

ANNUAL REPORT

OF THE

Fruit Growers' Association

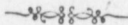
OF

NOVA SCOTIA,

1900.

Annual Meeting at Wolfville, January 29th, 30th, 31st, 1900.

Published by Order of the Government of Nova Scotia.



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1900.

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Fruit Growers' Association

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Annual Meeting at Wolfville January 30th and 31st 1900

Printed and Published by the Association at Wolfville

WOLFVILLE
NEW SCOTIA

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J. E. BIGELOW,
President Nova Scotia Fruit Growers'
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S. C.

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FRUIT GROWERS' ASSOCIATION

OF

NOVA SCOTIA.

PATRON,

SIR M. B. DALY, LIEUTENANT GOVERNOR.

OFFICERS FOR 1900.

PRESIDENT.

J. W. BIGELOW Wolfville, N. S.

SENIOR VICE-PRESIDENT.

P. INNES Kentville, N. S.

COUNTY VICE-PRESIDENTS.

Annapolis County	REV. H. HOW, Annapolis.
Kings	"	J. S. BISHOP, Auburn.
Hants	"	W. H. BLANCHARD, Windsor.
Halifax	"	B. W. CHIPMAN, Halifax.
Lunenburg	"	JUDGE DesBRISAY, Bridgewater.
Digby	"	CHARLES BURRILL, Weymouth.
Yarmouth	"	C. E. BROWN, Yarmouth.
Shelburne	"	T. ROBERTSON, M. P. P., Barrington.
Queens	"	JUSTICE FORBES, Liverpool.
Colchester	"	J. E. LOCKWOOD, Truro
Pictou	"	C. R. B. BRYAN, Durham.
Cumberland	"	T. R. BLACK, M. P. P., Amherst.
Antigonish	"	F. R. TROTTER, Antigonish.
Guysboro	"	W. D. CAMERON, Guysboro.
Victoria	"	H. P. BLANCHARD, Baddeck.
Cape Breton	"	DR. KENDALL, M. P. P., Sydney.
Inverness	"	WALTER McDONALD, Glen Dyer.
Richmond	"	HON. ISIDORE LeBLANC, M. L. C. Arichat.

SECRETARY.

S. C. PARKER Berwick, N. S.

ASSISTANT SECRETARY.

R. W. STARR Wolfville, N. S.

TREASURER.

GEO. W. MUNRO Wolfville, N. S

AUDITORS.

GEO. THOMSON,

R. E. HARRIS.

EXECUTIVE BOARD.

THE PRESIDENT,
VICE-PRESIDENT,
SECRETARY,
TREASURER,

J. ELLIOTT SMITH,
JOHN DONALDSON,
J. E. STARR,
DR. DEWITT.

FRUIT COMMITTEE.

R. W. STARR.
C. C. H. EATON,
COL. S. SPURR,
GEORGE THOMSON,
GEO. C. JOHNSON,
PROF. SEARS,

MRS. OLIVIA JOHNSON,
C. E. BROWN,
W. S. BLAIR,
R. S. EATON,
C. M. VAUGHAN,
F. J. PORTER.

SMALL FRUIT COMMITTEE.

G. C. MILLER,
T. H. PARKER,
GEORGE B. MCGILL,

S. B. CHUTE,
HENRY SHAW,
J. S. BISHOP.

PUBLICATION COMMITTEE.

THE PRESIDENT, Ex. Officio.
THE SECRETARY, Ex. Officio.

W. C. ARCHIBALD,
R. W. STARR.

DELEGATES TO FARMERS' ASSOCIATION.

COL. S. SPURR,

C. R. H. STARR.

FINANCIAL STATEMENT.

N. S. FRUIT GROWERS' ASSOCIATION IN ACCOUNT WITH G. W. MUNRO,
TREASURER.

1899, Jan. 16.	By balance on hand.....	\$152 33
	" E. S. Crowley, Life member	5 00
	" F. J. Porter, Life member	5 00
	" L. W. Sleep, Life member	5 00
	" A. C. Starr, Life member	5 00
	" I. N. Chute, Life member	5 00
	" 30 annual subscription	30 00
	" 2 Lady members.....	1 00
	" F. C. Sears	23 00
	" Interest on deposit.....	21 76
	" Transfer from Horticultural School	1200 00
	" Annual Grant, received Jan. 10, 1900.....	300 00
Mar. 25.	To J. M. Patterson, Envelopes, etc	\$ 5 00
	" Secretary's expense account	29 32
	" Secretary's salary for 1898	100 00
	" W. C. Archibald, expenses meeting	5 25
	" J. E. Woodworth, printing	19 75
	" R. S. Eaton, expenses account	11 27
	" W. H. Higgins, reporting	30 02
April 30.	" Transfer to Agricultural School	300 00
June 2	" R. W. Eaton, printing.....	1 60
" 6.	" Herald Printing Co., Reports	193 05
" 10.	" Town of Wolfville, Rent	20 00
" 12.	" Acadia University, Rent	25 00
" 12.	" M. G. DeWolfe, expenses Farmers' Association...	2 90
Dec. 30.	" Transfer to Horticultural School	300 00
	" Balance on hand	1099 93
		\$2053 09 2053 09
1900, Jan. 10.	By Balance on hand.....	\$1099 93

I have examined the foregoing account and have found all the debts properly vouched, and that the balance of One Thousand and Ninety-nine 93-100 Dollars at the credit of the account is correct.

Wolfville, Jan. 15, 1900.

GEO. THOMSON, Auditor.

NOVA SCOTIA SCHOOL OF HORTICULTURE IN ACCOUNT WITH
G. W. MUNRO, TREASURER.

1899, Jan. 16.	By Balance on hand.....		\$415 37
	" Received from Prof. Sears		186 71
	" Interest on Deposits.....		7 68
April 30.	" Transfer from F. G. A.....		300 00
May	" Provincial Grant.....		2000 00
	" New Brunswick Grant.....		50 00
Dec. 30.	" Transfer F. G. A.....		300 00
	To Prof. Sears, salary.....	1310 00	
	" Greenhouse expense accounts	360 00	
	" Town of Wolfville, water service	2 50	
	" Acadia Athenaeum, advertising	5 00	
	" Acadia University, Lease of ground	25 00	
	" Wolfville Coal Co., fuel	56 37	
	" Prof. Sears, expenses o Truro	6 66	
	" Prof. Sears, subscription to periodicals	12 60	
	" Transferred to F. G. A. account	1200 00	
	" Balance on hand	98 26	
			\$3259 76 \$3259 76
1900, Jan. 10.	By Balance on hand.....		\$98 26

I have carefully examined the foregoing account and have found all the debts properly vouched, and that the balance of Ninety-eight 26-100 Dollars at the credit of the account is correct.

Wolfville, 15th Jan., 1900.

GEO. THOMSON, Auditor.

ACCOUNT OF NOVA SCOTIA SCHOOL OF HORTICULTURE FOR THE
YEAR BEGINNING NOV. 1ST, 1898, AND ENDING NOV. 1ST, 1899.

EXPENSES.	RECEIPTS.		
Rent of Class Room.....	20 00	Balance from last year.....	\$ 333 46
Rent of School Grounds.....	25 00	Nova Scotia Gov't Grant.....	2000 00
Water Rate	5 00	New Brunswick Gov't Grant....	50 00
Advertising	5 00	Greenhouse Receipts	140 21
Coal	56 37		\$2523 67
Greenhouse expenses	145 29	Expenses	1843 47
Expenses of Section Imps.....	26 81		\$1843 47
Salary S. A. Porter.....	360 00		
Salary F. C. Sears.....	1200 00		
	\$1843 47	Balance.....	\$680 20

THIRTY-SIXTH ANNUAL MEETING.

(Stenographic Report by W. H. Huggins.)

Held in College Hall, Wolfville, January 29th, 30th and 31st, 1900.

MONDAY EVENING SESSION.

The meeting opened at 7 o'clock p.m., President Bigelow in the chair. Rev. Dr. Trotter invoked divine blessing. The President then read his address as follows:

THE PRESIDENT'S ADDRESS.

To the members of the Nova Scotia Fruit Growers' Association:

Permit me to so far digress from the object of this meeting to congratulate the people of this province, as well as our own members, on having experienced the most prosperous year in the history of Nova Scotia in the development and profitable production of our varied resources, especially our mines, forests, fisheries, agriculture and horticulture, and to-day every man in this fair province can find profitable employment for his head, his hands and his money. The past two years have been most profitable to the Nova Scotia fruit grower from the fact that we have had fair crops of superior apples and obtained the highest price in the history of the trade, owing to scarcity in the world's apple crop. This year our apple crop will exceed 400,000 barrels, and as most of these have sold at from \$2 to \$3 per barrel, the net proceeds may be fairly estimated at over one million dollars. Some estimate may be formed of the immense profit in this business this year from the fact that several growers have accepted or refused from \$3,000 to \$5,000 for this year's crop of apples, and many orchards have paid this year 25 per cent on a valuation of \$1,000 per acre. This is owing to the fact that Nova Scotia was the only apple producing county that had 90 per cent of an average crop. The others ranged

from 70 per cent to 20 per cent, and altogether averaging less than 50 per cent. The United States, which requires forty million barrels for home consumption, returns this year's crop at thirty-four million barrels; and several apple producing countries in Europe, notably Germany, are large importers this year. "Lest we forget" now is the time for us to economize and provide against a light crop and low prices—which are sure to come.

Our Plum Crop

has this year yielded about 60,000 baskets (10 lbs.) with average sales of 30 cents per basket. Our cranberry crop reached over 1000 barrels. Pears and small fruits were a fair crop and sold at remunerative prices. Strawberries about 300,000 baskets. Our fruit trees have this year been unusually free from insect pests and fungus diseases, and the dread San Jose scale is so far not known to exist in Nova Scotia. The only drawbacks in this year's fruit harvest was the unusually warm weather during October and November, which prematurely ripened our early winter varieties and caused some of them to open black and soft in foreign markets. I think that under our high cultivation, especially if autumns are warm, our early winter fruit, notably Blenheims, Kings and Ribstons, are maturing earlier each year.

A Standard Apple Barrel.

The Canadian government has passed the following act, giving Canada a uniform apple barrel, and it is to be regretted that it is not of the same dimensions as the standard barrel adopted by the United States, and that it does not apply to potatoes and other vegetables shipped in barrels. Our worthy vice president has this business in hand, and will, I hope, succeed in having the act amended this year. November 13. Section of Act 2. On and after the first day of July, one thousand nine hundred, section 18 of the weights and measures act shall be repealed and the following shall be substituted therefor:

"18. All apples packed in Canada for sale by the barrel shall be packed either in cylindrical veneer barrels having an inside diameter of 18 inches and one-third and 7 inches from head to head inside measure, or in good strong barrels of seasoned wood 27 inches between the heads inside measure, and having a head diameter of 17 inches and a middle diameter of 19 inches, and such last named barrels shall be sufficiently hooped, with a lining hoop between the chimes, the whole well secured with nails.

"2. Every person who offers or exposes for sale, or who packs for exportation, apples by the barrel, otherwise than in accordance with the foregoing provisions of this section, shall be liable to a penalty of 25 cents for each barrel of apples so offered or exposed for sale or packed."

Inspection Law for Apples.

The careless and fraudulent packing of apples in Canada has become such a menace to this important trade that some inspection law seems imperative, and the hon. minister of agriculture requests us to outline some form of an act which will not entail any individual loss or grievance to the honest packer, and you will find this a difficult task. I have had frequent communication with the Ontario Fruit Growers' association on this question and they have passed the following resolution, which you will please consider carefully and adopt unless some act more desirable can be formulated:

Resolved, That both the Dominion and

the provincial legislatures be asked to consider the advisability of legislation to carry out the following regulations for the sale of apples and pears:

1. That all apples and pears packed for sale in closed packages shall have the minimum diameter of the fruit marked in plain figures on the top or face end of the package, thus, 2 inches, 2¼ inches, 2 inches, etc., as the case may be.

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

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

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

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

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

3. That all apples and pears packed in closed packages be subject to inspection by the government inspector.

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

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

6. That in such latter case, the inspector shall apply some distinctive inspection brand to show that the packages have been inspected and found to be honestly packed.

7. That the name of both packer and shipper be required to be placed on each package.

School of Horticulture.

As a detailed report of this school will be made by the chairman, I need only refer to it as being very successfully conducted by Professors Sears, with about 65 students in attendance, representing ten counties in the province, and six students from New Brunswick, and its influence in promoting the successful prosecution of the valuable industry of fruit culture is being realized all over the province, and in no other department of educational work is \$2,000 as profitably and practically expended as in this school and in the lecture course of Professor Sears throughout the province, and we hope the Nova Scotia government will see the importance of employing Professor Sears to lecture and teach in every county during the summer months. A few hours instructions in the practical points of fruit growing in our public schools by such a competent professor would be of great value to the province.

Exhibits.

There were 383 exhibits of fruit from ten counties, drawing \$588 in prizes at provincial exhibition in 1899. The apple exhibit was excellent in quality. We were fortunate in securing the services of our old friend, Professor Craig, now of Iowa state college, as judge and lecturer, and a detailed report of his will be published in our annual report. The early date at which this exhibit will be held this year prevents us from making any creditable show of apples, but pears, plums and small fruits may make up the deficiency.

A proof of the indifference to fruit culture in eight counties is shown from the facts that separate county prizes of \$20 and \$10 have been offered three years on terms so easy that any intelligent boy could without expense, make the exhibit and claim the prize, yet no exhibit has been made from these eight counties.

The hon. minister of agriculture has made arrangements for a large exhibit of fruit from Canada at the Paris exhibit, opening April 15, 1900, and employed Mr. C. Patriquin to preserve a full

line of bottled fruits, which has been supplemented by 80 boxes of apples and pears for exhibit and 50 barrels of apples to be distributed by Professor Robertson, as Nova Scotia's share, and if successfully carried out will be a great credit to Canada.

Transportation of Fruit.

The complaint of excessive freight rates charged by subsidized lines to London has engaged our attention for the past ten years, and seems no nearer a favorable solution than at first. Your worthy vice president was appointed a delegate to the maritime board of trade at St. John and ably presented the grievance of fruit shippers, with such results as he will fully explain. It now seems the fixed policy of the government not to dictate any freight rates to their subsidized lines, and fruit growers have only one alternative—to employ other lines for fruit transport. After a careful consideration of this subject I am fully of the opinion that as this trade develops profitable means of transport will be by small fruit steamers from the Bay of Fundy ports, much the same as oranges are exported from the Mediterranean and bananas from the West Indies—and with loading ports at Annapolis, Kingsport, Horton and Hantsport and a pier now being provided at mouth of Cornwallis river, fruit growers can find foreign markets without the aid of any subsidized monopolist lines, at about half the freight now paid. Within the next five or ten years we must provide for an export of over one million barrels annually, and the steamship company which secures this business from Bay of Fundy ports, at half the present cost, will have one of the most profitable export trades from this continent. It is now certain that steamers can be loaded once a week in Minas Basin from wagons direct from the orchards, and it only requires the united effort of fruit growers to secure this at once.

IMPRESSIONS OF NOVA SCOTIA.

Rev R. F. Dixon was then introduced to the audience and received a hearty welcome. His subject, "Impressions of Nova Scotia," was treated in a humorous and interesting manner.

He said he felt a little diffidence in addressing an audience consisting of experts, because his knowledge of the fruit question was very limited. Mark Twain once wrote a book, "What I don't know about farming," and he thought he could fairly write a book, "What I don't know about fruit culture." Since coming to the Annapolis Valley it had dawned on him that the cultivation of an orchard was really a science. He had come down here from Ontario, where he had resided twenty years. He thought this country was the healthiest on the American con-

continent. The climate was all that could be desired—65 in Nova Scotia as compared with 63 in Ontario—mean summer temperature. The mean temperature in winter in Nova Scotia is 25 and in Ontario 19. The snow fall here during the last ten years is two inches less than that of Ontario. He thought we had a climate that leaves very little to be desired. The beautiful scenery of the province had been a perfect revelation to him and the resources of the province were very great. If the hundreds of thousands who had gone to the United States had remained at home no one could predict what this province might have been. He believed this association was doing good work and wished it every success.

PROGRESS OF FRUIT GROWING.

The Great Increase in Orchards During the Last Ten Years All Over Canada.

Dr. Wm. Saunders, of Ottawa, addressed the association as follows: It affords me great pleasure indeed to have this opportunity of appearing again before an audience of Nova Scotians. I recall with very much pleasure my former visit to this town. My first visit was about fourteen years ago, when I began the work of the experimental farms which has been so useful in advancing agriculture and horticulture in different parts of the Dominion. My first visit was to Nova Scotia. I came to the Annapolis Valley and drove nearly the

whole length of it, and thus had my first introduction to this beautiful section of the Dominion. The great burden among the fruit growers even then was that the apple market was nearly overdone. They were afraid it was not safe to plant more orchards. They thought the people had enough apples, and did not realize the number of people in the world who did not get an apple. That idea has been pretty well dissipated. From what I have seen of the country I think it is safe to advise the people to plant more trees. You might have five times as

many orchards as you have now with profit to yourselves, and it would be more remunerative than any other industry you could have invested in, provided you plant the right sort of apples,—good keepers such as you can ship,—and if you look after your orchards and care for them as you would care for anything you are fond of, nature will do the rest for you.

Nova Scotia 14 Years Ago.

had very few apple trees outside of the Annapolis Valley. When I came down to the upper part of the province they said, "We do not grow apples here, you will have to go down to the Annapolis Valley." I asked why they did not grow apples; the reply was that it was cheaper to go down there and buy them. I tried to combat this; I saw nothing in the climate of Nova Scotia that was inconsistent with the growth of apple orchards. I believed from the outset that they could grow them. This doctrine I tried to preach wherever I went; and experiments have proved it true. I find good orchards in almost all districts I visit, where farmers have an abundant supply of fruit which they use to the great advantage of their health and families. I think, ladies and gentlemen, that there is no food more healthful than fruit, and no fruit more so than the apple. You are situated near the seaboard and your fruit orchards are looked after with quite as much care as some of the fruit orchards further west.

Your attention has been directed very largely to the growth of apples. I think you might with wisdom direct more attention than you have to the growth of pears. The experience of shippers during the last two years to Great Britain has shown that the

Shipments of Pears.

have paid better, and with relatively better prices than any other fruit sent over. And the British people are only now getting an idea of what a fine pear

we can grow in this country. John Bull will pay a good price when he gets what he wants. The pears grown in Nova Scotia have a fine flavor and are of good quality; and their beauty is such as to commend them to the people here who have money to spend in fruit. When in England a few years ago I was surprised at the use made of pears at dinners and on public occasions. I found that pears were rented out at so much a night; they were put on as decorations of the table and anyone who was foolish enough to take a pear to eat was thought a barbarian. They had no idea of having them to eat; they were there for show. But that state of things is passing away. I believe there is an unlimited demand for the fine pears this valley can grow, and a large export business could be carried on with profit. There are very few among the bulk of English people who use pears freely, and there is a large class of consumers who would willingly buy this luscious fruit if they could get it,—and I hope a word to the wise will be sufficient. The following year after my first visit, when I came down here, I wanted to know

Something About Cherries,

and wherever I went in the province I was told I would have to go to Bear River for cherries. I went to Bear River and I found there were plenty of them there; they grew everywhere. I found on enquiry that some of the early settlers had brought the cherries with them; they came from western New York and sowed the seeds of these cherries. They were all seedlings and some were exceedingly good. I tried to buy a box, but found I had to pick them myself; so I paid seventy-five cents and picked my own box. That was a little different from the Ontario custom, but I assume they are now picked, packed, and marketed as any other commodity. I have noticed that you are not without cherries in the valley now, and you can

safely plant more cherries as well as pears; no doubt you would find a good local market in your local towns. Plums were not grown very largely at that time. So much for Nova Scotia.

In Prince Edward Island, fruit growing has made some progress; they thought their climate was not suitable. There were a few orchards some thirteen years ago when I first went to the Island. A year ago the first shipment of apples was made from Prince Edward Island to Great Britain. They arrived in good condition and sold at satisfactory prices. So the Island has been encouraged by this little success and fruit growing is extending considerably, and will extend rapidly in the future.

Apples in New Brunswick.

In New Brunswick there are many sections, more especially in the St. John Valley, where orchards have been planted and are now doing well. Among the apples to go over in cold storage to the Paris exposition, in addition to the large quantities from the Upper Provinces, are 50 boxes from New Brunswick, and 25 boxes from Prince Edward Island, so as to demonstrate to the people at Paris that this great area of country in Eastern Canada is adapted for the production of fruit of good quality.

Quebec is also to some extent a fruit growing area. In the eastern part of Quebec only the hardier varieties of apples can be grown and apple culture is only carried on to a limited extent. Plum culture is common over the Island of Orleans. In the western part of Quebec it is very favorable. A considerable quantity of Fameuse are exported in egg cases, and the apples are wrapped in paper enclosures inside. They have realized good prices in London. They get from 3 to 4 shillings a case, a price quite beyond anything for fruit shipped in the ordinary way. A profitable trade has sprung up and I

have no doubt that within the next five years they will large export from that part of the Dominion. The eastern townships in Quebec are also good for apple growing.

Ontario is a Wonderful Province

in its capacity for fruit growing. At Ottawa the climate is not favorable, as it is too far inland to admit of growing the best varieties. We do grow a considerable quantity of what might be called second-class fruits; in some localities we can grow such apples as the Spy and King. We also grow the Wealthy, Duchess, and Pewaukie. But 100 miles further up the St. Lawrence there is a district where the finest variety of winter apples can be grown, and this district extends westward to Hamilton. Prince Edward is one of the finest producing apple counties in the Dominion, and there are large areas all the way north from Brockville to Niagara. On Lake Ontario is a sloping piece of land extending 40 miles inland which is one of the finest fruit sections of the Dominion; there they ripen peaches in large quantities and grow grapes to an immense extent, and the country there is looking more and more like a garden every year. I found in Manitoba, Ontario peaches, plums and apples, and on enquiry in the Niagara district I found that 200 carloads of peaches, pears and apples had gone up to that district within the course of a few weeks in the autumn; and this large shipment had relieved what would otherwise have been a congested market, and resulted in making better prices at home in the great centres of population such as Toronto, Hamilton and Ottawa. There has also been a new district opened up of late years along the shores of Lake Erie, from Point Pelee to Amherstburg, where peaches can be grown with more certainty than in the Niagara district.

