recommendations, and I have a list here which I shall read to you.

In preparing a list of recommended varieties of tree fruits and grapes for the Niagara district there are many things to keep continually in mind.

1. The different sections such as Queenston, Fonthill and St. Catharines vary as to earliness, and the selected varieties should vary to suit those conditions.

2. The soils in those sections are variable as is well known by all and this, too, has a bearing on the varieties to be selected.

3. The degree to which varieties are subject to disease and the hardness of varieties in withstanding severe weather conditions should also be considered.

4. Some varieties of fruit are self-sterile and the choice of other varieties, which would be suitable for cross pollination, is very important. This, perhaps, has not been given sufficient attention in the past.

5. The suitability of varieties for local markets, distant markets, or for canning purposes, should receive greater attention than has been given in the past.

6. Then growers naturally consider the variety on a "returns per tree basis."

These points are not the only considerations necessary, but they serve to show how difficult it is and how unsafe it is to recommend varieties when at this distance from the orchard. The writer feels that growers, who are going to set out orchards, could not do better after all is said and done than consult successful growers in the immediate vicinity to make a final selection from the following list of recommended varieties:

**APPLES:** Astrachan, Duchess, Wealthy, Snow (Jones red strain), McIntosh, Rhode Island Greening, Baldwin, Spy.

**CHERRIES:** As the present supply of cherries (sour varieties especially) will probably take care of the demand for some years to come, growers would be well advised not to make very extensive plantings. Varieties might be selected from the following list:

Sour: Richmond (light plantings only), Montmorency.

Sweet: (White) Napoleon, (Black) Tartarian, Elkhorn (moderate plantings only), Windsor, Schmidt Bigarreau, Bing.

**PEACHES:** As many of the peach orchards have been taken out during the past few years and as there are not many young orchards coming on, it is felt that the restrictions, as given for planting of cherries, would not apply to peaches. Greensboro, Arp Beauty, Yellow Swan, Yellow St. John, Fitzgerald, Garfield, Elberta (moderate planting only), J. H. Hale (in moderation only and interplanted for pollination), Lemon Free, Beers Smock (if true to type and name).

The following varieties of peaches have proven very inferior and unsuitable: Early Rivers, Triumph, Sneed, Red Bird Cling.

PEARS: Giffard, Clapp (blights badly), Bartlett, Bosc (blights badly), Howell, Anjou (drops badly), Duchess, Keiffer (large strain).

PLUMS: At the present time very few new plantations should be set out as there is now an over production in a plum year. Some inferior varieties could probably be taken out to advantage. Recommend: Field (the earliest blue domestica), Bradshaw, Imperial Gage, Reine Claude (moderate plantings only), Italian Prune, Shropshire Damson (very large plantings have been set out in last few years), Monarch, Grand Duke.

It is felt that plantings of Japanese plums and Americana varieties should be reduced as they spoil the market for better varieties.

GRAPES: The acreage of grapes at present is probably sufficient to take care of all demands. The Champion grape is condemned and recommendations are made that Champions in a vineyard be taken out and other varieties substituted.

Black: Moore's Early (in moderation), Campbell's Early (on deep, rich soil), Worden, Concord, Wilder (self-sterile, in moderation).

White: Niagara (in moderation).

Red: Agawam (on deep, rich soil).

With regard to the canning of peaches, the attitude taken was the canners realize that for the export trade they will have to pay more attention to the variety of fruits. There is a demand at the present time for superior varieties for canning purposes, but the chances are those varieties are no good for anything else, and the feeling is that the canners had better make ten or twelve-year contracts with growers to grow what they want. The Keiffer is mentioned as one of the recommended varieties, but most of you know who have been growing Keiffers that there are two distinct strains. There is a small one that is very hard, and then there is a large Keiffer which seems to do much better on moist soils, and naturally gives you a larger size, and it is a variety that would prove more profitable.

Garfield is included in this list of peaches. There are many who have not a very high regard for the Garfield, but there is a good strain of Garfield. There is a big Garfield and a little Garfield, a good colored one and a poorly colored one.

There are no very new varieties mentioned in this list, but only those that are pretty generally known throughout the district, and while there are some very promising new varieties coming on, that is a matter that is not appropriate for me to take up at this time. The Experiment Station has a peach that they think well of at the present time, and when that is tried out on different soils and different localities we may have something that will be far superior to those mentioned in this list.

I did not take up the question of raspberries, strawberries, black berries, currants, gooseberries or any of these other small fruits. While they are important, in view of the fact that the trees are long-lived, we simply took up the tree fruits and grapes.

Q.—You did not recommend the German plum? A.—I mentioned the Italian Prune, and there is very little difference between the German and the Italian; either is all right, but the Italian, I consider, is the better prune of the two.

Q.—It is a smaller prune? A.—No, not much difference in the size, but quite a bit of difference in the shape of the tree.

## REPORT OF TRANSPORTATION COMMITTEE.

MR. BUNTING: The Resolution Committee brought in a resolution of appreciation of the way the Carrier Companies handled the fruit last season. It is very difficult to hear in the lower part of this room, and I do not know that all the members appreciated the fact that that resolution was being passed, but I wish on behalf of our Joint Committee to emphasize the appreciation of the larger shippers for the very excellent service that was given last year by the railway companies, and at the close of this resolution I have no doubt that one or two of our larger shippers would like to emphasize that fact.

After passing through the past year, with an unprecedented crop, the rank and file of the fruit industry not only of the Niagara Peninsula but of the Province of Ontario have not a very extended bank account. After everything is counted up, the majority of us feel as though we are property-poor. Perhaps the members are looking to the Transportation Committee for some relief in the coming year in that respect. I do not know that the committee will be able to offer any great encouragement, but I can say this, that the committee have had several joint meetings and have taken the whole question into very careful consideration, and the several resolutions I am about to read are the crystallization of their discussions. These resolutions read as follows:

1. Resolved that with reference to freight rates on fruit and vegetables from Ontario, this committee will prepare and submit representations to the operating railways, and will, if necessary, request a hearing before the Board of Railway Commissioners of our contention that the fruit and vegetable interests of Ontario vitally require, and are entitled to, commodity freight rates lower than existing effective class rates for distribution of their products.

2. With reference to carload minima on fruit and vegetables this committee proposes to represent to the railways and express companies, and asks this convention to approve of the principle, that in construction and adjustment of rates on our perishable products any minimum that is higher than cars can possibly or advisedly be loaded should be lowered, even though this demands adjustment of effective carload rate.

3. With reference to express shipping receipt which releases the express company from liability beyond Fifty Dollars, unless higher valuation declared and insurance assessed, this committee proposes to represent to the Express Traffic Association of Canada, and if necessary to the Board of Railway Commissioners, that this is wrong in principle and adjustment is sought on a per pound valuation or other mutually satisfactory basis.

4. That the express companies be requested to provide joint through rates on fruit from exclusive one line stations in Ontario to exclusive other line stations throughout Canada.

I move the adoption of the report.

The motion was seconded by Mr. Foster, and carried.

THE CHAIRMAN: I want to thank you one and all for the splendid attention throughout our meeting. In the earlier years of the Ontario Fruit Growers' Association the principal theme was how to produce more and better fruit. Then the time came when we had an over-production, and last year we were confronted with problems which we never had to face before, and the programme which has been presented to you on this occasion has resulted from the desire of the executive to give you something that would be of benefit to us for years to come. I thank you all on behalf of the association for your splendid attendance, and will now call the meeting adjourned.



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