All Along the Shores

of Lake Huron and Lake Ontario fruit culture is progressing rapidly, and makes a large contribution to the shipments to Great Britain. This last year has been unfavorable all over that part of the country and that has given your apples in this valley a great chance as to price, and while we should not rejoice in the misfortunes of our fellows, yet we are always ready to take advantage to do the best with our own products. The fact of the prices having kept up is due largely to the small crop that has been raised in Ontario. While the Niagara district affords great advantages, and also the counties of Essex and Kent, the further you go north the higher the flavor of the fruit will be, and the better the keeping qualities; hence while the Niagara fruit matures earlier than the fruit grown in the inner counties up towards the southern shores of Lake Huron, yet in this section it will keep a week or two longer before maturing and that affords them opportunity of getting to Europe in better condition.

I will take you further west, up in the Algoma district, extending as far as Lake of the Woods. Although fruit is not grown to any considerable extent, yet there are a few hardy varieties which will grow up to that point. From the beginning of the prairie district east of Winnipeg to Calgary practically no apples of any sort are produced. There is a section near Morden about

Fifty Miles South of Winnipeg.

where the elevation of the Red River valley is 650 feet, where a few apples have been grown. Mr. Stephenson lives near there, who has a sheltered place with a great wood to the north and west of him. This year I went down to see him and he had eight, or ten varieties of Russian apples. And again

at Brandon the superintendent of the experimental farm showed me some apples which were grown by the archbishop of Rupert's Land. I found one or two trees of Transcendants in Winnipeg. I also found a tree in Winnipeg that bore three or four quarts of West Astrachan crabs. I think I may safely repeat that throughout that whole district practically there are no apples grown, nor is there any prospect as far as we can see at present of getting large fruits such as you would consider desirable and essential to your comfort to grow there. Some twelve years ago we received at Ottawa from the Royal botanical gardens at St. Petersburg some seeds from Northern Siberia which had been collected by the Russian government, the Pinus or Siberian crab. We expected a nice ornamental shrub, and we were not disappointed. It is a very handsome tree, branching close to the ground ten or twelve feet high. It is a beautiful thing in spring, and it produces crabs as large as a cherry. I sent a few seeds to Brandon and Indian Head and those little apples have grown at both those farms from the terminal bud every season. And last year, or the year before, the superintendent at Brandon reported that the first crop of apples ripened were as large as cherries. We thought to try and improve from this crop by cross fertilization, by crossing the Duchess, Fameuse, Ribston, Yellow Transparent and Tetofskey. For instance we would take the pollen from the Red Astrachan or Tetofskey and dust it on the pistil of the pinus and tie it up and allow it to grow. You will then find the fruit partaking of the character of the parents. Last year, that is four years from the sowing we had thirty-five of these varieties, very vigorous trees. Five of these fruits have been thought to be sufficiently large to be worthy of naming.

The largest and best of them has got to the size of the Siberian crab. These have been tested on account of the promising style of their growth and have thus far proven hardy. If we can give the people of this vast country a taste of fruit, the love of fruit will

Increase the Demand

for Nova Scotia, Ontario and New Brunswick fruits, and you will thus gain a market. Ontario, of course, has a large market in that country now; Manitoba, Winnipeg, Brandon, Portage LaPrairie and Regina now consume immense quantities, and the demand is increasing year by year. Some small fruits can be grown there very successfully, particularly currants and some varieties of gooseberries and raspberries. Strawberries unfortunately make all their blossoms in the spring, and it so happens in that climate they are subject to hot days and frosty nights, which has a bad effect on these particular plants. We have sent a good many thousand plants to be tested, but we have not yet had much results. They also have a great deal of wind, and in the autumn the little runners are blown from one side to the other and they do not get a chance of rooting.

Crossing the Selkirks to British Columbia, in the coast climate, from the Pacific Ocean east 100 miles we have a wide area perhaps 200 or 500 miles long. This 100 miles is the best fruit-

growing district that we at present know out there, and it grows abundantly apples, pears, plums and cherries, but more particularly plums; they have enormous crops.

British Columbia Plums.

I have never seen plum trees grow as they do in British Columbia. These fruits grow in great abundance and perfection. They cannot grow peaches successfully, as there is not enough heat; and there is not enough heat to ripen the grape or tomato. The climate is somewhat like your own, but not so warm. When you come east of that coast range you strike a different climate altogether. The moisture-laden clouds deposit all their moisture on the mountain. At Spencer's Bridge the biggest apple shown at the world's fair was grown. It measured 14 $\frac{1}{4}$ inches in circumference, and was put under a glass case as the largest apple in the exhibition. After it had been exhibited for some time an apple came from Oregon that weighed two ounces more, and then another that was still larger. Coming further east of Spencer's Bridge between that and the Kamloops there are several places where fruit is produced. East of the Kamloops there are some orchards doing well.

I thank you for listening to me in this rambling address and I must again express my pleasure at the opportunity of being able to have a friendly talk with you on fruit growing. (Applause).

TUESDAY MORNING SESSION.

THE USE OF BORDEAUX.

Professor F. C. Sears on the Best Methods of
Preparing Spraying Mixture.

I ought perhaps to apologize for presenting to you a subject which is as old as the one announced and which to some might seem accordingly stale, I have two excuses to offer, the first being that I am very much interested in this subject myself, and so I assume that you are also, or at least ought to be; and the second is that I believe some of the points which I shall present will be new to most of those present. I wish first to explain the chemical changes which take place when the solutions of lime and bluestone, or copper-sulphate, are mixed together in preparing Bordeaux mixture, because much of the further discussion depends upon our understanding this point. This will necessitate the introduction of a few chemical terms but I shall do so without hesitation because I have no sympathy with those who believe that farmers and fruit growers, or at least as intelligent ones as we have here in Nova Scotia, are to be frightened by a few of the so-called scientific terms. Let me say then, that when this mixture of lime and vitriol is made we get an entirely new chemical substance, the copper-sulphate or vitriol disappearing altogether as such, and its place being taken by what is known as copper hydroxide—Thus:

$\text{Cu SO}_4, 5\text{H}_2\text{O}$ (copper sulphate crystals) and Ca (OH)_2 , (slaked lime) give Cu (OH)_2 , (copper hydroxide) Ca SO_4 (gypsum) and $5 \text{H}_2\text{O}$ (water).

The real change is somewhat more complicated than this but this is sufficient for our present purpose. Now while the copper sulphate itself is very poisonous to such plants as the apple this new substance which is found in the Bordeaux is not poisonous to them and we can therefore see the importance of being certain that in preparing Bordeaux we have added sufficient lime to change all the copper sulphate to this new substance copper hydroxide. Just

A Word of Explanation,

or in further discussion of this somewhat singular fact, that two substances so nearly alike should affect plants so differently. It is by no means an isolated case and I can perhaps better illustrate or enforce it by referring to two other substances which have a similar relation to each other in regard to their effect upon animals. These two substances are the drug calomel and the poison corrosive-sublimate. Probably all present know these substances, at least by reputation, calomel being a drug used by many physicians in the treatment of certain diseases and corrosive-sublimate being one of the most deadly poisons known. But they resemble each other in their chemical composition. They are composed of the same elements, the same materials as we might say, only combined in a little different proportions. Each is made

by the combination of a yellowish gas, chlorine, with mercury, such as is used in thermometers, the only difference being that corrosive-sublimate has twice as much chlorine as calomel has. Now so far as the apple tree is concerned the copper sulphate corresponds to the poisonous corrosive-sublimate, while the new substance, copper hydroxide, found in bordeaux mixture, is the calomel which is to cure it of such diseases as black spot, etc. For the purpose of determining when sufficient lime has been added the potassium ferrocyanide test, is, in my own opinion, the surest and most convenient. Its use depends on the fact that when any of the copper-sulphate is present in the mixture you will get a red color on adding this test solution; that is, as long as the bordeaux is dangerous to your apple trees this test will give you the red danger signal. The

Advantage of This Method

of preparation over that of weighing out your materials is that with this you are absolutely sure when you have added sufficient lime; with the other, everything depends on the strength of the lime used and any mason will tell you that different brands of lime, or even different barrels of the same brand will often vary one half in their strength. There is also another advantage to be gained from the use of this test. It has been found by the experiments of two French scientists that what is called neutral bordeaux mixture, that is bordeaux to which only enough lime has been added to change over all of the copper sulphate, that such bordeaux is much less likely to be washed off from the leaves by rains than when either an excess of lime is added or not enough. Leaves covered with bordeaux and other fungicides were subjected to artificial rain for 24 hours and at the expiration of this time the bordeaux was still abun-

dant on them. The practical importance of this point will be easily recognized in a country like ours where rains are liable to be so frequent during the spraying season. It was further found, in the experiments alluded to, that freshly prepared bordeaux would adhere much longer than that which had been prepared for some time. This will mean that our common practice of leaving half a barrel or so of bordeaux mixture when we finish one spraying and allowing it to stand for ten days or a fortnight until we are ready to spray again is

Not a Good Practice,

but that we should as far as possible, prepare only what we can use in a very short time after it has been mixed. The question has been asked why it is that bordeaux mixture which is harmless to such plants as the apple and plum is so destructive to fungous plants like the black spot or, to reverse the proposition, why a substance which is so destructive to black spot as is bordeaux should be harmless to the apple. And the suggestion has been made that if the explanation lies in the fact that fungous plants, like the black spot, require less to kill them than does the apple, and that bordeaux while strong enough to kill them is too weak to injure the apple, why it might then be possible to use a solution of bluestone, for spraying, weak enough not to injure the apple in the least but strong enough to destroy the black spot. This suggestion would be very good provided the explanation of the difference in the effect of bordeaux on the apple and on fungous plants lay, as suggested, in the fact that a substance would destroy the fungous which was too weak to effect the apple. But the true explanation is not this, but lies in the fact that substances affect various plants in quite different ways. For

example, it has been found that a mould will grow luxuriously in a solution which destroyed a vigorous plant being apparently benefited by what was extremely poisonous to the higher plant. And with bordeaux mixture the case seems to be just reversed, the fungous plant being destroyed while the higher plant is uninjured.

Successful Methods.

Success in the use of bordeaux mixture depends not only on its proper preparation but also on its proper application. The plant which is to be protected should be covered entirely with a coating of the bordeaux through which it is impossible for a fungous to penetrate without being destroyed. It is becoming more and more evident each year that nearly all of the blemishes or diseases of our fruits may be prevented by the proper use of such fungicides as bordeaux mixture. The latest addition to the list of curable diseases is what is known as canker, so common on certain apple trees. It has been discovered that this is caused by a fungous plant similar to that which causes the black spot of the apple and that it may be prevented by the use of bordeaux, and I am quite convinced that what is known to us here in Nova Scotia as the 'collar-rot,' attacking more particularly the Fall-water and the King, is of similar origin and may be prevented by the use of some fungicide if the proper method of attack can only be discovered. I hope, during the coming season, to undertake a series of experiments on

this subject which I trust may throw more light upon the matter. In conclusion let me sum up briefly the points which I have attempted to bring out in this discussion.

Summary of Facts.

1st. The same substance affects different plants in quite different ways. A substance which will entirely destroy such a plant as the apple being harmless or even beneficial to certain fungous plants, and conversely a substance which is quite harmless to the apple may entirely destroy a fungous such as the black spot.

2nd. Copper sulphate will destroy both the apple and the fungous when either is in active growth but bordeaux mixture contains copper hydroxide, an entirely different substance from copper sulphate or bluestone, and one which is quite harmless to the apple but sure death to the black spot.

3rd. A sure way to tell when enough lime has been added to the bordeaux to change all the copper sulphate to copper-hydroxide is to use the potassium-ferrocyanide test.

4th. Neutral bordeaux, or that which has neither too much nor too little lime in it, will adhere to plants better than either that with an excess of vitriol or that with an excess of lime.

5th. Freshly prepared bordeaux will adhere better than that which has been mixed for some time; it being even stated that after 48 hours, it loses much of its power to adhere to the leaves of plants.

NEW VARIETIES OF APPLES.

Some of the Kinds Not Well Known in Nova Scotia but Good Growers.

The following paper was read by R. W. Starr:—I have been asked to prepare a short paper on some of the new, or not well known varieties of apples, such as will be likely to prove profitable to the commercial orchardist. It must be conceded that many of our so-called standard varieties have serious faults which lower their value to the grower, and every man who intends planting an orchard next spring is asking: What kinds shall I plant to fill the season and give the most profit? I will not attempt to answer that question. There are too many conditions to be considered: variations of soil, location, cultivation. Questions like these can only be answered by careful and methodical experiments, which should be carried on simultaneously in different localities in order to get satisfactory results. This of course means expense, frequent disappointment, and many failures, but if from one hundred varieties of carefully selected new and foreign sorts we can find one only for the mid-winter season that will prove as good as Gravenstein is for the autumn months, then we shall be well paid.

I do not intend, in this paper, to propose any scheme by which this work may be accomplished; but merely to call attention to its importance and necessity, leaving the ways and means for further consideration, and proceed at once to name a few varieties that have been partially

Tested in the Orchard and Market,

and so far, have given good results in both, and can at least be rated equal

in value to other standard varieties of the same season. I shall name them somewhat in order of their ripening:—

Hurlbut—Tree strong, vigorous, good habit of growth, very productive; fruit, medium, oblate, conic; skin, yellow, nearly covered with red, splashed with darker red; dots, few and light; stalk, short, rather slender; cavity, broad, deep, russeted; calyx closed; basin, shallow, slightly wrinkled; flesh, white, crisp, juicy, mild subacid; core, small, season, November, and December.

Wagener—Tree is not large, but is thrifty, healthy and hardy; a very early and abundant bearer, requiring high cultivation, warm soil and plenty of sunlight to produce the best flavored, high-colored fruit; fruit, medium to large, oblate, slightly shouldered and ribbed; skin, yellowish, very smooth, and firm, fairly well covered with two shades of red, either mixed or in broken stripes; dots, few and yellow; cavity, medium, irregular; stalk, long, slender; basin, broad, abrupt, ridged; calyx, small, closed; flesh, light cream color, fine grained juicy, melting; flavor, mild, vinous, subacid; one of the best table apples of the season, and will be a leading market sort when better known, as it is a good carrier, and stands up well if shipped in proper season. Season, December, and February.

Stark—I have grown this apple for over twenty years. As a commercial apple I consider it more profitable than Baldwin. The tree is a strong vigorous grower, never splitting or breaking, however great the crops; an early and abundant bearer of even-sized, perfectly formed fruit, which hangs well to

the tree, producing very few drops, or culls. I used to consider it one of the best of the long-keepers. At the Chicago exposition it stood up better than almost any other, and the apples were in fine condition when I left late in June. Several times of late they have shown a tendency toward dry rot, a disease than has affected Ribstons and Greenings for some years past, and is now being studied by scientists, to try to get at the cause, and conditions under which it is developed. Aside from this drawback, which has injured several shipments, they have usually sold in London for about the same price as Baldwins. Fruit, large, roundish, slightly conic, sometimes oblong; skin, greenish yellow, shaded, splashed and striped with bright, and very dark red, covering three-fourths of the surface; dots, numerous, some light, some brown, others aureole; stalk, short, stout, cavity medium, regular; basin, wide, slightly corrugated; flesh, greenish yellow, a little coarse, firm, mild, subacid; core small; good; season, February to June.

A Canadian Favorite.

Ontario—This is undoubtedly the best of the late Charles Arnold's fruits. It was obtained by crossing Spy with Wagner. It has evidently combined in itself some of the best qualities of both parents. Tree, vigorous, spreading, bears early and abundantly; fruit, large, oblate, slightly conic, obscurely ribbed; skin, light yellowish white, partially covered with bright red with some stripes and splashes; dots, light; stalk long, slender; cavity, broad, deep, frequently russeted or rayed; calyx, closed; basin, broad, slightly, corrugated; flesh, yellowish white, fine, tender, juicy; season, January to April. Good to very good. This apple has been fruited for several years in this county and in Yarmouth, with very satisfactory results, and of late years has been

quite freely planted here, mainly on account of the high recommendation of the Ontario F. G. A. they having placed it highest, or next the highest, in their list of commercial apples. It has not yet been sufficiently grown in Nova Scotia to definitely prove its commercial value; but I know of none more promising, or more likely to become one of the leading varieties of its season.

Cornish Aromatic—Scions of this fine long-keeping apple were sent among several other sorts to this association, by the London horticultural society, in 1865. John G. Byrne, of Kentville, got and set some of them in bearing trees, finding them quite profitable when they came into bearing; he grafted several more trees, and now finds they bring him the highest market prices in London in the late spring shipments. It is a good and regular bearer, hangs well on the trees with few drops; it is a splendid keeper, a good shipper and holds its flavor until the last. I find by my notes taken at the time, in Chicago, in May, '93, that Cornish Aromatic was given the first place for quality and flavor, in an informal test, in which Spy, Golden Russet, Baldwin, and a number of others from Nova Scotia, Ontario, Quebec and several of the states, took part, and the judges were if I remember right, Powell, of New York; Wolverton, of Ontario, and several others. Fruit, medium, roundish, oblate, slightly ribbed; skin, smooth, yellow, nearly covered with rich red, with faint splashes of dark crimson; dots, plentiful, russet yellow; cavity, medium depth, narrow; stem, long, slender; basin, shallow; pleated; calyx, small, closed; flesh, white, sometimes stained red, firm, crisp, rich, aromatic, subacid. John Lowe, of Northard & Lowe, says of this apple:—"You should grow more of them; they suit our market and are wanted. You cannot send too many of them."

A Good Table Apple.

Cox's Orange Pippin—This is an English apple that takes the highest rank as a dessert apple in London. It has been grown in this county for a number of years, but it not likely to become popular with the ordinary fruit grower, as it requires warm soil, and high cultivation to give size and color to the fruit. Even then it will hardly compete with Blenheim, Ribston and King, in the number of barrels of fruit to the tree. But if well grown, and carefully selected and packed in bushel boxes or cases, so that they will not bruise they will command such prices as will more than cover all deficiencies in production. In fact, the demand for that particular apple is always greater than the supply, and we should be alive to the wants of our best market and endeavor to supply it. Fruit, oblate, regular, smooth; skin, yellow, sprinkled shaded, and splashed, with crimson over most of the surface, flesh, yellowish, granular, firm, juicy, brisk, rich subacid.

Belle de Boskoop—Supposed to have originated in Northern Germany. Downing says he received it from France. I received scions from the late Charles Gibb, in the spring of 1888. It has been fruited and shown at our annual meetings, at Chicago, at Halifax, and at Omaha. This year it did not bear, but from what I have seen of it I consider it worthy of more extensive trial. As I have no specimens, I give Downing's description:—"Tree, vigorous, spreading, comes into bearing moderately early and produces abundantly in alternate years; of fair fruit, good size, very good quality; keeps well and is very promising. Fruit, medium to large, oblate, roundish, sometimes oblique; skin, yellow, finely russeted, shaded with light and dark red, over a large part of the surface; dots many, small, and large, some irregular, yellowish brown; stalk, long, slender;

cavity, deep russeted; calyx, partially closed; basin, large, round, deep, slightly corrugated; flesh, coarse grained, crisp, juice brisk, subacid, rich, and of very good quality; core, small, close. Season, February to April.

Victoria—Scions of this fine apple were sent me from Abbotsford, P. Q., by the late Charles Gibb in the spring of 1889. It proves a good bearing, healthy tree, and I think is one of the best of the early autumn apples. Fit for table use the first of September, it can be kept without loss of flavor until Christmas. Fruit, full medium size; form, roundish, oblate, smooth, quite regular; stem, medium to long, slender; medium smooth, sometimes uneven; calyx, small, frequently open to the core; segments, short, closed; skin, white, covered with rich rose red, shaded in the sun to a deep wine color; dots small light grey; core, large, open, frequently outlined red; seeds, numerous, dark brown, pointed; flesh, white, sometimes stained light red, fine grained, firm, crisp, with pleasant aromatic flavor; quality, very good to best.

The Dudley Group.

Dudley—(Dudley's Winter Dudley's Red Winter, North Star.) This large handsome apple is said to have originated in Aroostook, Maine, from seed of Oldenburg, and shows many characteristics of that apple in an improved form. It is said to be quite as hardy as its parent, an early and constant bearer, strong, flexible branches, capable of carrying the crop with out breaking. This apple I consider worthy of extended trial in all those sections of our province where the Gravenstein does not prove a commercial success, as its season appears to be about the same. Fruit, large, frequently very large, roundish oblate, slightly conic; skin, creamy white, turning light yel-

low at maturity, two-thirds covered and powdered with light red, splashed and brokenly striped with dark red, almost crimson; dots, quite small, light and numerous; stalk, long, slender, deeply set in a broad even cavity; calyx, open; segments, long, partially closed and reflexed; basin, broad, quite deep, irregularly corrugated; flesh, white, a little coarse grained, crisp, juicy, brisk, pleasant subacid, core, medium; seeds, large, long, flattened, light brown; very good; season, October, November, December.

Richardson—A chance seedling, dug from the roadside and set in an orchard about 15 years ago by Ivory Richardson, of Sweden, Maine, and exhibited at the annual meeting of the state horticultural society, Skowhegan, December 27-29, 1898. Said to be a strong vigorous growing tree, and a good constant bearer. Fruit, large; form, roundish oblate, slightly shouldered; skin, yellow, but nearly covered with rich red, marbled, and splashed with dark crimson; dots, scattering, grey, frequently russeted on the shaded side; stalk, medium, strong, deeply set; cavity, large, slightly corrugated; calyx, large, deep running up to the core, closed; segments, rather short, partially reflexed; basin, broad, medium deep, slightly corrugated; core, large; seeds, numerous, light brown, plump, pointed; flesh, yellowish coarse, firm, juicy rich subacid; season, November, December.

I also give the description of a few English apples that are highly spoken of and known in London markets, but have never been grown here. We should import a few trees to test them as we know that many of our best standards are of English origin.

English Varieties.

Peasegoode's Nonesuch, from Dr. Hogg—This beautiful apple was raised by Mr. Peasegoode, of Stamford, Eng., and

is a fine culinary and dessert apple. It is like a handsome and highly colored Blenheim Pippin. Fruit, large, roundish oblate; skin, yellow, overspread on the sunny side with red and copiously streaked with bright dark crimson; stalk, short, deeply inserted, eye, very large and open, set in a deep round even basin; flesh, yellowish tender, very juicy, with an agreeable acid flavor; season, October, November.

Lady Henniker, from Journal of Horticulture—This new English apple was raised by John Perkins, Thornham Hall, Suffolk. Tree healthy and a great bearer; fruit, valuable for both cooking and dessert, large, roundish conic, angular, ridged round the eye; skin, yellow, shaded with pale red and broken streaks of crimson in the sun; stalk, very short; cavity, wide, deep, russeted; calyx, large, open; basin, very deep, angular; flesh very tender in the grain, well flavored and with a pleasant perfume; season, November, February.

There are one or two apples grown as standard varieties in Ontario, that we know little about, and I should like to ask Mr. Petit to give us his opinion as to their usefulness and whether we would likely succeed with them, or whether they are good enough to displace others that we have of the same season. I allude first to LaRue or Baxter; how does it compare with King, as a commercial apple? And next to Phoenix and Cranberry Pippin, how do they compare with Baldwin?

Last year we heard of a new apple, the Merritt, in New Brunswick, which had a good local record for looks, long-keeping, and good quality. I have had some correspondence with Mr. Reid, of Fredericton, on the subject. He has sent me a sample of the fruit and a history of the apple so far as it can be ascertained by the gentleman on whose farm the original tree is standing.

Discussion.

Dr. Saunders said that he thought the Ontario a good variety.

A. H. Petit—The La Rue, which is grown in the eastern counties, is a very promising and useful apple.

Dr. DeWitt—In our local markets in Halifax and St. John, before the Gravenstein matures, there is a demand for a nice apple, and the Valley does not seem able to supply it. Mr. Starr had mentioned the Victoria. It would be well for the young men to consider what this apple is capable of doing.

Colonel Spurr—What about the Red Astrachan?

Dr. DeWitt—It is worthless. People do not want it, except to graft stock in. It is also a bad keeper, and I do not think it is early enough.

Dr. Saunders—What about the Yellow Transparent?

Dr DeWitt—Yes, it might fit into the season. I do not know much about it.

Colonel Spurr—Do you know the August Pippin?

Dr DeWitt—Yes; many of the good apples have gone out of use. The Spitzenburg, for instance, that beautiful apple which is said to be sent from New York to Queen Victoria every year. It is one of the old standard varieties. The Yellow Belle Fleur and the Spy seem to be depreciating, and going out. They are not being propagated in the nurseries. You never see the Spy in the nursery catalogues now. With respect to the Wagener, Liscombe and the Star, the experience I have had is that they are not taking the place of the old standard varieties. Mr. Lowe told me, in London the Wagener was not a good shipper, or keeper, and did not arrive well. The Liscombe is to a great extent worthless, compared with the King. Nothing was said of the Golden Russet. As for flavor, richness, and crispness, it is

an apple that we can scarcely afford to do without, because it is a great keeper and an excellent apple. What I would like is that you might get hold of three or four varieties which would give us better trees and better fruit to extend our orchards. We

Profess Great Things

in Wolfville. When Dr. Saunders mentioned cross fertilization, I felt if we had only attempted to cross fertilize in the school five years ago, we might have had something valuable to-day. I think we can improve if we will.

W. C. Archibald—I think Mr. R. W. Starr has outlined some excellent varieties.

Captain Tingley said he was driving with Mr. Chase one day, and he, (Mr. Chase), said to him that if he was going to set out an orchard, he would set out the Gravenstein, Baldwin and Ben Davis, and that he would use only these varieties if he was going to set out 10,000 trees.

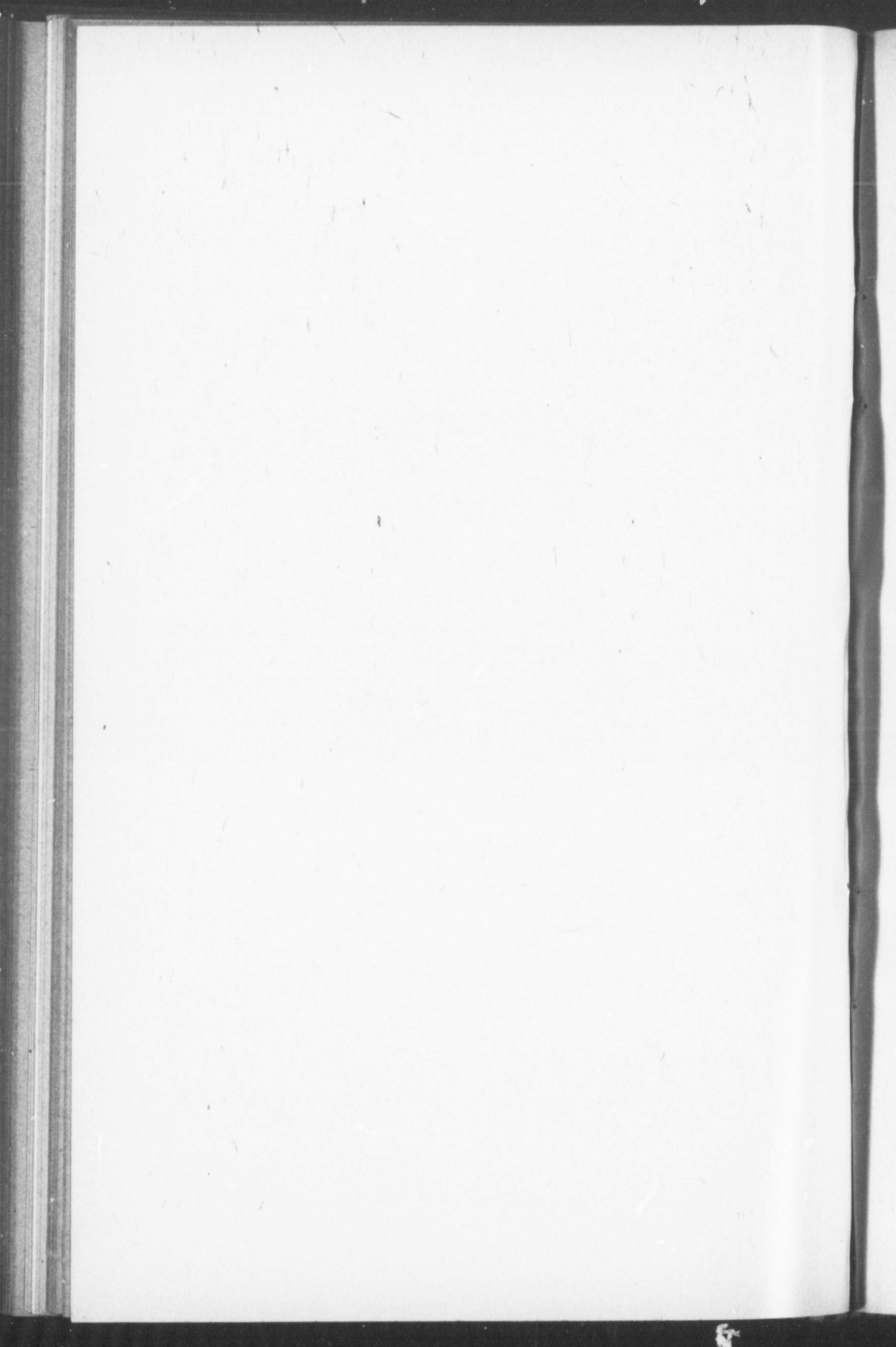
J. E. Starr said he wanted to come down to business. We wanted those varieties which from past experience, would put dollars in our pockets. When in England, visiting the celebrated fruit show in the Crystal Palace, he in company with Mr. Lowe, had an opportunity of observing the finest fruits grown in England. He found there, as here, that there were some few kinds that towered above others. The Nonesuch, for instance, if it could be grown successfully in this country, would be an excellent apple. It is as large as the Fallawater. Cox's Pomona was a bright and beautiful variety, yet he thought we should

Make Haste Slowly.

He thought when we got our celebrated fruit station, it would be in the province of that institution to say whether this variety was worth culti-



S. C. PARKER,
Secretary Nova Scotia Fruit Growers
Association.



vating or no. He had heard Mr. Chase say that he would simply take the two kinds if he were laying out an orchard, the Gravensteins and Baldwins. A few years ago we cut out the Baldwins on account of the black spot, but since the process of spraying had been introduced, it was entitled to the first place on our list. The Gravenstein is too well known to need comment. Cox's

Orange Pippin is so choice that if we had it here, and shipped in half-bushel boxes, we could get any price we asked for it. The Blenheim does not grow as well in England as it does in the Valley. The King of Pippins grows well there. He believed these few varieties might be experimented with to advantage.

FRUITS OTHER THAN THE APPLE DESIRABLE FOR CULTIVATION IN NOVA SCOTIA.

Discussion Opened by by Ralph S. Eaton.

"I have been requested to mention the varieties of the different fruits, other than apple, which in my opinion are most desirable for cultivation in Nova Scotia. It is, perhaps, expected that in addition to simply running off these names I should make a few comments in order to open a discussion a little more fully. In doing so I cannot refrain from emphasizing most strongly what seems to me to be the almost universal lack of appreciation for the luscious tree fruits that almost every land owner in this province could have as well as not, either for his own personal use or as a source of income. Is there a man or woman, boy or girl, in this province who does not love cherries? Yet even in this so-called great fruit county of Kings, I will guarantee that there is not one farmer in ten that has even a single cherry tree, not one in four hundred that has as many as he and his family would really enjoy, and not one in the whole county that has as complete a variety as would be desirable. In the case of those having a single tree or two, their children so long for this fruit (the first tree fruit that matures), that it is impossible to prevent them

stealing it a fortnight before it is fit to be eaten, and if this is the condition in Kings county, what must be the barrenness of other counties,—excepting the towns of Digby and Bear River. As to the commercial phase, there are

Not Enough Cherries

put on the markets of our towns and villages to allow one tenth the people to get a box for eating, for a cherry pie or for a jar of preserves. Why is it that people will not grow more of these trees when they are really less particular as to soil and climate than the apple tree? They require no pruning, and though they will respond to cultivation, they have proved themselves able to produce very satisfactorily in the most neglected green-sward. Their symmetry, foliage, and beautiful appearance when in blossom, make them almost as desirable as an ornamental tree for the road side, the yard or the lawn, as the maple. The Governor Wood, Black Tartarian, Windsor and Rockport for sweet cherries, the Montmorency and English Morello for acid, will give a succession from the first of July till into Septem-

ber. There are many other very desirable varieties, such as the Napoleon, Elton, Hortense and Cyclone, but the others are standard sorts which have been well proven. Again, what proportion of those in Nova Scotia, living on farms, have peaches to eat? I believe quite half have never tasted a single specimen, and yet it remains to be proved that nine-tenths of them cannot grow all they want for eating, or for canning. This statement will be discredited by most, but the statement that peaches could be grown at all in Nova Scotia has always been discredited until within a few years, when as fine specimens have actually been put on the market from Kings' county as can be grown on the continent, and seven different varieties matured perfectly in seven successive weeks in my own orchard during the last season. People talk about it being too cold in Nova Scotia to grow peaches, and I was asked several times last autumn at the Halifax exhibition if the trees did not have to be dug up in the fall and taken in under cover. Last winter the thermometer in Kings county dropped to 20 degrees below zero one night, the lowest drop, except one, in thirty-six years. Last spring when the peach trees of Judge Chipman, at Kentville, were

In Bloom Like Pink Bouquets

there were two severe frosts, one of which froze the water nearly half an inch thick, and yet Judge Chipman had to arrange artificial supports for the branches of his trees, on account of their load of fruit, long before the fruit was fit to pick in the autumn. Care must be taken not to select late ripening varieties, for the heat of our summers is not sufficiently intense to mature some sorts that a less maritime position, such as New York state and Ontario, may ripen. Their success in Nova Scotia depends mostly, in my

opinion, on knowing how to care for them. The Alexander, Hynes Surprise, Mountain Rose, Jacques Rare Ripe Elberta, Fitzgerald and Crosby will be generally suitable, I think, for this province.

The most luscious fruit I have ever eaten in Nova Scotia is a Nova Scotia apricot, and though their success is not yet as assured as the peach, I should recommend a few specimens for each garden of two varieties, the Early Moorpark and Harris. The quince will grow almost anywhere, and a specimen or two of the Orange and Champion would be very desirable for home use.

But there are two more fruits which should attain much greater commercial importance, the pear and the plum. Mr. Pettit of Grimsby, Ontario, who is with us this season, and who has been one of the foremost men in aiding extension of the markets of the softer fruits grown in that province, will tell you that since the use of cold storage an

Almost Unlimited Market

is provided in England for pears of good quality, and it is gratifying that larger plantings of this fruit have been made in Kings county during the past season. This fruit can be grown anywhere that the apple will grow and with the cold storage transportation that the Honorable Mr. Fisher is trying to arrange from Halifax to London there would appear to be a most promising opening throughout the whole province for its extended cultivation. The Bartlett, Anjou, Clairgeau, Duchess, Lawrence, Howell and Louise Bom de Jersey could be recommended for the export trade, and the Clapp's Favorite should be added for local markets.

But in growing plums, Nova Scotia should be shamed. Do they realize the number of carloads of plums that have been imported into this province

from Ontario during the last few years? They cannot, or else every bit of sand and grit has gone out of them. A prominent fruit grower in Annapolis county told me a year ago that you could not sell, or give away, a plum tree to be planted in that county.

Plums Were Scarce.

This year he told me that there were not enough plums grown in that county for home consumption. A few years ago Pictou county grew lots of plums. Now I understand that, barring the wild plum growing on the road side, the business has about collapsed. A few even in Kings county have given it up. And yet the teams of five or six commission men in Halifax are busy day after day, from morning till night during the fruit season, carting Ontario plums and peaches from North street to their sale rooms. One feels like using the language of Spartacus to his fellow gladiators at Capua—"Is Sparta dead? Is the Grecian spirit frozen within your veins? Will you lie supinely on your backs till the enemy has bound you hand and foot?" What is the matter? You say "black knot and leaf blight." Mr. Pettit will tell you that in the Grimsby district where most of the soft fruit consumed in Nova Scotia comes from, where car loads by the dozen are sent to the North-West, and where the supply of the enormous consumption in Montreal and the large cities of Ontario is obtained, you will hardly find enough black knot to fill a pocket. How is this? Because the fruit growers there have got sand enough in them to put the

Black Knot Law in Force

and otherwise look after their trees. Just as fine plums can be grown in Nova Scotia as in Ontario, and as great a variety. Professor Craig said

at the exhibition last autumn that one variety of Japanese plums, the Burbank, which was shown, was finer than any he had ever seen in Ontario or the United States. These were two ounce plums, and there were others there of the same variety, and from the same orchards, put in acid for their better preservation, which were half as large again, or three ounces in weight.

I shipped three crates of these plums to England a year ago and they landed in almost perfect condition. Messrs Northard and Lowe reported that if this variety could be put on that market any time after the last of September they would bring splendid prices. Prof. Craig feels that these Japanese plums are going to be more at home in the maritime provinces than any where on the continent farther west. I refer to these particularly for they are considered one of the greatest acquisitions of the century in horticulture, and when such plums as Moore's Arctic and Lombard, which have sometimes

Seemed to Glut the Market.

for a short season, because of their inferior eating and keeping qualities, as well as their lack of style, give place to a good succession of these Japanese and a few other varieties so attractive for dessert, as well as superior for canning, I prophesy that people will very largely substitute this fruit in its season for the apple, even the Gravenstein. The Tutts, Red June, Abundance, Burbank and Wickson, will give a splendid succession from the middle of August till into October. Add to these the Monarch, Black Diamond, Grand Duke and Reine Claude, and the most desirable list of plums, in my opinion, is complete.

But though I have named such varieties of cherries, peach, apricots, quince, pear and plum as I think would give most general satisfaction throughout the province,

yet the questions are strongly forced back upon me, "For what good," "How much effect will this paper have upon the masses in Nova Scotia," "In what way is the more extended cultivation of these fruits as well as the apple to be attained throughout the whole province, the greater comforts of our people to be supplied?" Kings county may feel somewhat satisfied with the consciousness that she grows as many of these fruits as all the rest of the province, and, from present indications, will in ten years time be growing twice as many, unless some special change is effected. Yet this association is a provincial one. Its interest may be almost entirely sustained by the fruit growers in Kings county, but its aim is to encourage the growth of fruit

All Over the Province.

It would be wasting time to talk about dangers of over production. We look with some pride at our output of 400,000 barrels of apples for the province. In 1896 one county in New York state produced 1,000,000 barrels. With the exception of Kings, Annapolis, Hants and a portion of Lunenburg and Pictou, almost every basket of fruit consumed in the other counties has to be brought from without their borders. How is fruit culture to be opened up in first class shape in Shelburne, Queens, Colchester, Guysboro, Cape Breton and other counties not yet mentioned? I was not asked to answer this question, but in view of the markets of our capital and county towns being almost entirely captured by the fruit growers of Ontario, 1,200 miles away, and in view of the prospects of the export trade to England, I consider it one of the most important questions for this association. It is a question which must of necessity be answered before long by the government of this province whose business it is to consider ways and means for securing all such agricultural development.

Now, there are two ways by which

this can be done, but on this occasion I will only speak of one, the more important. Bring some five to ten farmers' sons from each of these counties to an agricultural college, situated where these fruits are grown in greatest quantity and perfection. On special days or weeks, and by special railway rates bring the parents and a large representation of farmers from each county in touch with the college orchards and nurseries, and the fruit district surrounding them; the inspiration will be quickly caught and its leavening influence gradually spread until every county of this fertile province shall have enough and to spare, and, from the harbors of Yarmouth, Lunenburg, Sydney and Pictou will in the next twenty years be sending out to the mother country

Steamers Laden With Fruit

from their surrounding districts. This idea was embodied in the resolutions sent from this and the Farmers' Association to the government last winter. It was conveyed in the recommendation of the agricultural committee to the house of assembly. It has been recognized and very forcibly emphasized during the last few months, since the scheme of having a maritime agricultural college has been propounded, by every county in Nova Scotia that grows fruit and is therefore able to appreciate its extension. Pictou Hants, Annapolis and Lunenburg have come out frankly and with no uncertain sound in the editorial columns of their papers in support of this principle and in recommending the location for the proposed institution. Several of the papers in St. John and in northern and eastern New Brunswick, as well as letters of some of the provincial farmers, have been unanimous in advocating this location. The wisdom of this multitude of counsellors can hardly be disregarded. A most radical change and impetus in this province must be secured. There must be a nucleus from which the influences which bring about this change must

emanate. The college will naturally form this nucleus and the maritime provinces are fortunate in possessing a situation for this institution, where, as Dr. Mills

says, the combined advantages for agriculture and horticulture are far superior to those of the institution of which he is president at Guelph.

THE BEST COMMERCIAL APPLE.

Seven Varieties that are Known as Standards, and Always Safe to Plant.

The question of what were the best paying commercial apples was considered by J. E. Starr, as follows: This matter has been discussed individually by each of us for many years. I will give a list of apples that I think worthy of attention by any young man who is setting out an orchard. I had to place first on the list the splendid Gravenstein. Our friend Mr. Chase may dissent, because I do not think he has made as much money out of them as he has out of other varieties. This apple cannot be excelled; it is wonderfully productive; it matures early, and is thus an advantage to the fruit grower, for if a man has 2,000 or 3,000 barrels to pick, pack and ship he has got to be up and doing.

The next apple I will speak of in the order of merit is the Baldwin. Looking at my neighbors' orchards and my own, I will say unhesitatingly, from the time of being planted until now, there is no other apple that has given my neighbors and myself so much money as the Baldwin. It must be thoroughly cultivated and sprayed to keep the black spot away, and you want a good big warehouse to stow the crop in.

Next in point of merit and desirability I place the Nonpareil, because it is a standard variety and it is

Always to be Depended Upon.

It will give you good money and plenty of it. I have had 28 shillings sterling for it when Fallawater brought less. Next I would name the Golden Russet. This is a superb apple. Unfortunately the tree is not quite sturdy enough. Fancy having 15 barrels on a tree; you never get them. The tree has not capacity to give you a heavy crop, which proves a drawback. It is first class in quality and price, on the other hand, and I believe that it deserves a high place. Then I would name the Ribston Pippin. Its name is found everywhere. London is its home, but they want to be sent there in time. I think our high cultivation is ripening the Ribston prematurely. It is wanted for the Christmas market, and with some it keeps longer than with others; above all you must have a cool cellar to place them in as soon as they are picked.

The next variety I would name is the King, which is an excellent variety, and towers above everything we have got. It is as red as blood and very large. I do not see how the people on the other side can ask for anything more delicious. It has a firm flesh that guarantees it to be a good keeper and sells in the market first-class. Next.

is the Blenheim Pippin. Some people may not be fortunate with this variety, but it

Sells Well on the Other Side.

They are very apt to fall off the trees if you do not pick them at the right time. The tree is a magnificent grower and its limbs grow in good proportion. The next variety I look for great things from in the future, but at present it is an unknown quantity, the Ben Davis. It is strange that the Ben Davis, which is so deficient in quality, should be in such demand. We were afraid to take hold of the Ben Davis because it is as dry as chips. It is especially a western apple and grows there better. It bears early and abundantly. The apple keeps well and goes on the other side in splendid shape. There is no man here to-day who can say what the Ben Davis can do for this country in the future. Next to the Ben Davis shall we say the Fallawater. I speak feelingly about the Fallawater because it served me a bad trick. I had 40 trees set out and five or six at a time died. I tried to get some information from every scientific man I met as to the cause of their early demise, but without result. At the World's Fair I used to ask the men there if they had any remedy, or knew any cause of their failure to grow, and the only conclusion I came to was that if you want to grow the Fallawater you must top-graft. Out of 45 trees I have not one solitary tree left. Yet my neighbors are growing them. They brought 31 shillings this year, in the English market. We will let the Spies come next. It appears they are losing favor. It is a variety not adapted to us as it is to Ontario. In that province it is the king of apples.

Their climate gives it the necessary heat and moisture. You will observe the tree is late starting here. I have now come to the Wagener as last. It will come into bearing before you know it. It gives you good fruit, but they say on the other side

They Do Not Want It,

and we are obliged to listen to them. So with respect to this particular variety, I would not advise you to set out many of them.

I would take about seven varieties if I were setting out a large orchard: the Gravenstein, Baldwin, Nonpareil, Golden Russet, Ribston and Kings, and then I would put in the Ben Davis for the seventh variety. But of course you must always remember that different localities produce different results. And in closing my few remarks, I need not tell you that we cannot do without the Nonpareil. (Applause).

C. R. H. Starr—May I not suggest as to your non-success in growing the Fallawater, was it not due to the fact that your trees were imported from the United States? And I would say with regard to the Ben Davis, that it is not to be mentioned in the same day with the Fallawater. I would also ask you what about your subsoil?

J. E. Starr—I think my trees came from Rochester.

Dr. DeWitt—Does not the same objection to the Fallawater as to its falling propensities, also apply to the Blenheim Pippin?

J. E. Starr—The Fallawater is like the Blenheim: they all fall, and that is one of their disadvantages. If the trees would live I would take chances and expect good returns.

TUESDAY AFTERNOON SESSION.

METHODS OF SOIL CULTURE.

Deep and Shallow Cultivation and the Superiority of
the Later on Farm Land.

J. H. Grisdale, agriculturist of the Central experimental farm, Ottawa: It affords me very great pleasure indeed to have the pleasure of meeting the members of the Nova Scotia Fruit Growers' Association. I regret to say that I am not particularly interested in this industry, that is it does not command my entire attention, and I am more concerned with the cultivation of the soil and management of stock than in the cultivation of fruit; but as my department is the foundation of all other industries, I am sure you will be interested in a discussion of this subject. It is a subject which must be of very great interest to us; especially has it been so in the provinces of Ontario and Quebec. Your soil here is in better condition than we find it in Ontario, on account of having received good cultivation by the early settlers. I know that most of you have been here for many years and so it is in better condition than we find it in Ontario and Quebec. My remarks will bear especially upon the improvement of the soil. Upon the careful planting of our young trees depend our future orchards. So this is an important subject to discuss, especially to those thinking about setting out orchards, and as you know orchards will in time get out and pass away. Now why do we devote our energies to

Tilling the Earth.

By tilling we do not appear to add any thing, yet it appears to have a wonderful effect. I will take my subject up under three headings: first, the reasons

for cultivation, namely, to make plant food in the soil available and rendering it more easily obtainable; second, maintaining the soil's fertility, holding the land in that condition so that we may receive profitable returns; third, restoring the soil's fertility lost by bad tillage, or improper cultivation on soil which has fallen into a poor state of fertility.

Under the head of making food available I would draw your attention to the fact that this has been known for ages; for instance, take the derivation of the word "manure." "Manure" means to handle, from the latin "manus," a hand. Adding fertilizers and tilling the soil are practically the same thing, and tilling the soil renders the present component parts available. Both aim towards increasing and rendering the food available for plants in the soil. The necessary constituents for plant food are nitrogen, potash and phosphoric acid, and we must add a little lime. By stirring the soil and exposing it to the wind and air much of the nitrogen which is in an insoluble form, that is in such a state that it is not available, is changed into nitrates, and thus becomes available. The phosphoric acid is acted upon by light and moisture, and by tillage becomes available also. Potash is somewhat similar. The two most common

Methods of Cultivation

which have been discussed and which have been in common use are the deep and shallow. The deep is the mode used down here. That is, plough the land late

in the autumn, and leave it in that condition during the winter, and then treat it, or prepare for the sowing of the seed in the spring. This has some advantages; leaving the land in a condition to hold the snow absorbs the nitrogen, opens the sub-soil and exposes it to the frost and admits of perfect disintegration of the larger lumps of earth in the spring. This is the principal advantage.

Now in the shallow cultivation on the contrary, and this is what I wish to draw your attention to, we plough quite early and not so deep. Let me give you a description of how we treat our soil under this system. As soon as the hay is cut, which in our country is the first part of July, the land is ploughed and the cattle turned on to the meadows. We plough from three to four inches deep. As soon as ploughed we roll the soil or pass over it, cutting it up with a smooth harrow. This process of harrowing is repeated at intervals just as we find grass or weeds are starting up, and the soil is thus kept from the end of July until the fall rains begin. If you decide to put manure on in the fall then during the autumn it is applied and harrowed in to a certain extent, and just before the rains begin the land is furrowed up into ridges twenty inches apart. As soon as the frost is out and the land is in a condition for working we pass over it with a cultivator and break it down; and after it is broken down, if we are going to sow a root crop, we run a deep cultivator penetrating eight inches

Stirring Up the Sub Soil.

As you all know this will be heavy on the horses. A cultivator with narrow teeth must be used, and as this cannot be expected to disturb the whole subsoil it is better to go cross ways. After this process the land is prepared for roots. When the roots are removed we are ready next year for the grain crop. The soil instead of being ploughed is again ridged up into ridges, say twenty inches wide,

and left until spring when it is broken up and seeded down with something for a meadow. The mixture we use is ten pounds of clover and twelve pounds of timothy. It is not so necessary to have the timothy, but the clover is important. A good mixture of timothy and clover is suitable for feeding horses and cattle upon the farm. The succeeding year we have a pasture and then it is ploughed under. I wish to emphasize the points which this system of cultivation serves. We want to render available the potash, phosphoric acid, and nitrogen for plant food. Then the whole

Aim of This Cultivation

must be first to increase, and second, to render these substances available. Take the deep system of cultivation and we find we are exposing to the air eight to ten inches of soil. The whole eight or ten inches must be equally acted upon. But the all-important constituent for plant growth is nitrogen, and this is found in the form of humus. Perhaps there are some who do not know what this is. Let me remind you of the black earth you see in passing through a forest or the muck in some of your lower sections. Here we have the humus in almost pure form. This is the constituent to which we must pay most attention, if we wish to increase the fertility of our land, so far as the production of wood is concerned. Humus can only be formed where there is some vegetable matter to decompose. We apply each year so much manure over the land. If we scatter the humus which is supplied in eight inches of surface soil you can see what a poor effect it will have upon the land. If we can put it in four inches of soil it will be doubly beneficial because its effect does not increase in a direct ratio. It tends to retain the moisture and makes more

Rapid Vegetable Growth.

Upon light soil, loam or sand it holds it together and increases its power; it closes

around the roots, giving up nourishment to the tendrils.

Now we find that to make the best progress along this line from tillage, a certain rotation of crops must be followed. The rotation which I think the best, especially for a farmer who has a good many cattle, is a four year rotation. The first year plant roots or potatoes; the second year, grain, seeded down with clover, and I may say that during the year while the grain is growing the clover is enriching the soil and you are likely to get a much better crop; the third year, hay, a mixture of clover and timothy. I may say they use in Ontario two kinds of clover, alsike and red clover, alsike being a perennial. The rotation we have adopted in some parts is five years; 1st year, peas and oats; 2nd year, grain or roots; 3rd year, grain; 4th and 5th years, hay. The latter rotation may be of some advantage where you want to produce a larger amount of grain. As you all know, clover and the other leguminous plants are able to utilize the free nitrogen in the air. This is done by means of a number of small nodules in the roots. The nitrates are decomposed in the humus, and are made available for plant food. A good many use green manure.

This year at Ottawa Prof. Macoun, our horticulturist, carried on experiments on this line, which were very interesting. The summer cut it four times. He estimated he got from five to eight tons of clover per acre. On another part he used horse beans, but I do not know how he has succeeded. Clover, I may say, besides adding nitrates to the soil and rendering it available by means of its deep rooting qualities, brings up the phosphoric acid from the subsoil.

I have felt at a great disadvantage in addressing a meeting of fruit growers, but I thank you for your kind attention.

Discussion.

John Donaldson: This short rotation of grain and clover, is it possible to keep up the fertility of the soil, or increase it, say on pasture land, or grain land?

Prof. Grisdale: Yes, I know of a case in Ontario where a man bought one half of a farm; the half he bought was tilled by the methods I have spoken of, and the other half was left entirely to nature. The experiment was carried on for six years. The yield was over double that of the adjoining farm. With respect to shallow cultivation do not go deeper than three or four inches. If the subsoil must be disturbed then go down with some instrument. With respect to the farm just spoken of, the part which had been treated produced 70 to 80 bushels per acre; the other half not more than 30 bushels per acre.

John Donaldson: I do not think shallow cultivation has been tried here.

Col. Spurr: If you plough from three to four inches deep, is this sward rotted or interfered with?

Ploughing in July.

Prof. Grisdale: We plough in July. Most of the vegetable matter is decomposed, and in the autumn we have a layer of good nitrogenous material full of humus, and the next spring if it is not ridged up you may pass through it without disturbing it at all. If there is plenty of manure on it in the fall it will probably be advisable to ridge it up, because during the summer a good part of the vegetable matter is decomposed into nitrates, and nitrates are soluble. If it is ridged up the ridges will shed the rain and in that way there will be a great saving. Another advantage of ridging up is that the subsoil will be exposed to the frost and this is one of the advantages claimed for deep cultivation. The frost acting upon the subsoil loosens up or relieves some of the constituent parts,

Prof. Saunders: In 1887 eight plots of a twentieth of an acre were given to this experiment; two were sown with wheat, two with barley and two with oats. Clover was sown with the grain in some cases, one with wheat, two with barley and one with oats, with clover at the rate of ten pounds to the acre, and the other four plots were left without any clover. As far as we could see from the tops of the grain the sowing of the clover did not materially affect the grain. But during the summer after the harvest, on the plots which had clover the plants looked thrifty. In the spring the whole eight plots were sown with oats. When the oats came up it was not long before you could see a marked trace of those plots that had been sown with clover.

Profitable Results.

And after the harvest had been gathered it was found that the weight of straw on the four plots which had clover had averaged 78 per cent. more, pretty nearly double, on the plots where clover had been growing, as compared with those that none had been grown on. We had an increase of 28 per cent in grain and 78 per cent on the straw. The lands were as similar as you could find land. There was no material influence other than the ploughing under of the clover. This year without making any additions to the soil the area was sown with Manchura barley. You could easily see the gain. You could go over and pick out the plots where the clover had been sown quite easily. I do not think any farmer wants anything more convincing as to the good effect of the ploughing under of green clover. It would be worth many millions of dollars if farmers over the whole Dominion would adopt that practice, to sow ten pounds of red clover with every crop we put in the ground. The clover also draws up the potash and phosphoric acid away down in the soil. All these good effects must be added to the condition of the humus in the soil. At the fruit

growers' meeting at Whitby, Ont., Mr. Powell was speaking on this subject. I took some notes of where clover had been ploughed under three years. There was an addition of 1,300 pounds nitrogen, and 105 pounds phosphoric acid. He did not tell us how much potash was added. This addition of the nitrogen, which was largely associated with the humus, had increased the

Power of the Soil

to hold moisture to an enormous extent. It was found that this acre of soil contained 46,870 tons of water more than the acre adjoining. The more water the soil can hold in its interstices the better it will be for the crops. One inch of rain fall will add 1,000 tons of water to an acre. These experiments have been carried on with extreme care and accuracy.

Dr. A. P. Reid: The address of Professor Grisdale will be very beneficial to the farmers of this country. In the first place his demonstration will go to show that there must be a sufficient amount of phosphoric acid and potash in our ordinary soil to supply as we know a limited demand,—and unless it is replenished the soil will become poor. With regard to the presence of nitrogen in the soil I expect everyone has experimented by adding nitrate of soda. If you add this you will see quite a difference in the general condition of your orchard. Nitrate of potash would be the best form but it costs too much. Last year I planted cow peas instead of clover. It belongs to the same family as the clover does, but whether it is going to be of any use I do not know yet. I know the cow peas grew very luxuriantly.

Prof. Grisdale: With regard to cow peas, we in Ontario have not found it possible to grow them on account of our climate.

Prof. Saunders: The soils which have been analysed by our chemist have shown as much phosphoric acid as in Europe.

I would not have you run away with the idea that you can run a succession of good crops without manuring. Even in the fertile north west they tried it, but found it would not do. At Portage La Prairie the average land will not stand a constant withdrawal. Some districts are already falling off in production that have not been cultivated long. You cannot continually draw from any store whether it is cash in the savings bank, or fertility in the soil, without replacing. If you continually draw without restoring you will come to poverty in the long run.

M. G. DeWolf: About three years ago I put twenty bushels of soil in my cellar—which is quite dry. Has it lost any humus or any other property of soil that should be available for plant life? I am under the impression that that soil is not as good for plant life as it was three years ago. I do not know whether it is necessary to take it into the open air.

Prof. Grisdale: In any case soil left in that condition will lose a large amount of nitrogen.

Dr. DeWitt: If the sub-soil is not disturbed by shallow ploughing, what is the instrument for use?

Prof. Grisdale: We use a common cultivator and change the teeth. We use a narrow tooth which goes down considerably deeper. It is nearly straight and slightly curved forward at the point, and this cuts through, if your sub-soil is heavy.

Prof. Saunders: Who makes that cultivator?

Prof. Grisdale: We are getting one made by Coulter & Scott, of Coburg, Ont.

Question: What is the length of the teeth?

Prof. Grisdale: Fifteen inches.

Q. How wide?

Prof. Grisdale: One inch. then it gets narrower. It is sharpened at the point, and it has a cutting point the thickness of

your finger two inches deep, seven inches apart, twelve in number.

Q. Will two horses draw it?

Prof. Grisdale: No. It takes three horses.

P. Innes: What depth would you put it?

Prof. Grisdale: From seven to eight inches.

Q. Do you put any weight on the harrow?

Prof. Grisdale: No. The weight of it is sufficient.

Q. We have some Charlock in this valley? Is it a nitrogen gatherer?

Prof. Grisdale: It will not add to your soil.

A. Whitman: I turned in clover last fall, so my neighbors asked me why I did not turn in the cattle. Is there greater fertilizing property in the roots of the clover or the tops?

Prof. Saunders: There is a larger percentage in the top than in the roots, although they both add a great deal. The reason I said it was economical to feed the clover if you had cattle, was so that you would get from the clover all the carbohydrates, and the cattle would leave on the land in the fertilizers that they dropped there about 90 per cent of all the mineral constituents they had consumed that the clover had taken out of the soil. So that while you would lose 10 per cent which would go to build up the flesh of the animals, you would gain more in the weights of the animals. I suggested this not that it would make the soil richer but you would find your pocket book richer by the increased weight of the cattle, and at the same time have a large amount of the fertility left in the land.

Prof. Grisdale: If the soil is light soil the cattle will add more than 10 per cent. The packing of the soil would be worth more than they would eat off it.

ADDRESS.

A. H. Petit, Grimsby, Ontario.

Mr. President: I am delighted to be present with you to-day. I have a great interest in the fruit industry of Nova Scotia. Some gentleman from Nova Scotia and myself stood side by side at the World's Fair, held at Chicago, and I do not believe there were any prouder exhibitors there. That is why I am pleased to be with you to-day; and pleased to join with you in the various subjects connected with horticulture. Now, I begin my few remarks with a good deal of diffidence. I know in this province there are a great many gentlemen who are advanced thinkers along the line of horticulture. Perhaps you will be able to give me a great deal of information along that line, and I would hesitate to get in a position in which you could call me down. I would like to address my self to-day as a fruit grower who is practically engaged in that business for his bread and butter, to feed his family and surround them with whatever luxuries he can. I believe to-day, we are making progress. This is the thirty-sixth meeting of your society. I think the last meeting of the Ontario association was the thirty-fourth. Our associations have done wonders in this Dominion. They have stimulated our people to put forth their best efforts, and have brought forward all the different varieties of fruit, that have certain degrees of excellence. This matter has all been placed before our people time and time again, and we have been benefited and profited by it. But the day is beginning to come when we should lay more stress on the marketing of that great product which we are producing throughout the whole Dominion. I came from the

province of Ontario where our industry has grown to

Very Great Proportions

and we often think of you in the province of Nova Scotia. We have to send our product 1,200 miles before it can be shipped to the British market. You, lying on the sea-coast, have to send yours only a few miles to place it on ships for that market. We feel you have a great advantage over us in that respect; but by having a wider range of fruits than you have, we can make up a little what we lose in the long transport of the product. I can say that we, as fruit growers, have made a tremendous lot of mistakes in fruit culture, and, no doubt, our young men will profit by the mistakes we have made in the past. One of the mistakes we are making is that we are growing too many varieties of fruit in this country for profit. We want to get to solid rock bottom. We want few varieties, and let them be such varieties as will command the best prices in the markets of the world. Now the question is: What will those varieties be? Now, I do not think a gentleman from Ontario can tell you what varieties are best adapted to the soil, situation and climate of any place in this province; neither do I think a gentleman from Nova Scotia could tell us what varieties are best suited to our conditions, but they would use their good judgment and see what we could produce of good quality.

The Ben Davis.

The name of the fruit being known on the British market, assists to introduce it, but the quality in the future has

got to stand, to bear the test of that market for us. Now, there was one apple mentioned here this morning, that I would be inclined to lay out—the Ben Davis. If I had the Ben Davis bearing and producing good crops, I am satisfied I would make money out of it. They are everything but a good eater. Where will it stand fifteen years from now? Will it stand a money maker? I doubt it. We want an apple of better quality. Twenty years ago we could sell Rhode Island Greenings in the English market, but the Englishman said he wanted a red apple. We gave him the Baldwin. Now the Rhode Island Greening is a better apple than the Baldwin. To-day the Englishman is not quite so fond of the Ben Davis as he was ten years ago. When you want to touch an Englishman in a tender place,

Give Him a Tough Apple.

I was judging apples at the Chicago industrial exhibition, and I had twenty plates of different varieties. I saw a gentleman passing, who was a shipper of 60,000 barrels of apples a year, so I called him over, and asked him to name me the best apple, and he named the Mann apple. It is rather a coarse apple, a good bearer, but the quality is not what we would like to have. Here is a buyer and shipper, who will take that apple in preference to others, to make money out of it. Will he take that variety of apple ten years from to-day?

Some of our people are thinking that this fruit business is going to be over done, and are beginning to be doubtful about the future. I do not think the fruit industry has produced anything yet, but is still in the cradle. We have three provinces in the west which will be a market for years to come. It will be years before they will be able to produce any fruit whatever. A gentle-

man has placed not less than 200 car loads of summer fruit in the West this season, packed in ventilated cars, and shipped through, and I saw a notice in the local papers, which was very flattering to him indeed. Now, look to the British market, and see what prospects are there. I do not see that we will be able to keep pace with the increased demand for our fruits in the British market. If you could grow pears of good size and quality, to a large extent, I believe you have got a grand market at your doors. You need not have cold storage. Put them on steamships in cold storage, and in ten or twelve days they are on the market. This year one shipment that I made to the British market, consisted of 268 cases of Duchess D'Augleme Pears. They sold on an average of \$2 a case. Each case contained about 22 pounds. If you take the greatest care and handle those varieties that will arrive in prime condition.

A Steady Business

can be carried on and good prices can be obtained. What are we doing with regard to shipping apples to the British market? I think we are shipping more apples than should be placed on that market. Suppose you have 300 barrels of apples, 200 barrels of first-class apples, and 100 barrels of second class. If you ship them to the British market, you will realize an average of 14 shillings for No. 1's, and 11 shillings for No. 2's. That will be a fairly good average. You will have furnished 300 empty barrels, which will cost you \$90. You will have expended \$75 in packing them. Now you will pay from \$1.10 to \$1.15 for commission, freight and other expenses in connection. Just see what your receipts are for that shipment? Supposing you shipped 175 barrels of first class apples. Grade them, do not put an apple in them that will be less

than 2½ inches, and free from worms. You will get from 16 shillings to 17 shillings per barrel. Now you have the same freight, the same commission, the same barrel to pay for, the same amount to pay for packing, picking and sorting, and then you would have 125 barrels to dispose of to the evaporator for drying. You could then show a margin of \$75, and kept 125 barrels at home, and you have not had the packing and barrelling, and have given employment to a large number of people in your own locality to prepare them for the evaporator. Our people who are engaged in evaporating fruits are making money. I know they are anxious to put up all the evaporating establishments they can. This evaporated product is exported to Germany. They even save the cores of the fruit, and, it is said, make jellies of them, and even champagne, to be shipped back here again and we pay \$12 to \$14 a dozen. So you see it creates employment all around.

With regard to the inspection of fruit we urged the government to pass the inspection act. We asked that the inspection act be not compulsory, but any person wishing to have his fruit exported could have it inspected by the inspector on requisition. The government passed the act, but made no provision to pay the inspector. It is high time to put a check on careless and

Fraudulent Packing.

We have prepared a report to send to the minister of agriculture, and we only hope he will give us an opportunity of hearing us along that line. The packing is not what it ought to be, and we want to have a stop put to it. We in the province of Ontario are laying it largely at the door of the buyer. An apple grower goes out and buys 50 to 60,000 barrels of apples on the trees; he has got to trust Tom, Dick and Harry to do this work. We

are asking that the name of the packer and the name of the shipper shall be placed on every barrel. I believe this will be a step in the right direction.

Discussion.

Mr. G. DeWolfe—have you formulated a plan by which you can have proper inspection?

Mr. Petit: Yes, we want local inspectors appointed to cover 30 miles of territory. Supposing I want to sell you two or three carloads of apples. You may be willing to buy them subject to inspection. We do not want anything to interfere with the buyer. Eighty per cent of our apples are shipped to the British market. Every time we wrong the trade in that country it comes directly back to the producer in this country. We are blamed to-day that the fruit growers in this country are not honest. This inspection act does not say that they all shall be inspected.

Dr. De Witt: I understand that this inspection will not affect the grower?

Mr. Petit: Yes, it may. All apples are subject to inspection. Many come around and buy them on the trees.

John Donaldson—What do you say about buying them that way?

Mr. Petit: The man who sells shuts his eyes, and goes on hoeing the ground, and does not care what happens. I find we have got double the "slacks" you have. Why is it? I believe our people who do pack, pack well. In the standard apple barrel you will have to join us next year.

J. E. Starr—Get your barrel made like ours.

Mr. Petit—I would say not quite so much bilge. If we could grow Gravensteins in Ontario like you do, we would not put one in a barrel, we would use cases.

Cases Versus Barrels.

I shipped 170 cases of Spies and they netted me \$1.22 a case at home, a very satisfactory price for a little less than one-third of a barrel. I will advocate that you use a grader. I use Warburton's grader. It does very well. The only trouble is an apple that is long shaped gets across the hole and will not go through.

Dr. A. P. Reid said that his experience of shipping in boxes was not satisfactory.

Q. What sized case do you use?

Mr. Petit—We use the Cochran case manufactured in Montreal. It is two cubic feet square, dove-tailed, half inch stuff. We wrap in tissue, use a little excelsior and a little pressure.

The president—Do you use paper fillers?

Mr. Petit—No.

Mr. Innes—What freight do you pay?

Mr. Petit—From Grimsby to Liverpool, 85c. to \$1.00. The box weighs 53 pounds. The boxes are laid down at 11½ cents, made of pine.

R. A. Starr—Pine is obnoxious.

Mr. Petit—Not if it is well seasoned.

Q. Why not put them in kegs?

Mr. Petit—You want more ventilation. I am speaking of cold storage.

C. R. H. Starr—Have you found 36 to 38 degrees in cold storage sufficient?

Mr. Petit—In some cases we feel it has not been cold enough. I think we want a different compartment for fruit, from that which carries butter and cheese. We want a little higher temperature.

Dr. Saunders—What varieties of pears have you sent to the British market.

Mr. Petit—Bartlett, Louise Bonne, Duchess, the Keiffer, not a good qua-

lity, Lawrence, Howell, Buerre d'Anjou, Buerre d'Clairgeau.

C. R. H. Starr—Have you tried Clapps Favorite?

Mr. Petit—That is the one I am thinking of. That is a pear that will go very well.

Q. Would you recommend shipping anything but a good sized pear?

Mr. Petit—No. The Laurence is a capital pear about Christmas.

C. R. H. Starr—Have you had any difficulty with wet or moisture on the other side?

Mr. Petit—No.

Decay on Steamers.

C. R. H. Starr—The engineer assured me he kept the temperature down to 33 degrees as nearly as possible, but the pears when opened had the appearance of standing in a shower. It was only a matter of 24 hours after they landed when they began to decay; evidently our shipments this year have not been successful. And I think you will find the shippers another year will not ship in cold storage unless they have some assurance of success.

Mr. Petit—If you try your Gravensteins in these cases you will be pleased with the success. The bushel case is as follows:—Ends, 12 inches; length and width ½ inch thick; sides 23½ long, 11½ wide, ¾ thick; top and bottom 23½ long, 10½ wide; corners dove-tailed and glued.

The half bushel case is as follows:—Ends and centrepiece 6 x 12 inches, ¾ thick; three side pieces on each side 3¾ wide, 23½ long, ¼ thick; top and bottom 4 inches wide, 23½ long; cleats on each end ¾ x ½ inch.

Dr. DeWitt said the sellers in London some years ago, said they did not want fruit in boxes. They wanted our Nova Scotia barrels.

Mr. Petit said he had that same ex-

perience. The sellers wanted barrels and the trade wanted boxes. We want to get down nearer to the masses of the people. Mr. Petit cited a case where the costermongers wanted grapes in cases, and they sold them as fast as they could get them.

Dr. Reid asked the best time to pick fruit?

Mr. Petit—Just the moment your seed begins to turn brown. As to rates, we pay 96c. to \$1.07 from Grimsly

to London, Liverpool and Glasgow. We ship via Montreal entirely. We are 360 miles from Montreal. I do not think the question of rates is as nearly important as the question of condition. If they lack condition, you cannot do anything.

President Bigelow then moved a vote of thanks to Mr. Petit for his interest and valuable address, which was seconded by Dr. A. P. Reid, and passed unanimously.

INSPECTION OF APPLES.

C. R. H. Starr on the Feasibility and Necessity of Proper Government Inspection.

Naturally the first reply to this question that comes from anyone who knows anything about the packing or shipping of apples is that government inspection is not desirable. But there are circumstances surrounding this matter which must qualify that statement very materially. Mr. Petit has pointed out to you that this matter has been discussed very fully in the Ontario fruit growers' association and it has been discussed, and is a matter that has claimed the attention of every man interested in the fruit export of this valley. We have not had the same difficulty to contend with in this country that they have had in Ontario, from the fact that we have had very few speculators. When farmers are shipping their own fruit they become their own inspectors and you can hardly conceive of any fruit grower packing and shipping his own apples who would not try to do the best he could. If they were not packed carefully it was perhaps due to his want of know-

ledge in packing, but we have to a certain extent the same difficulty they have in Ontario. We have some large buyers who buy in immense quantities. They go into an orchard and purchase the entire lot. They are picked, packed and assorted by almost any person he can employ; they are branded at the stations and put on board the cars, and the buyer perhaps has not seen them; he does not know what he is getting; they are sent across and sold, and perhaps turn out badly. Where we have reports of that kind they come almost invariably from people who buy apples under these conditions, or from people who do not pack them tight in barrels. I saw the other day a man attempting to shake his apples on the soft bottom of his cellar; he had a screw press, but I believe they would be slack before they got to the other side. If he had a rock or plank bottom to put his barrels on when using the press it would have been better. I believe that inspection is

Absolutely Necessary

on this side. After what Mr. Petit has told you it is of little use for me to go over the ground. I remember particularly cases when the heads were not sufficiently nailed to keep the heads in. These apples belonged to a speculator who bought under the conditions I described to you. If the inspector had power at that time it would have been his duty to have condemned them and not allowed them to go forward. We should have some system of inspection whereby such lots may be inspected, especially when there is a suspicion that they are not right. We have local inspectors appointed by the county councils who could be useful at certain times. Of course you cannot compare the inspection of apples with any other commodity like flour, etc., because in the case of apples, after they are packed and pressed for shipment, it would be a serious matter to meddle with them, and it should not be done unless there was a suspicion that they were not right.

Now, with respect to this matter of inspection, the fruit growers of Ontario have discussed this subject pretty fully and we have this scheme before us as laid down in the president's address to-day, as taken from their reports, and I believe there are a great many good points in it, but further, I am of the opinion that there are some points requiring amending and modify-

ing. I observe in their classification they admit 10 per cent wormy or spotted apples in the first-class grade. It is true that they have much more difficulty in wormy apples in Ontario than we have, but I do not think any allowance should be made for wormy apples. I would suggest that a committee of this association be appointed, together with Mr. Petit, to discuss this matter and report at a later meeting, so that we may have some resolution from this association. With respect to the

Classification of Apples,

packages, barrels, etc, there is much to be said. About three years ago we were quite interested in this object. I had some boxes prepared, and also one of my friends whom I do not see here in the room this afternoon. In these boxes we packed a lot of fine fruit. The reports we got from these lots was that every apple in the case of Gravensteins was bruised. We used excelsior and wrapped the apples, and notwithstanding this, the reports were that they were bruised. So we were asked to send as large a package as we could get so they would have the smallest amount of damage.

A committee on motion of C. H. R. Starr, seconded by S. C. Parker, was then appointed, consisting of the secretary, C. R. H. Starr, and Mr. Petit, to report at the next meeting on this subject.

TUESDAY EVENING SESSION.

SCHOOLS OF TECHNOLOGY.

A Forceful Statement of the Needs of Technical
Education in Nova Scotia.

W. C. Archibald presented the following paper:—The subject of the proposed school of technology was assigned to me without my consent, but I will willingly do what I can to open it for discussion. In common with yourselves, I am seeking information. In this last year of the nineteenth century we stand on the threshold of industrial changes momentous and great. The peninsula of our province of Nova Scotia is one-third the size of Britain, south of the Tweed. That small area has a population of some 30,000,000. Nova Scotia is equally rich with any other country of its size, in the variety and wealth of its natural resources—in its agriculture, its fisheries, its minerals, its forests. The need of the present hour is thought, thought which is the outcome of knowledge and the skill to apply it to the development of our native resources. Our extent of view is bounded by our individual horizon, and the progress we attain in life is limited to our ideals. Communities or groups of men differ from each other in the same way as do individuals. In one locality exist a group of fruit-growers who evolve, out of the conditions in which they dwell, thought and results entirely different, for instance, from those characteristics as we find them in a mining district, and hence to accelerate the advance in these particular lines, education in a specific direction is needed. That

Technical Education is Needed

to develop our special industries we all agree. No one disputes it. Shall these schools become one polytechnical school for the province, or many technical schools adapted to the particular occupation found in respective sections of the country? I hold that it is of primal importance to the success of these varied schools that each be located at the point where exists a sympathetic appreciation of all the difficulties to be overcome and of the helpful influences of which advantage may be taken. To illustrate: Suppose that the school of horticulture established at Wolfville seven years ago, had been placed at a point in the province where there were fewer and less intelligent men surrounding it, men daily living in the closest touch with these finer influences which can only exist among a class of people whose thought is largely employed in fruit growing and extension work; could it have attained the success it has, and given its present promise of future usefulness? It certainly could not. On this point we challenge discussion.

The modern technical education which had its origin in the heart of the great Teutonic race—in Germany, in Switzerland and in Holland,—has in those countries also attained its highest degree of perfection. To reach the entire working class, from the lowest stratum upward, it has been found that

the most effective and economical education is reached in the division of subjects and the multiplication of the schools. Instead of one polytechnical school—one school where a variety of subjects are taught—they have many technical schools where a specialty is made in one line of thought in one important branch.

Schools in Germany.

In Saxony there are no less than 111 technical schools in a population that includes only 150,000. The value of this classification is at once apparent. For example, one of these technical schools is devoted to the art of lace-making. The marketable value of the lace depends on the pattern of the lace. In proof of this, a lady in our province, in entering a store and asking for lace, enquires for the latest patterns, and a new beautiful design has her preference. The designer is a specialist and, by reason of the increased marketable value of the lace, he commands a large salary and gives to a large number of people remunerative work. Both the designing specialist and the workers who carry out his ideas have had a training in the technical school. Again we seek the system which would assuredly raise the working classes and evolve from the workers a love for their work. Community of students in a single trade school will elicit from each other co-operative and individual thought, and acquire a strength of purpose quite impossible under less favorable influences. The prejudices existing in society are noted. Most honorable occupations are under ban, because of these prejudices. In a polytechnical institution those prejudices will be coupled with ridicule, and native bent in students will swerve from its true course. The method we seek is economical, rapid, full in attainment, with the utilization of all existing aids in the line of our progress. The schools

would be located at Halifax, Truro, Sydney, etc., or wherever the natural conditions and sympathetic surroundings are evident in fullest measure. To assure their early and ultimate success—while on principle I would advocate the establishment of distinct technical schools for each and every individual industry as soon as they are needed,—yet I recognize that two occupations may be so closely related and so coordinate in their workings as to make their union in one school mutually advantageous.

The Commercial World

is being steadily forced to the conclusion that German competition in manufacturing, which is the bug-bear to-day of other countries, is due to the fact of the utilization of trained intelligence in her technical schools. Yea, more; stronger conclusions are now borne in upon us, that the nation which trains her working classes to individual thought and strong self-reliance, beginning at the bottom and working upwards, is not only singularly correct in her training system, but will some day bid for the dominance of the world.

In this ever-broadening fruit industry of Nova Scotia, comprising apples, pears, plums, cherries, grapes, quinces, peaches, apricots, currants, gooseberries, raspberries, black berries, strawberries, etc.,—in the production of these what is the imperative need of the hour? It is more beautiful patterns, including form, color, flavor and qualities. Knowledge not yet ours must be learned, as fruit-growers in other lands are gaining it. The art of economic production must be reduced to an exact science by every fruit-grower who would be successful. If we would secure and hold the remunerative markets of the world we must be fully

Abreast of All Knowledge

that relates to the production of these fruits. We are well aware that technical education in the United States is being conducted on a different system from that which prevails in Europe, and is polytechnical, but we must also remember that the foundation for these institutions was laid forty years ago by one man, Senator Morrill, of Vermont, and by one congressional act, in voting immense areas of public lands, whose revenues should be devoted to this purpose. We venture to say that if our cousins over the border had this work to do again to-day it would not be established on the polytechnic system, but rather on the purely technical system,—each school adapted to the needs of a particular occupation. The educationists and the government of this province are asked to remember that technical education, affecting the prosperity of the country for ages to come, now deserves at their hands the most careful and thoughtful consideration, and such it must receive to rightly settle the question.

If Nova Scotia is to have a future in wealth, in power and influence, as a province of this growing Dominion, it must result from the awakening of the latent energies of the people and the economic development of our great national resources. That a government of the country has within it the power to contribute to the wealth-producing energies of its people is in abundant evidence. Within ten years the export butter industry of Canada has grown through governmental encouragement from \$249 per year to \$1,000,000 per year. With governmental aid, led by the Fruit Growers' Association, here our fruit growing industry of \$1,000,000 to-day may soon reach

\$5,000,000 a Year.

Technical education will fit our young men for developing the industries of

Nova Scotia, and will give to the whole province a strong impulse, an impulse that it requires. The common and the high schools, the colleges and the universities of the province furnish an excellent basis for technical education. This foundation for technical training cannot be over-estimated. But our colleges and universities are thought to be falling short of their fair share in the work of raising the general status and well-being of our people. University education is one-sided in view of the general interests of the nation. Let us thank God for what they have done, but we in Nova Scotia should wake up, and what the people of other countries have done and are doing we should at once attempt. Contact with men of enlarged thought is of great stimulus, and personal contact of this kind is invaluable. University men have had such contact. They should impart their knowledge in similar contact and inspire others.

The farming class of Nova Scotia constitutes about half our entire population. They have cheerfully given of their money and their brightest children to establish and maintain our colleges until the professional ranks are overflowing. My conception of religion is: purity in heart and life, with the gospel of God in Jesus Christ, a daily as well as a particular sacrifice—a divine hero living among heroines and heroes.

The Agricultural Class

to-day need most of all the personal contact and quickening impulses of living thought in their business life, and in the art of productiveness. The minister, the doctor and the lawyer should have stronger purposes when they leave the university to more frequently meet the farming class,—in this direction, satisfy this craving, and bring about this reform. Intellectual

vigor among our class is now at a premium. We go to asleep reading bulletins and blue books, but in the presence of bright, intellectual men, never! Thirty-three years ago our great Nova Scotian, Howe, or "Joe Howe" if you wish, addressing the farmers of Hants county, said, and his words are as pregnant to-day as when they were uttered at Brooklyn:—

"There is nothing good that is not tried; the many trials to which we are subjected give us more stamina and energy. The gourd which springs up in a night may perish in a day, but the oak is shaken and strained by the mountain wind which loosens its bark and gives strength to its fibre, and when generations who have witnessed its wrestlings with the storms have passed away, then, and then only, is it fit to form the ribs of the gallant ship

and to sustain the thunderbolts of war. How is it with that precious metal, so precious that for it men and even women will sell their very souls. Melted in the subterranean fires beneath us, it is driven through the rifted rock; it is pulverized amidst the sand until the miner finds it, and even then it must pass beneath the stampers, be purified by water and tried again by fire before it is fit to deck the hand of beauty and enter on its great mission as the agent of commerce and the medium of exchange."

Seven years ago the Fielding government established the School of Horticulture. They did a wise and statesman's act, an act which honors Mr. Fielding's name, a name that will long live, as will the institution he called into being.

FEEDING.

With the Farmer Rests the Task of Feeding the Nation.—How About Himself?

At the Tuesday evening session, Rev. Dr. E. M. Keirstead, gave the following address:—I have responded to the kind invitation of the executive to speak to you a few minutes, although I feel that after having appeared before you so many times, I should apologize again I have, however, no interest but to promote the work you have at heart, and therefore, I have a kind of moral sincerity which takes away what otherwise would be an unseemly audacity. I have a high regard for the work of this association and it grows upon me year by year, as I listen to your discussions. The interests of agriculture

are so closely identified with the varied interests of our country that you have not only the material interests of the country virtually in your keeping, but also the interests of the country in general. You not only raise products which feed the multitude, the staff of life, for the development of the nation, you not only supply your products for the commerce both foreign and domestic, which brings our nation into intercourse with other nations, you not only provide for the sustenance and transport system of the nation and all that springs therefrom, but you set the type of life of your nation because it is the

great average mass of the nation that really determines the character of the nation. It is the mass of the people that determines the strength of the nation. And those dwelling in our country where the future generations are growing up will make the nation of to-morrow. The unity and type of life of the future will be determined by that which exists on the homestead to-day. The degree of influence that is there, the degree of intelligence, the degree of morality, the degree of aspiration, the degree of reverence as manifested in general will become the

Typical Life of Our People.

Out from these homes will come your teachers and thinkers, your legislators, and your poets, prophets and preachers so that the man who will prophesy of Canada, must base his prediction upon the masses now in the homes, and he who would provide for the great future of Canada must develop the agricultural type of the country up to the highest point. And it is a truism in political economy that the production of the wealth and so the prosperity of a county will to a great extent depend on the industry, intelligence and morality of its people. We are told that large portions of Asia and Africa have gone into decay, not because of the niggardliness of nature, but because of the decadence of the moral and intellectual life of the people who inhabited those regions. Accordingly whatever concerns the life of the agriculturists of Canada is of importance, and, therefore I wish in the few minutes I am to speak to you, to discuss

The Feeding of the Nation.

believing it to bear directly on national welfare. You have had papers on this subject from year to year. It has been discussed time and time again, and therefore I am not out of harmony with your deliberations and if any one

should feel inclined to criticize me for selecting such a subject, I would shelter myself behind Herbert Spencer, who enlarges on this subject. I will entrench myself behind him as the Boers have done against the English. For while you may criticize some of the British generals out there, nobody will dare to hold controversy with Herbert Spencer. Now let me show you the value of food to life. Here is a plant. What have you there? Nobody knows precisely what you have. You have arrived at some practical conclusions, however. All the various elements brought together give some kind of condition so that life springs up and flourishes. Let us see how it develops. What forms the body of it? How much fruitfulness it exhibits as time passes! Where does that come from? Is it out of the plant, or out of the soil, or out of both? A large portion comes from the soil and from the air. We cannot adjust exactly the mathematical proportion, but a large part is out of what is external to the plant; a large portion is made up of what it takes and assimilates. Thus the capacity of the plant to grow and bear fruit is determined by its capacity to feed; the more it can eat and the higher quality of what it eats, the more vigor it will have and the more promising its future. Here is a bright little colt which appears on your farm some spring morning. What is it that will make that colt live to become a horse? Why the colt must get the farm in himself, or as much of the farm as possible; and so he begins the process and takes what he likes and grows upon what he gets and his power to feed is enlarged, and by and by you have your horse. You find it necessary to give him food, and of the very best quality, to develop strength and speed. The capacity of the animal to feed is the determining element in it,

How are you to get us this fast Atlantic service you are seeking? Why, by the big engines that will eat up large quantities of coal converting it into power to overcome the forces of nature. So the more power you get to appropriate and assimilate that which is given to you the

More Strength and Energy

you should develop. Now what is true of the colt and the plant, and the engine, is true with the farmer. He needs to be a good feeder and in proportion as the farmer himself feeds on that which is best will his farm be a success. I have heard of a man who died, and the description of his career was that "he was born a man and died a grocer." Whether that be true or not is questionable.

I question whether he could be a good grocer without being a man, and I wonder whether he was born a man; anyway he was born with the power of becoming a man; but no doubt he gave all his energies to making a grocer of himself, and so failed to become a man. Whatever the fact may be in relation to the grocer there is no doubt about the farmer, for Paul says:—The husbandman that laboreth must be the first to partake of the fruits." That is to say, if he is to be a good farmer he must eat of the fruits before others. If a man can raise fruit and not have interest enough to eat of it he will not have joy, faith, zeal enough to make him go on working.

So the farmer must be a good feeder. He must eat of the best his farm produces. You, in this valley, however, need no exhortation on this point for judging by what you sell us who are poor pensioners on your bounty, you already act on the principle stated. (Laughter.) But in remote sections it is to be feared that many who find the products, live on the poorest, conse-

quently grow weak in body and courage. Then disease comes, and they spend for medicine what should be spent in food. Let

The Man That Labors

first be fed, that is good British law and good common sense and economy. But it is written "Man shall not live by bread alone." Where is it written? In the Bible, you say. But what is the Bible? It is not merely a mechanical statement of what certain men have evolved out of their consciousness. It is a magnificent statement of facts as they exist. So it is written in the universe, in nature, in the constitution of man, that something else is needed to sustain him than the bread which feeds the body—what Hamlet calls the machine. You can nourish a horse by bread for his body, but a man needs more. He needs thought for his mind, beauty for his emotional nature and a constant revelation of purpose to strengthen his will. Here is a baby. You hope he is to grow into manhood; that from him will go forth streams of light and life and power. In order to this end you feed him as much as he can take of the best food; he increases in stature; the boy's mind expands too; you give him books, and try to get as much as possible of the world that lies outside of him into his mind and character. When he becomes a man it is hard to say just how much of him was there at the beginning, and how much has come from without. Philosophers, as you know, are divided in their opinions on this subject. Certainly the boy's mental food has formed his mind. Even the farm itself seems to be within him; for if you pass the homestead where a family has grown up that has become famous, you will in some reflection in their speech and writings of the mountains,

streams and even the clouds in the midst of which their early years were spent. So

The Problem of the Farmer

is not merely to raise grain and fruit, but to feed in reality himself and his family.

But I say it is a problem for the farmer to feed himself. In the autumn he looks around and sees his barns filled. All nature has been bounteous to him, and he sees his great pile of grain. But what is he going to get out of that grain? Some of it will go to the sustenance of his family and the rest he immediately converts into food for more cows and more horses. The next year he has a larger return and the process is repeated and he goes on enriching the farm and adding to his stock. What has he done? Instead of feeding his own soul he has only fed his cattle. While there is bread enough he, like the Prodigal, feeds on the husks. Let any one suggest to him that he take \$1.50, or three bushels out of that grain and buy a book for food for his mind and heart, and his family, and he at once suggests that it is extravagance. Let him take \$5.00 for that purpose, and he would be at once pronounced as a visionary. But why do I speak of this? Because the entire nation as it is to be, its preachers, its teachers, its thinkers, those who shall intransmit the life of the present in increased power to the future, all these elements of the population are there on that farm, and unless our material advancement can be turned into spiritual life and power it has failed in its purpose. We have some astuteness in feeding plants and pigs, let us learn to feed men. You will say all this is very vague. What would you have? I think the agricultural societies of this country ought to have in them all the elements of life, and to see that while

they are growing in affluence, in richness of resources, a little ten-by-fifteen school-house is proof against those people that they have

Not Begun to Feed Themselves.

The time has come when these agriculturists are practically independent and accordingly, over and above what the public school gives, provision ought to be made for culture of the bright young people in these homes. The time is now upon us when the university is not confined to the cloister of the middle ages, but has come out to serve the people. Why should not the farmers join their efforts, and by university extension work secure the teaching in popular and effective subjects of the curriculum? There is history which carries you back to our old home in Eden, and traces our wanderings since leaving it,—so full of suggestion of purpose, and of what is in man, so prophetic to the thinker, philosophy teaching by example; there is the science of government, that can now be made at the same time, instructive and practical; there is the history of the great religions that brings the largest and most stimulating thought; there are the great outlines of speculation on the problems of the world and of human life; there are the great masterpieces of literature that have stood the test of ages, and are life treasured up; all these, not to speak of natural science could be brought very clearly to the minds of our intelligent people in this country in such form as to enlarge the range of thinking and enable life itself. Do you not see that while the farmer is to feed his cattle and his fellow-men he must also feed himself. Otherwise his farm owns and masters him, instead of his being its master. He must be fed as a man before he can be a farmer; first, we are sons of God, after that sons of the world, and success in the

lower depends on the strength of the the demands of their complex nature.
higher. The farms of our country must The hunger for the highest is the cul-
feed the people of the country in all tivation of all blessedness.

GOLDEN OPPORTUNITIES.

What Nova Scotia Farmers Could Do if They Realized Their Advantages.

B. W. Chipman, secretary of agriculture, said that his first duty, and he often had this privilege, was to apologize for the absence of the members of the government. He hoped that they would be present at the next meeting, but it being so near the opening of the legislature, doubtless they found it difficult to leave the city. When he came to Wolfville, and saw the display of fruit, and the work of the association, he could carry his memory back to the time when Kings county did not ship a barrel of apples, but he hardly dared to speak of it for fear they would ask him his age. The growth of the fruit industry in the valley had simply become marvellous, and he doubted if there was such a valley in Canada. In Berwick an orchard of $2\frac{1}{2}$ acres, nine years from the seed, produced 20 barrels of apples. Another gentleman in Kentville had 23 trees planted on a half acre. In the 9th year he had 20 barrels; 11th year, 50 barrels; 13th year, 80 barrels; 15th year, 94 barrels, 80 barrels of which he shipped to the English market, and netted a cash margin of \$250, with 14 barrels of refuse left. While we have made this great

Progress in Fruit Culture,

we have not kept pace with the times in the other branches of agriculture. He thought it was a great pity that so many of the young people had left

this country in the past to go to the gold fields of Australia and California, seeking for riches which they perhaps had never found, when if they had stayed at home, they might have become wealthy, and been of so much importance to the country. The output from the gold mines is only \$400,000 per year; our fisheries, from \$7,000,000 to \$8,000,000, while our agriculture is \$15,000,000. The whole output from the mines, fisheries and forests of the Dominion is \$80,000,000, while that from agriculture of the Dominion is \$600,000,000. Let me say to the farmers of this country, that if you increase agriculture 20 per cent., you add \$3,000,000 to our provincial wealth. If you only add 10 per cent. you will add \$1,500,000 more than three times as much as all the output of our gold mines. Yet, how many men are leaving their farms. He blamed the fathers for keeping the young men delving away with old-fashioned implements, when modern implements were so much easier to work with, especially in haying, and harvesting. The work of the farmer is too hard, and a few years ago it was seldom a young man got married except on Sunday, so his wife could go to work on Monday. The premier of the province, a short time ago, was over in England, and he told him when he came home, that one of the brightest sights he had seen, was twenty young ladies in white, learning to make

butter. He, Mr. Chipman, would rather see them on bicycles and one man making the butter from a thousand cows. He would say to the young men of this county,

Get an Agricultural Education,

no matter what pursuit they are aiming at. He had seen professional men leave their professions and run farms, but how soon would they run their agricultural ship on the rocks if they did not have an agricultural education. He had great pleasure in congratulating the association on the work it was doing, and especially the horticultural school. He believed the director of the institution was an excellent man for the position. He had been all over the province with him, and addressed forty or fifty meetings. In speaking of the orchards of the Annapolis valley, Dr. Robertson told him he had travelled nearly all over the apple regions of the world, but he had never seen such

Model Orchards

as were in Kings county. But he regretted to say that in other parts of the province they were not making such great strides as they were in the Annapolis valley. In 1893 the govern-

ment had established the system of giving bonuses to creameries. We started in ten out of eighteen counties. Previous to that, Ontario supplied Nova Scotia with butter and cheese, but he regretted to say that they were not now working the creameries up to their full capacity in the province. One reason was that the proper cows were not kept. During the present winter Halifax has had to import butter from the neighboring provinces. One buyer told him he paid \$3,000 a month to the neighboring provinces. The same system was established in Prince Edward Island in 1891. Last year they exported half a million dollars worth of dairy produce. Are we to be hewers of wood and drawers of water for the other provinces of the Dominion? Let me tell you that the counties of Colchester and Cumberland have as much fertile land as the whole of Prince Edward Island. We have as much fertile land in Nova Scotia as would make three P. E. Islands. So if the farmers of this province would take advantage of their opportunities, there is good reason to believe that we would not only supply our home market, but take a large share in our increasing export trade.

WEDNESDAY MORNING SESSION.

SECRETARY'S REPORT.

It again becomes my duty to meet you in annual session. As fruit growers, we may congratulate ourselves on a prosperous year. The season of 1899 may be called a model year, with rain and sunshine so intermingled as to produce the best results. The crop of both standard and small fruits has been good, and we have been favored

with a good market for all our products. It is unnecessary for me to point out to you that as fruit growers we have the best part of agriculture. I had the pleasure of attending the meeting of the farmers' association, at New Glasgow, last week, and in listening to the discussions, and hearing of the difficulties encountered in making

a success of stock growing, I was more fully than ever convinced that our lot is cast in pleasant places. To still further improve our position, we should lead the van in improved methods in the fruit business. We are convinced that we produce in some varieties of our fruit the best of their kind in the world. At the exhibition in September, Professor Craig, late of Ottawa, now of Ames College, Iowa, and one of the best authorities on the continent, publicly said that the Gravenstein and Ribston apples and the Burbank plum as shown there, excelled anything in those varieties that he had ever seen. With this assurance should we not make efforts to put these fruits on the market in the best possible condition? Will any one venture to assert that the Gravenstein, pulled from the tree long before it is matured, wedged into barrels so firmly that the apples are often knuckled into each other to the very bottom of the barrel, shipped for a fourteen-days' voyage in hot weather, in the scalding hold of a steamship, ever arrives in London in the condition that we know it in here? Mr. Petit said yesterday, that

Ontario Envied Us.

the Gravenstein, and further truly said that if they grew it, then they would ship it in cases in cold storage. This is one of the many good things from Mr. Petit; let us take heed. Another thing to improve our position is better cultivation. There is no doubt, as the experience of many of you will prove, that good cultivation means improved appearance of the fruit crop, as well as more in quantity. Some of our progressive orchardists are handling their orchards by frequent and thorough stirring of the soil during the spring months, and sowing to clover early in July; and from observation and some experience, I am convinced that this method will ensure good results. Spray-

ing, according to the established formula, will do much toward ensuring a crop of first class fruit. The Bordeaux mixture applied at intervals will surely check the leaf blight of the plum tree, and go far towards preventing plum rot on the trees.

To secure the best results we must pack and ship less poor fruit. The act regulating inspection and grading may do something toward this; but we must also hold up a higher standard for the growers. A very few apples withdrawn from a barrel may often much improve the appearance. We are at a time in our history when this matter of careful selection demands attention. Our friends in Ontario, as outlined by the president, are moving along the same line. I think all will agree that there is need for careful attention to this matter. In Ontario it seems that the inspection act is being framed by the large dealers. Here in Nova Scotia the large packing houses are investigating many packages, and often finding poor samples in barrels that, perhaps, otherwise would have gone unnoticed to the market.

Educational Progress.

We are glad to find from the report, that the horticultural school is in good condition, and accomplishing good work in all departments. By reference to the statement appended to the treasurer's report you will see the school is living well within its income. We find the government of New Brunswick is in full sympathy with our work, willing to pay pro rata per pupil for the support of the school. From the school report we learn that six students from New Brunswick are in attendance this year.x

The fruit exhibit at the provincial exhibition was very creditable, and under the care of President Bigelow, was very successfully carried out. The placing back of the date for the exhibi-

bition to September 12th, will operate very materially against the fruit exhibit. There are very many other points of interest or importance of which I might speak, but I will not

occupy any more time at present. I have to thank the president, officers, and members for every assistance required in performing the duties devolving upon me during the year.

HORTICULTURAL REPORT.

Submitted by W. C. Archibald Chairman of the Council Board.

Chairman of the Council Board.

I have the honor to submit the seventh annual report of the Horticultural school, with class list of students, as follows:

Beginning horticulture, 11; second year, ditto, 10; advanced, ditto, 3. Beginning botany, 19; advanced, ditto, 29; entomology, 5.

Total enrollment, 69. Of these, from Nova Scotia, 60; New Brunswick, 7; Prince Edward Island, 1; England, 1.

Green house receipts, \$140.21.

I transcribe from last year's report and re-affirm the following:

"A special class for boys between the ages of 11 and 13 years, was formed at the beginning of this school year. Agriculture is given at the start its rightful place. We believe a living sympathy for the subject will be maintained and the boys will be trained to observe the things they see. The prejudice found existing at this early age, it is thought, will be more easily removed and the liking for rural pursuits take its place.

"Boys of this age who are trained to think, as they look on fine types of orchards in the vicinity of the school, give wide opportunities to the teacher."

"The ground and plants furnish laboratory material for all classes in microscopic work, which is in itself of great

importance. They illustrate many points thought out in teaching and seen as specimens in the discussion of landscape art. On all sides young men on the farm are seeking more education, but they want agriculture as well as horticulture, and they cannot afford the time to obtain one line of instruction at one school and the other at another school. No man living can say what is horticultural instruction and what agricultural instruction for the very reason that many subjects are both horticultural and agricultural."

Six weeks were given by Director Sears to lectures in the various counties of the province. The outlying counties are showing increasing interest in the selection of varieties for small orchards and gardens as evidenced by their letters of inquiry, and more particularly from districts where these lectures were given. We must endeavor to reach those people who cannot in any representative way send students to the school. The board have arranged for a series of six to eight weeks' lectures for the coming year. The spraying meeting, now of undoubted value, will be continued. Applications for young nursery trees to test are coming in far beyond our ability to supply. The need of suitable experimental grounds is deeply felt. This matter has been repeatedly pressed

upon our government. The council press with the executive for a govern-
board are unanimously resolved to mental appropriation for this purpose.

REPORT OF DELEGATES.

To the Nova Scotia Farmers' Association, at Annapolis
Royal, February 22-24, 1899.

Your delegates beg leave to report that they attended the fourth annual meeting of the Nova Scotia Farmers' Association held at Annapolis Royal on February 22nd, 23rd and 24th, 1899. Having been present at all the former sessions of the association they consider this was the most important one held by that body. They are pleased to report that the attendance from all over the province was large. Your delegates watched over the interest of your society and took part in all the discussions. A greater interest seems to be taken by the farmers in the aims of their association. As you are aware, the main subject for discussion was the need of an agricultural and horticultural school such as this province requires. The association was most unanimous as to the desirability of amalgamating the schools of agri-

culture and horticulture which we now have, into an agricultural college where the very large number of farmers' sons, and others who wish to become farmers, may get a more scientific knowledge of agriculture in all its bearings as well as the many other very great advantages always accruing from the associations of college life. The resolution regarding the college adopted by the Farmers' Association, to be forwarded to the provincial government, was virtually the same as passed by your association, the words of the particular location desired by the association being changed from "Kings county" to an expression pointing quite as plainly to this part of the province.

RALPH S. EATON.
M. G. DeWOLFE.

REPORT OF DELEGATES.

To the Nova Scotia Farmers' Association, at
New Glasgow, January 24-26, 1900.

Your delegates are pleased to report that they attended the annual meeting held at New Glasgow, January 24th, 25th, and 26th, and took an active part in all the proceedings. From all over the province delegates were present,

and it was conceded by all that this was the best session yet held by that association. The subjects for discussion were of a high order, all tending to the advancement of the farming interests of Nova Scotia. Your delegates

watched over the interests of your society and tendered on your behalf a hearty invitation to the Farmers' Association to meet with us during the annual meeting to be held in Wolfville.

The Farmers' Association is doing good work, and should have the support of every one who is interested in agriculture. There seems to be a growing desire as to the needs of a fully equipped agricultural college

placed in the very best location possible, and that the time has arrived when farmers and farmers' sons must have scientific knowledge of agriculture, so as to be abreast of the times, and in a position to meet all competition. All of which is respectfully submitted.

M. G. DeWOLFE.

R. W. STARR.

REPORT OF COMMITTEE

On Winter Fruit Exhibition.

In accordance with the direction of the executive, we issued on November 8, a leaflet containing a list of prizes, and conditions under which they were to be granted. These were mailed to officers and members of the association, and fruit-growers in all parts of the province, and some were sent to Ottawa, New Brunswick and to Prince Edward Island, and although the response was not as general as we could wish, still the show was as large as we could expect under the circumstances, there being nearly 300 plates staged by about 25 exhibitors. Your committee were very fortunate in securing the services of Mr. A. H. Pettit, of Ontario, as judge, and although he had but a short time on Wednesday to do the work, he showed himself to be thoroughly acquainted with the business, being methodical, painstaking and accurate, both as a judge and as a pomologist. Following out his suggestions your committee have appended to the report a list of those exhibits not in the price list, considered worthy of notice, and have awarded prize cards to the fruits named.

There were four plates of apples sent by Mr. J. H. Reid, of Fredericton, in

answer to a request for samples of New Brunswick apples. No. 1, a bright yellow apple sent for name, is not recognised by any of our pomologists. No. 2, Bethel, well grown and well colored, but in past seasons has been condemned as a commercial variety. No. 3, Mildred or Milding, a well grown fine-looking sort that may prove worthy of trial here, and No. 4, Merritt, a native apple that has been highly recommended by those who have known it for many years in the locality where the original tree stands, which is said to be over 100 years old, but has only now been brought into notice. It is said to be a long keeper, and a strong growing, hardy, and constant bearer.

Apples from LaHave.

A magnificent plate of Yellow Belle-fleur from Judge DesBrisay, Bridgewater, attracted much attention, being much larger than any other specimens of the same variety on show. Such specimens go to prove that the valley of the La Have is to be considered one of the best fruit producing localities of the province if the same care, skill, and cultivation are bestowed on

the proper varieties, as are given to the orchards of the Cornwallis and Annapolis Valleys.

A very handsome plate of Fameuse or Snow, was exhibited by A. H. Johnson, of Wolfville, which attracted much attention from the fact that the specimens were not only well-grown, but were perfectly free from black spot, owing to four careful sprayings during the season.

A fine plate of "Cornish Aromatic," was shown by J. G. Byrne, of Kentville. This apple should be generally tested, as its table and keeping qualities are of the best, and it is well known on the London market.

There were many other varieties that should have been noticed, but the work was so crowded into the last day, by the storm of Monday, that it was found impossible to get time to make reliable notes, after they were finally arranged. We have to express the hope that next year arrangements may be made in time, and some financial encouragement given to make the winter show of apples a great and permanent success.

On behalf of the committee,

F. C. SEARS,
Chairman;

R. W. STARR,
Secretary.

LIST OF PRIZES.

There were no money prizes, but handsomely illuminated cards were awarded as first and second prizes.

Best exhibit of apples grown on one farm, one plate each variety. Two exhibits—1. Arthur C. Starr, Starr's Point.

I find in this collection thirty-three varieties of handsome well-grown apples, from which I select the following, which I think possess especial merit as to evenness of form, color, size, and quality: Penneck, Fallawater, Hurlbut, Blenheim, Stark, Hubbardston, Golden Russet, R. I. Greening, Baldwin, Nonpariel, Cabashea (or 20 oz.), Wagner, King, Ohio Nonpariel, York Imperial, Spy, Ribston, Schaffer, Fall-Harvey, Pomme Grise, Swazie-Pomme Grise, American Golden Pippin. The rest of the collection are well grown, and of good appearance, but are not yet proved to be good commercial sorts.

2. A. H. Johnson, Wolfville. A good collection of thirteen varieties, mostly well known standard sorts. Many

specimens had been looted from the plates in this collection, but fortunately enough were left to determine nearly what its value had been when first staged.

Two Exhibits.

Best five sorts from one farm.

Seven exhibits.—In this section I find a very close competition, Nos. 3 and 4 are tie with 49 points out of a possible 50, and the next highest are Nos. 11 and 15, with 43 points each, the others making 42, 41, and 39 points. I would suggest that in view of the excellence of these exhibits, and the commercial value of the varieties contained in them, that Nos. 3 and 4 be granted first prizes, and 11 and 15, second prizes. 1, Arthur C. Starr, Starr's Point; John G. Byrne, Kentville. 2, Arthur Johnson, Wolfville; Charles Fitch, Wolfville.

Best exhibit from a county west of Halifax. One Exhibit.—1, Charles E.

Brown, Yarmouth. A collection of 23 plates of fairly well grown apples, many of which are well known valuable sorts. Others are new to me, and their values not well determined; but the collection proves that with care, cultivation, and proper selection of varieties, good fruit can be grown in the western counties.

Best from counties east of Halifax,—no exhibit.

Baldwin. Nine plates shown. 1,—A. C. Starr, Starr's Point; 2, Ernest Johnson, Wolfville.

Banks or Red Gravenstein. Two plates. 1, J. Elliott Smith, Wolfville; 2, A. H. Johnson, Wolfville.

Blenheim. Four plates. 1, A. C. Starr, Starr's Point; 2, George E. DeWitt, M. D., Wolfville.

Ben Davis. One plate. 1, John G. Byrne, Kentville.

Fallowater. Four plates. 1, A. C. Starr, Starr's Point; 2, Herbert Johnson, Wolfville.

Golden Russet. Three plates. 1, A. C. Starr, Starr's Point; 2, A. H. Johnson, Wolfville.

Gravenstein: Three plates. 1, Charles Fitch, Wolfville; 2, Herbert Johnson, Wolfville.

King. Ten plates. 1, A. C. Starr, Starr's Point; 2, J. Elliott Smith, Wolfville.

Nonpareil. Four plates. 1, Charles Fitch, Wolfville; 2, Herbert Johnson, Wolfville.

Ribston. Four plates. 1, Herbert Johnson, Wolfville; 2, J. Elliott Smith, Wolfville.

R. I. Greening. Three plates. 1, Charles Fitch, Wolfville; 2, A. C. Starr, Starr's Point.

Spy. Four plates. 1, A. C. Starr, Starr's Point; 2, Arthur Johnson, Wolfville.

Stark. One plate. 1, A. C. Starr, Starr's Point.

Wagner. One plate. 1, A. C. Starr, Starr's Point.

New commercial apple. Three plates. 1, Ontario, C. A. Patriquin, Wolfville; 2, Hurlbut, A. C. Starr, Starr's Point.

New dessert or table apple. Two plates. 1, Cox's Orange Pippin, Robert W. Storrs, Wolfville; 2, Ohio Nonparell, Arthur C. Starr, Starr's Point. !

Quinces, 1 plate, variety, Champion. 1, R. W. Starr, Wolfville.

Collection of Cranberries, 1 exhibit, 4 varieties, very large, handsome, well-colored fruit. 1, J. S. Bishop, Auburn.

Collection of fruit preserved for show. 1, Arthur Johnson, Wolfville.

We also find a very large and attractive display of varieties placed on the tables, not entered on the list for competition, and several varieties for name, some of which deserve more careful examination than time would permit, and might profitably be referred to your pomologists for careful examination. There is also a very attractive exhibit from the experimental farm at Ottawa, consisting of the following varieties: Lawver, Gano, Yellow Bellefleur, McIneosh Red, Melinda, Edgehill, Salome, Scott's Winter, Pewauke, Shiawasse Beauty, Sharp's Russet, Ben Davis, Golden Russet.

A. H. PETITT, Judge.

The committee add the following:
1st prize for Milden, Norman Hallet, Douglas, York county, N. B.

1st prize for Merritt, F. B. Merritt, Fredericton, N. B.

1st prize for Yellow Bellefleur, Justice DesBrizay, Bridgewater, Lunenburg county.

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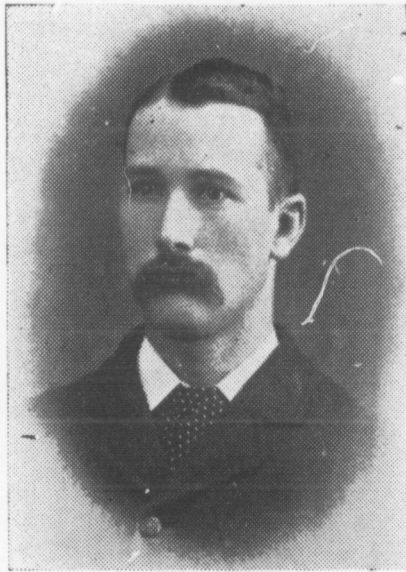
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GEORGE W. MUNRO,
Treasurer Nova Scotia Fruit Grow-
ers' Association.



CRANBERRY CULTURE.

A Profitable Business Which Might be Greatly Extended in Nova Scotia.

Henry Shaw—Your president has asked me to say a few words on the cranberry business. The crop this past season where the conditions were right, was very fine indeed, and the markets have been quite good. The soft, wet, warm fall has had the same effect on the United States cranberries as it had on our apples. To-day the reports from Montreal and Toronto, say that they are getting from \$5.00 to \$7.00 a barrel, and in the United States they are receiving from \$4.00 to \$6.00. There is a national policy tax on cranberries from the United States. The business is just as good as it ever was, and I am learning a little every year. The best place for growing cranberries is in a swamp. If you can get a swamp that can be flooded, and get the right variety of vines, you will be just as

Sure of Success

as you would be if you set out an orchard. Last year the prices ranged from \$6.00 to \$6.50 per barrel. The English trade now desires them put up in peck boxes. So far we have not yet been able to supply our own markets, and so long as we have to import cranberries, just so long will it pay to raise them, and after that we can export them. I will be pleased to answer any questions, or give you any information you wish.

President Bigelow—Was I correct in the estimate I made of the crop this year,—1,000 barrels.

Mr. Shaw—Yes. That was a fair estimate.

What are the expenses per barrel to Montreal?

Mr. Shaw—By the car load, forty-four cents, and ten cents up there for handling. Ten per cent. covers everything. Messrs Nonhard and Lowe, want them put up in peck boxes. Last year they sold for three shillings and three pence sterling a peck.

President Bigelow—What has been the largest number of barrels exported?

Mr. Shaw—3,000 barrels.

The cause of the failure in the United States this year was the fire worm. For safety it is better to flood in the month of June. If the cranberry bog affected by fire worms can be flooded for 24 hours, it will destroy them. Our American neighbors say your bog will be safe if you can destroy the first brood. Unfortunately for most of the growers here, only a few can flood at the right time. In order to be able to flood when necessary it is requisite that you should have a reserve supply of water. The common cranberry worm that has been here for years has been quite destructive some years, but other years it does no harm. I flood my vines every winter. There are a great many plantations up in our neighborhood which are just low, wet, sandy bogs. The great feature with respect to cranberries, is that they can be raised on the most worthless land of the country, and you do not want any manure after you set your vines out.

What is the right way to put them out?

Mr. Shaw—First clear your land of

all obstruction and vegetation. If you can flood it for one or two summers you can kill the grass. After ploughing and harrowing, your land will be ready to set out the vines. The cheapest way to have your bog fitted for cultivation is to let the water kill the grass, it will destroy everything but the clean soil to put your vines on. If the mud is deep you must spread sand over it about two or three inches deep. There are several varieties of vines from the Four Mile Lake that grow very well. A variety called the "cherry" grows very large.

Dr. DeWitt—Does not successful cranberry growing depend entirely on the water supply?

Mr. Shaw—A great deal.

Dr. DeWitt—I understand that is the reason they have been so successful at Cape Cod. One man there raised 30,000 barrels.

J. S. Bishop—It does in a measure, but it is not absolutely necessary. You must have water to kill the fire worm. They talked at Cape Cod of getting a steam engine. It appears they tried arsenite of lead, and Paris greer, but it was not successful this year

A voice—In one instance it was successful this year.

Mr. Shaw—In the summer time, in the growing season, you must have your bogs well drained, no stagnant water. Richardson Chute this year on one acre had somewhere about 100 barrels; some twenty barrels were damaged by frost. The crop was simply enormous. He can irrigate his plantation in dry weather.

J. E. Starr—Would you advise setting out on land that you can only irrigate in the spring and fall?

Mr. Shaw—Yes. It is better to get the water on in the fall of the year and keep it on all winter.

Water is Essential.

Dr. A. P. Reid—You must first have water for success, and in the second place after having destroyed the vegetation it is still necessary to cover the ground with sand.

J. S. Bishop—Yes, if it has a muddy bottom

Dr. Reid—Do you use any special type of sand?

Mr. Bishop—I use the ordinary red sand. I think the Cape Cod men use beach sand. If the mud is deep you want more sand. After your vines bear four or five years give them an inch more sand.

Dr. Reid—As I apprehend this matter it is not absolutely necessary to have mud. Low, sandy land will do if you can regulate it, and I presume flooding is only valuable when it is done at a certain period of the worm's growth?

Mr. Bishop—Yes. They blossom about the 1st of July. I kept the water on my bog until the 15th June, but I had no berries.

Colonel Spurr—Have you had any experience with cranberries growing on uplands?

J. S. Bishop—I suppose you mean the bush cranberry. I do not think you can make a success of it.

President Bigelow—You still recommend cranberry growing in Nova Scotia as a paying business?

J. S. Bishop—Certainly.

A Voice—What is the cost of picking them?

Mr. Bishop—Put it at \$1 a barrel, and the barrel costs twenty cents.

Mr. Wyman—How close do you put the rows?

Mr. Bishop—Rows 2½ feet apart.

Question—What season do you plant?

Mr. Bishop—Not later than June. They are apt to dry up in July.

P. Innis—Don't they spread like strawberries?

Mr. Bishop—Yes.

A Voice—A barrel when it is opened will soon spoil?

Mr. Bishop—Yes.

Dr. A. P. Reid—In Halifax, years ago, when they got them from Sable Island, they had the barrel full of water?

J. S. Bishop—I do not know.

New Brunswick Berries.

I. B. Oakes—There is an excellent cranberry spoken of here, grown on the south shore of New Brunswick. It grows on a very small vine, not nearly as large as our Nova Scotia Cranberry vines. It ripens 1st September. They load small schooners with them and ship them to St. John and Halifax. I

think if the facts were known you will find that New Brunswick supplies a large portion of the cranberries of Canada. It is a berry as large as a fox-berry. It grows at Grand Manan, and as far as Albert county, too. They have never tried to improve it by cultivation, it grows wild. They also have a larger berry, but it may possibly be the foxberry. They are a more tender berry than that cultivated here.

J. S. Bishop—You had better keep clear of the Sable Island vine. The climate out there is foggy and cold, with no frost, and they do not ripen as early as ours.

Henry Shaw—I would recommend J. J. White's work on cranberry culture as an excellent book, and you will also find in the report of this association for 1896, a paper on cranberry culture by J. S. Bishop, which was read at Middleton.

THE SAN JOSE SCALE.

A Pest Which it is Hopeless to Exterminate, But is Not Formidable.

Professor Sears read the following paper on this subject: Two years ago at our annual meeting the San Jose scale was the most important subject of the meeting. It was referred to at length in the president's annual address; nearly an entire session was devoted to a discussion of its frightful characteristics and the dire results which would certainly follow its introduction into the province, and an act was framed and later passed, to shut us off from infected countries. This year, though we are still interested in the matter, it is no longer with the feeling that should this pest appear we might about as well abandon

fruit growing altogether. At that time every newspaper was filled with the most alarming accounts of the destructiveness of this scale. Now though it is still much dreaded, many writers have begun to caution growers not to abandon hope with the advent of the scale in their orchards. Yet as I have said we are still interested in this scale and it seemed to me that a short discussion of its habits and its present distribution might be of interest at this meeting.

Origin of the Scale.

First, as to its life history. This scale passes the winter as nearly full grown

insects, which the following spring complete their growth and then the females begin to give birth to living young, instead of the usual method among insects, laying eggs which hatch later. Each female continues to produce young in this way for about six weeks and then perishes. The young when born are of course very minute, but have the six legs common to all insects and are active little fellows running about over the tree. This activity lasts for a short time, however, a few hours at the most, and they soon select a suitable spot, pierce the bark with their beak and from that moment become fixtures with no power to move. They soon begin to secrete a waxy scale which eventually entirely covers the insect proper, protecting it from most insecticides. These insects mature in from thirty to forty days, and the females then begin to produce young, which continues as previously explained, so that from later spring till the close of the season we have a continual succession of young insects produced, a fact which complicates greatly the treatment necessary to the destruction of this scale.

Another peculiarity of the insect, and one which has rendered it particularly destructive, and has hastened its spread, is the immense numbers produced by a single female in a single season. This matter has been investigated by the authorities at Washington, D.C., in the following way. A number of trees were selected and all the scales removed from each but a single female. This insect was allowed to produce as many young as it would and again all of these were removed but a single female, which produced a second brood and so on. It was found that four broods, or generations, were produced during the season. In the first generation seven females, each on a separate tree, averaged 99 young; in the second there was an average of 450 in six families; in the third 78; and in the fourth 459. Taking the average of these

families which were allowed to remain on the trees, and assuming that all the females among those scales which were removed would have been equally prolific, we have the immense total of 5,964,181,997, a number entirely beyond our comprehension at the beginning of the season. This

Immense Productiveness

is the second factor which renders this insect so unusually difficult to deal with. But on the other hand we find that in those districts where it has been longest known it is least feared and seems also to be least destructive. In California, where it was first noticed in the United States, it has come to be regarded as one of the regular pests to be dealt with, just as we look upon the canker-worm, or the oyster-shell bark louse, as necessary evils of fruit growing. It is like the potato bug and the horn-fly and a dozen others that might be mentioned. When first introduced into a new country an insect, being freed from its natural enemies, will multiply wonderfully if the climate is suited to it. This continues for a longer or shorter period of time until ultimately either its old natural enemies are introduced, or new ones begin to prey upon it, and it takes its place among the ordinary insect pests of that locality. Several methods of combating this pest have been developed which have proved very satisfactory indeed, so that its destruction has been reduced to as practical a basis as that of the canker-worm or the caterpillar. In this connection it is interesting to note the opinion of some of the best authorities in the United States. Prof. Slingerland, of Cornell University, says: "The San Jose scale can be absolutely and economically controlled by intelligent spraying." Prof. L. H. Bailey is quoted as saying: "I have no more fear of the San Jose scale than I have of the codling moth," while Prof. John B. Smith, of New Jersey, who has had as much practical experience in

dealing with this insect as perhaps any man in America, has this to say on the subject: "On the Parry nursery where the scale was originally introduced in 1886, there is now an orchard of Keifer pears in full bearing where the trees have been infected for years, and when the pears came off this season, as I am informed, with scarcely a blemish. Now, by all the cautions promulgated by the extremists in the direction this orchard should have been absolutely destroyed as soon as the insects were found to be generally distributed through it. Yet what a pity this had been and what an injustice to the grower! Could I justify to myself an order requiring any grower to sacrifice an orchard of bearing fruit trees because it was infested by an insect which could be reduced to harmless numbers?" And this brings us to the last point which I wish to consider, namely the question of the possibility of

Exterminating the Pest.

In 1896 it was found in the following states: Alabama, Arizona, California, Delaware, Florida, Georgia, Idaho, Indiana, Louisiana, Massachusetts, Maryland, New Jersey, New York, New Mexico, Ohio, Oregon, Virginia, West Virginia, Washington and Kansas, with probably many others where its presence had not been discovered. It is known to feed upon the following plants: Almond, peach, apricot, plum, cherry, spirea, raspberry, rose, hawthorne, pear, apple, quince, gooseberry, currant, persimmon, acacia, elm, English walnut, pecan, alder and willow. It would seem to me that with so minute an insect, so widely distributed throughout the country and feeding upon such a variety of plants, the possibility of even exterminating it is out of the question, and when we consider the question of keeping it out of the Dominion I should regard it as equally hopeless. Allowing that we shut off all communication in the way of traffic which is naturally impossible, it can only be a question of time when the insect will find its way

across the border from the United States. And besides all this we already have it in Ontario, where, though every attempt has been made to stamp it out, it is, according to the last accounts I can get, still found in abundance in certain localities. I can but feel that the attempts which have been made in Ontario to check this insect by cutting down infested orchards, however well meant they may have been, are a great mistake. Unless we admit that this insect is too much for us and decide to abandon the field to it I cannot see the utility of his method.

Not Effective Cure.

All that is accomplished when an orchard is destroyed is to remove that much food from the pathway of the scale and the ultimate end of this method must be the extinction of our orchards. The whole question would seem to hinge on whether this scale is to continue to be as destructive as it has been in the past and whether it is possible to exterminate it. As to the first fruit, the past history of all insects would lead us to expect its destructiveness to diminish year by year. As to the second let me quote from Mr. Marlett, of the department of entomology at Washington. He says: "Does anyone think for a moment and at all seriously that the San Jose scale is to be exterminated and that its dissemination is to be prevented, whatever may be the legislation and whatever quarantine steps may be adopted or exterminative measures put in operation? Undoubtedly this scale insect will overspread North America within the possible climatic range of the species and ultimately and at a not far distant date will become established in Europe despite all possible preventive efforts."

Q. Will this scale kill outright?

Prof. Sears: They will spread over the tree, and will eventually kill the tree if it is not treated.

Dr. Saunders: Is it the crude petroleum treatment that you refer to as effectual?

Prof. Sears: That is one, another is whale oil soap, also kerosene emulsion and hydrocyanic gas. Hydrocyanic gas has been used extensively in Maryland, and it is also used in disinfecting nursery stock. Most of the authorities say that if a nursery is badly affected to chop it down and burn it.

Q. In naming the trees it would attack I did not hear the orange tree mentioned?

Prof. Sears: I do not know whether it will attack it.

Dr. Saunders said the Ontario government, urged by the fruit growers' associations have taken strong measures to stamp it out. It is still restricted to a limited area. The insect multiplies with such amazing rapidity that it has given no end of trouble. He believed that the nurseries in Ontario were entirely free from the scale, and they are very careful in using hydrocyanic gas when importing stock. The

Hydrocyanic Gas Treatment

has also been used in the orchard by Prof. Johnston. You have to envelop your tree under a screen by this method, and it is a cumbersome and expensive method of treatment. He hoped that the crude petroleum treatment would be an effectual remedy. Prof. Macoun, our horticulturist, undertook to repeat some experiments made in the western states, spraying the trees during the winter with strong lime whitewash, with a view to retard the buds. We sprayed in February, March and April, and there was a decidedly perceptible effect from this spraying in retarding the bud, more particularly in plums and cherries. It was not so manifest in the case of apples. But later in the season, when the trees were cleaned by the action of the rains, we found on going over those which had been affected by the oyster shell bark louse that those which had been sprayed were entirely free. We feel perfectly sure that the lime had the effect of loosening the scale, not only the new scales,

but the old scales as well. We also sprayed the trees this year. My impression is that the action of the lime on the oyster shell bark louse, from what I have been able to see, is to loosen the scale up completely, although it does not probably destroy the eggs and the rain washes the scale off before the time comes for the eggs to hatch and thus we practically get rid of the trouble. I think it is an exceedingly useful discovery. At Ottawa we often find the bark louse an exceedingly hard enemy to fight. An effectual treatment is spraying with tobacco water and soap when the young come out, say ten pounds of tobacco stems in a barrel of water, soaked for a few days, and three or four pounds of whale oil soap. I hope this may be found a useful treatment in keeping the San Jose scale in check.

W. C. Archibald: I would like to ask Dr. Saunders if he would kindly give the season for disinfecting for the San Jose scale in Ontario, and what is the nature or extent of the law affecting the disinfecting of the nursery stock; is there a law obliging the nurserymen to spray their trees? I understood the scale being very minute is apt to be overlooked?

Dr. Saunders: I believe the law of Ontario now is that every nurseryman must expose all his stock, before shipping, to the hydrocyanic gas treatment in a chamber provided on his own grounds, and that he is liable to a fine if he sends out any stock which has not been fumigated in this way. I presume the law is fairly enforced. I do not think there are any instances on record of any trees or shrubs infected coming from the Ontario nurseries.

J. S. Bishop: Have any experiments been made with caustic potash for the oyster shell bark louse?

Dr. Saunders: Yes, I think Mr. Blair has made such experiments.

Mr. Blair: I used one pound of caustic potash to a bucket of water and sprayed

it on the tree. About the first of April it did seem to have an effect on the oyster shell bark louse. It reduced them 50 per cent. I find it not entirely effective.

Caustic Potash Treatment.

J. S. Bishop: I tried caustic potash myself, very strong, with the result that it completely cleaned the tree, so that my neighbors were amazed. I have a large quantity of wood ashes and used the lye. The strength must have been twelve pounds of caustic potash to a cask of water.

Dr. Saunders: How many pounds of potash would there be in the barrel?

Mr. Bishop: Twelve pounds to the barrel.

Mr. Blair: What time did you spray?

Mr. Bishop: In April.

W. C. Archibald: I am familiar with the use of it. For eight years I have, with one exception, used caustic potash. Last year I used one pound to three gallons of water.

Dr. Saunders: What kind of potash do you use?

Mr. Archibald: The article of commerce made in Ontario.

Dr. Saunders: That is a crude potash obtained from wood ashes.

Mr. Archibald: I think it is effectual in destroying all kinds of insects. I do not think we have much wood louse around Wolfville.

Col. Spurr: What do you mean by pretty strong?

Mr. Archibald: I think one pound to three gallons of water to the top or branches and I think one pound to two gallons to the trunk.

J. S. Bishop said he would advise persons to protect their hands with rubber gloves.

C. R. H. Starr thought that the best time to treat the bark louse would be about the time the insects were coming from under the old scale, which would be about April.

Dr. Saunders said it would be well for the operator to keep on the side of the tree from which the wind was blowing as if the mixture got in a person's eyes it would be irritating.

WEDNESDAY AFTERNOON SESSION.

THE VALUE OF TILLAGE IN THE ORCHARD.

J. Elliot Smith, Wolfville: "The topic before us is an important one. From a practical standpoint many of you know much more about this subject than I do. It is not therefore with a view of telling you something new that I have prepared this paper, but my object is more to excite discussion which may be of profit to all. In these times when there is such an abundance of everything that the land can pro-

duce, with competition so keen and prices so low, one prominent and constant aim with the orchardist, should be to secure the best quality possible of everything he undertakes to produce. There is always a demand for the best at a satisfactory price, and large solid apples with neither a scab or worm hole, will always bring a good price. We are living in a new age; new conditions and new dangers sur-

round us, and if we are satisfied to omit the new and better ways of culture, we shall surely be driven to the wall. The old couplets "A little farm well tilled," etc., are not without their significance at this day, or it may be,

"The Man With the Hoe,"

is brought to mind. The past summer has been of a nature to show the good results of thorough and constant cultivation. During the hot dry summer months those orchardists who kept the soil thoroughly worked, had the satisfaction of seeing their fruits come to proper maturity, while those who had so much land under cultivation that they could not get the required work done, lost heavily from the different fruits dropping in their early stages. A question that has been a long time debated among experienced orchardists, is, whether sod or mellow culture is better for an orchard. Many orchards have borne regular crops of fruit for many years with an unbroken sod. This only proves the land is unusually rich. As a rule, this is not the case. But in dry seasons, it may be difficult for trees in sod to obtain sufficient water to carry a large crop through to perfection. My experience is that the growth must not be checked; we must not expect that a tree planted in the grass, with simply a small portion of the sod worked around it, will make the same growth that the same tree would if planted in cultivated soil. I would say, a tree planted in cultivated soil will make three times more growth than one planted in the sod. Seeding down an orchard for a few years in some cases may prove beneficial, but the majority of orchards contradict this experience. Cultivation should begin

Early in the Spring

as soon as the ground is fit for work, keeping the surface earth harrowed

once every two weeks, or oftener, especially in dry weather, till the latter part of July, when it should be discontinued to give the tree time to mature its wood before the coming hard frosts. Of the many causes of failure in apple culture, the most common is lack of cultivation. The first value of tillage is to furnish the plants with food which the soil contains. I have found that when the orchard is in an unthrifty condition, so that the leaves are of a light green or yellowish tint, and ripen early, and the fruit is scant and poor, cultivation is the surest and speediest cure, and will accomplish what pruning and manure will utterly fail in doing without it. Cultivation of the soil so exposes it to the action of the air as to make available the plant food which is already there in store. In 1896 my orchard was in the condition above described. It had been seeded down and left to the ravages of insects for several years, and the trees were robbed of their vitality. In the summer I broke up thoroughly one half of it, applied fertilizers, sprayed and pruned it carefully, while the other half was pruned, sprayed and manured, but not cultivated. The same treatment was continued during 1897, and the result was plain enough to the most casual observer. It was here that I learned the value of tillage by killing the couch grass in the orchard and with this object in view I cultivated often during the season.

In 1896, from 50 trees of Nonpariels, 9 barrels were picked, while in 1899, 200 were got from the same trees. Now what does this shew? Was the soil exhausted? I think not. There is no question but that the soil was depleted, to a certain extent, of its fertility. There are thousands of pounds of nitrogen, phosphoric acid and potash in every acre of our land and it is better to handle the soil so as to get this

material out of it than to put our hands in our pockets and buy it.

The Real Value of Tillage

next to getting plant food, is for the conservation of the moisture of the soil. So the drier the season, the more frequent should be the tillage for the purpose of holding back the water held in reserve in the soil below. The past two years my orchard has carried a large amount of fruit, and of a quality that was very superior. I attribute it to the frequent tillage, holding in reserve the water supply, so there was sufficient moisture to carry the crops through to perfection. Another help in maintaining soil moisture, is the incorporation of plants in the soil for the purpose of adding humus or vegetable material, and this is very important, for if we cultivate without returning the humus to the soil in barnyard manure or cover crops ploughed in, it may be possible to injure our land by constant cultivation. I am a firm believer in clover crops for our orchards. There are two reasons for this: When we have put the soil in that fine condition, reduced it to the finest condition possible, through the process of frequent tillage, we have done so at the cost of the soil, to a certain extent. If we leave it in that condition we shall lose nutrition unless we cover it with some plants before the heavy rain-falls, that come during the autumn season. After you have liberated the

Plant Food in the Soil

you don't want it wasted, so we want to cover that soil just as quickly as we can after its reduction to that condition. By the first week of July we have secured the annual growth of the trees, and as we don't want to stimulate them to an unnatural growth, tillage should cease, and the cover crop be sown. I have known for two

years that I have been certainly improving the soil upon my farm to a very remarkable extent. It has been realized in the growth of trees and the annual production of fruit. Each year is showing regular bearing which can only be accounted for by the superior supply of plant food the trees have had through tillage, and supplied by the clover. Upon these trees there is to-day in addition to the growth of wood, a splendid development of buds for the coming year. In our orchard culture we need to improve our methods to produce a better quality of fruit.

In connection with our school of horticulture, we want an experimental station, where plant breeding, domestication and the treatment of orchards with reference to feeding, spraying, culture and pruning can be carried on.

Little Careful and Accurate Work

has been done along any of these lines. What work has been done is based more upon personal opinion than upon accurate data. One man is positive that the only proper treatment for an orchard is to practice clean culture, another is sure that the best treatment is to turn in the sheep(?), while his neighbor is quite as positive that hogs will do better service. One man would never use stable manure, another would never use chemicals. One man would prune severely, another regards pruning as unnatural, and would never use a knife, and so the problems multiply. There are many thoughts suggested to us, a few of which are: Can we, by cultivating the orchard persistently, grow fruit without any fertilizer whatever? Is it possible to injure land by too constant cultivation without returning the humus to the soil? Is there danger of adding too much nitrogen by the clover system? There is a difference in conditions and localities, and each must work out these problems.

A STANDARD BARREL.

The Imperative Need of Legislation Which Will Give the Canadian Farmer a Chance in Competition.

Mr. P. Innes spoke as follows: In introducing the discussion on the subject of a standard barrel I cannot do better than recount the history of the question up to this date. Prior to confederation the legal barrel in Nova Scotia was of the following dimensions: length of stave, 29 inches; head between chimes, 17 inches; diameter in centre inside 19 inches; corresponding as nearly as possible in shape and size to the Canadian or American flat-hooped flour barrel. After confederation this law became obsolete, and Dominion legislature fixed the dimensions as follows: stave, 27 inches, from croe to croe; head, 16½ inches to 17 inches; diameter, nearly as cylindrical as may be. This has been the law up to this date, but barrels of this size and shape have not been made or used in Nova Scotia, and practically we have been acting as if there was no law on the subject. Many of our farmers have continued to use barrels of the dimensions required by the old Nova Scotia law, while others had them made to suit their own ideas, with the result that we have

Barrels of Various Shapes

and dimensions, with capacity varying from 2 to 3 bushels. In 1896 agitation commenced to have this state of matters remedied. Mr. W. H. Chase, a large buyer of apples and potatoes, brought the matter to the notice of the Kings county board of trade, and the Nova Scotia Fruit Growers' Association. The latter appointed a committee to obtain information, and report to the next meeting of the association.

When the committee's report was brought in, the following resolution was passed unanimously:

Resolved, that this association petition the minister of trade and commerce to have the Dominion statute relating to the size of apple and potato barrels revised, with the view of having a standard barrel of uniform size for those commodities throughout the Dominion, and would submit the following dimensions for such a barrel, which in the view of this association, would meet the circumstances of the case, viz: length of stave, 30 inches; between heads inside, 27 inches; diameter of head 17 inches; diameter of bilge inside, 19 inches."

No action was taken by the minister in the parliaments of 1897 and 1898, but in 1899 the following legislation was passed:

"On and after the first day of July, 1900, section 18 of the 'Weights and Measures Act shall be repealed, and the following shall be substituted therefor.

"All apples packed in Canada for sale by the barrel, shall be packed either in cylindrical veneer barrels, having an inside diameter of 18-1-3 inches, and 27 inches from head to head inside measure; or, in good and strong barrels of seasoned wood, 27 inches between the heads inside measure, and having a head diameter of 17 inches; and a middle diameter of 19 inches, and such last named barrels shall be sufficiently hooped, with a lining-hoop within the chimes, the whole well secured with nails.

"Every persons who offers or exposes for sale, or who packs for exportation, apples by the barrel, otherwise than in accordance with the foregoing provisions of this section shall be liable to a penalty of 25 cents for each barrel of apples so offered or exposed for sale or packed."

Discussed Across the Line.

During 1897-98 the United States National Fruit Growers' Association, and the National League of Commission Merchants, having experienced similar trouble with the varying sizes of their barrels, had the matter up for discussion and finally called a convention to consider the question of a standard barrel, and ultimately agreed on a barrel of the following dimensions: head, 17 1-8 inches in diameter, length of stave, 28½ inches, bulge not less than 64 inches outside measurement, —the Minneapolis flour barrel,—and binding themselves not to buy apples, potatoes, etc., put up in barrels of any other dimensions. Following this action the state of New York legislated on the subject as follows: "A barrel of pears, quinces, or potatoes, shall represent a quantity equal to 100 quarts of grain, or dry measure. A barrel of apples shall be of the following dimensions: head diameter 17 1-8 inches; length of stave, 28½ inches, bulge not less than 64 inches, outside measurement. Every person buying or selling apples, pears, quinces or potatoes in this state by the barrel, shall be understood as referring to the quantity or size of the barrel specified in this section, but when potatoes are sold by weight, the quantity constituting a barrel shall be 174 pounds." I understand the New England states are using a barrel of similar dimension. The state of New York and the New England states are

Our Great Competitors

in the markets of Great Britain and the West Indies for our products,

apples and potatoes; consequently, when we learned of their action, the municipal council of Kinks, the boards of trade of Kings county and Kentville, in a joint address to the Hon. S. A. Fisher, minister of agriculture, at Kentville in February, 1899, the Hon. Dr. Borden being present, asked for a standard Canadian barrel of similar dimensions. The legislature of last session, both as regards the capacity of the barrel, and the scope of its application is inadequate. In neither respect does it meet the requirements of trade; first, because it is unjust to the Canadian producers, compelling them to sell a larger quantity for the same price (because the quotation is generally by the barrel) as their competitors receive for a less quantity—103 Canadian quarts as against 100 United States quarts, and, second, because it leaves other fruits and roots, notably potatoes, without determining the weight constituting a barrel.

What is obviously and, it seems to me, imperatively wanted, is a standard barrel of

A Fixed Specific Capacity

for apples, pears, potatoes and such products, similar to the barrel that has been adopted in the United States —the Minneapolis flour barrel. We are competitors with them, with similar products in the same markets, and the necessity for a barrel of similar dimensions is clearly apparent. For instance, Kings county alone exports annually from 250,000 to 300,000 barrels of apples to Great Britain and from 75,000 to 100,000 barrels of potatoes to Cuba. The barrel that comes into force on July 1, next, has a much larger capacity than the Nova Scotia barrel that has hitherto been in use; and if

our farmers are only to be allowed 2½ bushels for filling the new barrel with potatoes, they will lose a half bushel at least on every barrel. Legislation defining a standard barrel for potatoes, with the weight it will contain is of equal importance with apples.

After a lengthened discussion, it was moved by George Thomson and seconded by P. Innes:

"That this association petition the

Dominion government to change the act coming into force on July 1, next, regarding the size of apple barrels, so that the barrel shall contain 100 quarts (U. S.) instead of 103 quarts (Canadian) and that the quantity constituting a barrel of potatoes shall be 174 pounds; and further resolved, that the secretary communicate with the secretary of the Ontario fruit growers association, inviting them to co-operate in the matter with this association. Carried.

BILLS OF LADING.

Protests Against the Present Contracts, Which Place the Fruit Shipper at a Disadvantage.

This subject was considered by Dr. G. E. DeWitt, who said:

I have been requested to bring to the consideration of this session of the Nova Scotia Fruit Growers' Association certain conditions touching bills of lading with reference to the carrying of apples. In doing so I may not gain the esteem and commendation of the steamship companies. Our object in this convention is that in our intercourse and deliberations we may without fear or favor from any class of steamship companies or individuals, evolve and put in practice such principles as shall result in mutual good and profit.

The clause in the bills of lading now in use, which particularly affect the shipment of our apples is clause 1, which reads as follows: "That they shall not be liable for loss or damage done to goods by sweating, insufficiency of package in any respect, leakage, breakage of any kind, pilferage, wastage, rottage, rain, spray, rust, fire,

heat, frost, decay of any kind, contact with, smell or evaporation from any other goods, or loss arising from inaccuracies in obliteration, insufficiency of or absence of marks, numbers, addresses, or description of goods shipped, or injury to wrappers however caused." The words in this clause to which I think this association should take exception are, "breakage of any kind," "pilferage," "rottage," "rain, fire, spray, heat, frost," "injury to wrappers." Why should the shipper be responsible for breakage or pilferage, or damage done by rats, or rain, or fire, heat or frost? If the apples arrive in the cars at the port of export in good condition and if through the

Carelessness or Rough Handling

of the steamship companies, the goods are injured or damaged in any way, when loading, or in transit, or unloading, why should the loss be borne by the owner or consignors? Apples are rolled from the cars in Halifax on to the wharf, put into slings and carried in the slings into the hold of the ship.

In London, when unloading, there are three different modes in vogue, viz, in slings containing from 20 to 30 barrels; by the grappling hooks; and by sliding the barrels on skids from the rail of the vessel to the wharf. The latter mode is a severe strain on the barrel and may damage a barrel that is at all weak.

The steamship companies have control of the apples from the time they leave the cars at the wharf in Halifax until they are loaded on the consignees' vans or lighters. If the barrels are taken on board intact, if in a good sound condition, they reach the hold of the vessel, the responsibility of the shipper ought to cease. If damaged en voyage by breakage, pilferage, rattage, rain, or heat, or by loading or unloading, the steamship companies should be responsible. I understand that when damage is sustained to general merchandise through the carelessness or negligence or mismanagement of the companies who carry it, they are held and made

Responsible for the Loss.

Why should not the product of the orchard have the same privilege? Scarcely an account of sales comes to hand but shows the sacrifice of slack, open or damaged barrels. In a few instances bad cooperage may be at fault, but it seems to me that when a barrel is found by the steamship company to be unfit for shipping, it should be re-coopered at the expense of the shipper, or laid aside and the shipper notified, but not to be shipped in a damaged condition for the purpose of charging the freight. Innumerable instances have shown that when such barrels have been sold, they have not realized enough to cover expenses. In view of the partial and unjust clause in the bill of lading, referred to, I beg leave to submit the following resolution:

"Whereas the form of bill of lading now in use, and given by the Furness line of steamers to shippers of fruit by such steamships, contains as part of the terms and conditions on which the shipowners undertake the transportation of such property the following provisions:

"1st. That they shall not be liable for loss or damage done to goods by sweating, insufficiency of package in any respect, leakage, breakage of any kind, pilferage, wastage, rattage, rain, spray, rust, fire, heat, frost, decay of any kind, contact with, smell or evaporation from any other goods, or loss arising from inaccuracies in obliteration, insufficiency of or absence of marks, numbers addresses, or description of goods shipped, or injury to wrappers, however caused."

"And whereas great loss has heretofore arisen to shippers, causing their fruit to be sacrificed in the markets; and whereas great loss is likely to arise by reason of breakage, pilferage, rattage, rain, spray, heat and frost, and contact with, smell or evaporation from other goods, occurring during the transportation of fruit and by injury done to barrels while loading and unloading at the docks;

"And whereas the said Furness line of steamers is in receipt of a subsidy from the government of Canada;

"Therefore, resolved that this Fruit Growers' Association, in annual session, assembled, petition the government of Canada to regulate the terms and conditions of such bills of lading so as to make the ship owners liable to the shippers of fruit for all damage done to goods by breakage, pilferage, rattage, rain, heat, spray, contact with, smell and evaporation from any other goods occurring during transportation by such steamships, and by injury done to barrels while loading or unloading at the docks;

"And further resolved, that a copy of these regulations be forwarded to the Honorable, the minister of agriculture for Canada:"

Letter From English Firm.

Dr. DeWitt presented a copy of a letter on this matter from Nothard & Lowe, of London, as follows:

Dear Sir,—We are continually receiving letters from shippers, complaining of the loss they sustain through the low price obtained for slack, open, or half filled barrels. Shippers appear to be under the impression that we have only to make a claim on the shipping agents or owners here in London to have the matter settled, and our claims paid. We have been pushing these

claims for some years past, and fought one case some years since on this very question, and were beaten. While apples are shipped on bills lading, containing the clauses at present existing, we are powerless to enforce claims, although we most sincerely wish we could make the steamer pay these heavy losses.

We would suggest that the Canadian high commissioner here should be instructed by the government in Ottawa to fight a test case in London on this point, and this would solve the unsatisfactory state of things now existing. We hope you will bring your influence to bear on this matter.

Yours faithfully,
NOTHARD & LOWE.

NATURE AS AN EDUCATOR.

A Paper Read by M. G. De Wolfe, on the Refining Influence of Plants, Trees and Shrubs.

I have been asked to prepare a paper a little out of the ordinary, and yet in keeping with the aims of this society. You have all heard a good deal about growing fruit, and how best to combat the diseases and insects that infest the orchards, but I am going to take you out of the beaten track and try to lead you among the shrubs, trees and plants that by a little care can be made to enrich your homes, no matter how humble.

It is a good thing to get near to nature's heart, and to understand how much even a tree or plant can add to our joys of life, and how a fondness for such things is associated with our best and purest qualities. The fruit-growers of to-day are asking for a

higher standard in the cultivation of all fruits, and, from our point of view, the time has arrived when we should call for a higher appreciation of the things that are intended to refine and beautify our homes and surroundings.

Beauty is Power

and yet beauty is wealth, and when to this is added refinement, the combination is valuable. The farmer and fruit grower can easily obtain all these. Let him accept nature's offerings and with plants, shrubs and trees make the home beautiful. Encourage the young to take up the work. Secure the trees and shrubs that are natives, for among them are many as beautiful as the best ones of other lands. Let every

land owner set out ornamental trees along the highway. You may never know what poor wayfarer has called down blessings on your head, but you will be conscious of the good work done, and even if done from selfish motives it still adds to the value of your property, and does good to the many. All along the line are signs of progress, and with this progress is coupled a desire to make our lives brighter by contact with all things that elevate and refine. There is little room in the heart for coarseness when one has made love to nature, and to nature's works. I care not how humble the home, if the owner surrounds it with a lawn, or a fringe of trees, or makes a few bright spots with flowers. I am assured, that home has much to be envied. We cannot compel anyone to add to this refining influence, but we all can work a change by our example, and if each town in our province would have a public place and beautify it with nature's offerings it would start

A Chain of Refinement

that never would be forgotten, and when you and I had passed out of the memory of this generation, every tree and shrub that we have planted would still speak and reveal their wondrous beauty. The trees are never voiceless, and no doubt many of you when working in your orchards have heard them speaking to you with a peculiar tone, perhaps soft and low, and yet distinct and clear.

It is a suggestive fact that the parts of our province in which our people take the least interest in the refining influences of trees and shrubs,—in those parts intemperance, poverty and crime are most prevalent. Now if this is a fact, and we believe that a close relationship exists between all classes, we should then believe that whatever tends

to refine a part of humanity helps the whole. There is no doubt that we are all (even if we do not admit it) more or less in need of reforming, and none of us live up to our full capacity for refinement. Many of you no doubt who have the trees, shrubs and plants always with you can understand how much they add to the joys of life, and how close they come in contact with your best and highest qualities. How often in the daily grind of every day life come back to you thoughts of the old-fashioned garden that had the trees, shrubs and flowers that your mother tended so faithfully, and so lovingly, and it may be, that under some favorite tree in the home garden, you planned out your life work, and under the sheltering branches drew inspiration that kept you from growing cold and cynical. How often has a single flower called forth the better part of human nature and opened the eyes to the beauty and needs of some refining influence. How sad it is to see in even

This Beautiful Country of Ours,

this Evangeline Land, so many homes whose surroundings are lacking in the refinement that a few trees, shrubs and flowers might change! Is it any wonder the young people long to leave such homes and reach out for something different, or go to other lands where such things are held in esteem? Granting that trees, shrubs and flowers exert a refining influence, the question that would naturally arise is, how are we to get our farmers and fruit growers interested in the work? The first thing we find is the matter of expense, and if this can be overcome the rest is not so formidable.

In a paper of this sort one can only outline the plan of action. Now as far as the matter of expense is concerned I think that can be easily met. Most of you have some vacant lot, or odd

corner on your farm you can spare. It must not be too far from the house. Some day in the early spring take the boys with you and go to the woods. Select some striped maple or moose-wood, plummy or spiked maple, some two or three sorts of the cornus, or dogwoods, some of the viburnums or snowball family, and some other sorts of shrubs that you may find. Then help to plant them out on the vacant lot, and give over the care to the children. Later on in the season take the girls and boys collecting ferns, mosses, etc., and when planted out among the trees and shrubs you will soon have an ideal spot, and in the cool of the evening, after the hard day's work, you will be attracted to that spot, and you will also see the refining influence it is having on the members of your family.

Beautifying the Community.

To carry out this good work you must give the children full charge, but must always be ready to help, and to speak favorably of their work. You must also take a hand in improving the roads and highways near your homes, set out forest trees such as maple, ash, oak, birch, etc., get up a pleasant rivalry with the section the children are improving, cultivate a fondness for the work, and when the good housewife expresses a desire for a strip of green near the door, a few flower beds, you will wonder why this has not all been done before. Keep your eyes open as you go about among your neighbors. Contrast their sur-

roundings with yours, and when you see the other homes surrounded with trees, shrubs and flowers, draw your own conclusions as to the value of such things. Nature has done much for us in various parts of this province, but where nature has done so much people are apt to grow careless of the refining influence it exerts, or may exert. In many parts of the province the farmers and fruit growers are waking up to the need of better surroundings, and the things that a few years ago were looked upon as only the prerogative of the wealthy, are now found to be as necessary to one as to the other. In this paper I have only thrown out a few hints as to how trees, shrubs and plants can add to the value and refinement of your homes.

Nova Scotia Should Take the Lead

as the most progressive of all the farming sections of Canada and with our horticultural and agricultural schools the future has much of promise.

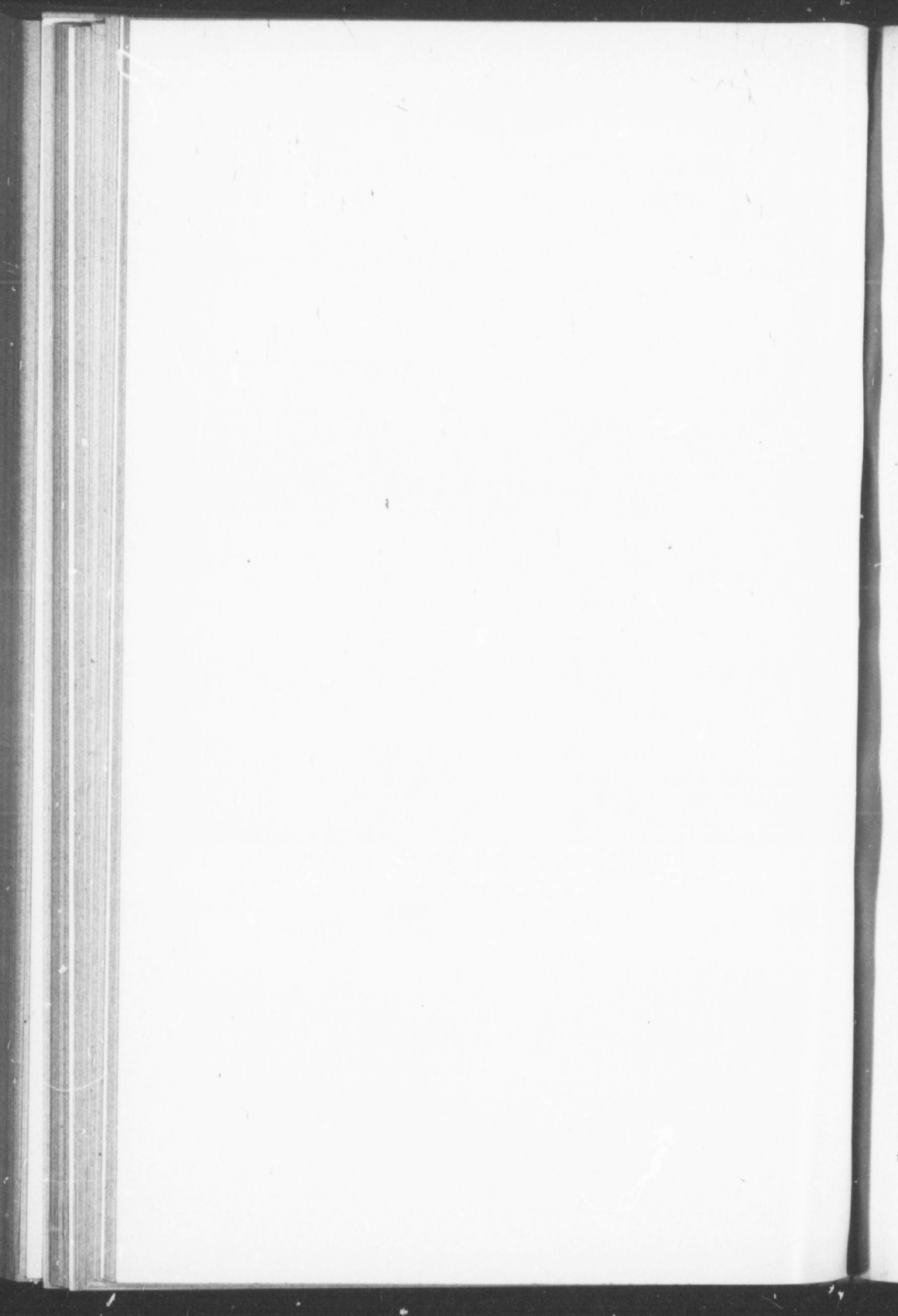
I can only hope that many of you will prove my suggestions to be true, and work them out to a successful issue. Plan out the work this winter, make no delay in the spring, and at the next annual meeting of this society let us hold an experience meeting, and let our testimony be such that all will continue in the good work. Some inducement must be held out to retain our young people on the farms, and influences must be built about them to have them in sympathy with their work. See ye to it that all may be well

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W. C. ARCHIBALD,
Member Publication Department
Nova Scotia Fruit Growers'
Association.



VARIETIES OF GARDEN TREES.

A List of Ornamental Trees and Shrubs That Grow Well in Canada.

Dr. Saunders followed with a practical address:—

Although a farmer and one of the largest farmers in the Dominion, I am an admirer of trees and shrubs, and it has been my privilege since I have been the director of the experimental farms to establish one of the largest collections of trees and shrubs on this continent. We have more than 2,500 varieties of trees and shrubs, brought from every quarter of the globe. I know nothing more elevating and pleasant than to wander amongst these and compare one with the other and draw lessons from this great and harmonious combination which we have formed there from these treasures of nature. I was very much pleased indeed with the eloquent address we have just listened to from our friend on the platform. I think, however, that much practical benefit can be given to those who may be seeking for information on this particular topic by mentioning a few of the more desirable sorts. You have in the public gardens at Halifax, an interesting collection, one which does honor to that city, and is

A Standing Advertisement

of the beauty of your climate. I was very much surprised in one of my yearly visits to find that they had specimens of cypress from Japan. Since then we have succeeded better, and we understand the conditions under which it will grow in our part of the country. With respect to this particular

variety most of you can grow it in any part of this section of Nova Scotia to advantage. It is not necessary to go to Japan for beautiful things. We have very handsome forms of native shrubs—and I know of no shrub which is better to improve your gardens with than our native *Arbor Vitae*. It grows in New Brunswick quite freely. I was reminded of this when planting a hedge at Nappan, some years ago. We planted a hedge there and it succeeded remarkably well. I think you will find it in some parts of Nova Scotia.

M. E. Dewolfe. "It is found in Aylesford."

Dr. Saunders—You will find in plantations of *Arbor Vitae* that the trees do not diverge in one direction or another. We have a form of pyramid that runs up twenty feet. When visitors come they often say, "how nice those trees are trimmed." The only time we do any cutting is when a limb is broken, or it is affected by some accident. This pyramidal form is easily obtained from the nurseries. We have a form called "Tom Thumb," which only grows seven or eight inches high. Another beautiful form; introduced by Mr. Hovey, in Pennsylvania, is called the Hovey-eye. Its foliage is laminated. Another beautiful form is called the Meehan eye; its tips are gold.

Different Varieties.

There is another kind tipped with silver, and another, egg shaped, which grows from eight to ten feet. A variety called the Columbia, which originated in Europe, and was brought to this

country from these particular shrubs because I know them to be vigorous and hardy, and they will assume these beautiful proportions of their own accord—and if you keep the shears off you will have an object of great beauty. We have about eighty different kinds of hedges grown in fifty feet lengths. The trees are planted about fifteen inches apart. There is also a little maple which grows on the Amour river, which divides some portions of Russia from China. It thrives as well on the bleak wind swept plains of the north as here. The leaf is a regular mapleleaf, a little larger and in the autumn it becomes a brilliant scarlet, as pretty a color as you could possibly imagine. Every year we collect a number of tree and shrub seeds. You may think that this plan of getting trees and shrubs from seeds is slow, but it is much more rapid than one anticipates. We have now all over the northwest patches of trees at the settlers' homesteads, and these have nearly all been grown from seeds distributed from the experimental farm. During the last nine years about

Seven Tons of Tree Seeds

have been distributed from the experimental farm in that great stretch of country,—about 1,000 miles east and west, and 300 miles south and north,—in Manitoba and the Northwest territories. In that section we are trying to make them better men and women by giving them seeds to grow. Many people who went there to grow wheat, are now so much attached to their homes that they would not think of coming back to Nova Scotia or Ontario. One of the most beautiful and vigorous trees that can be grown in the eastern portions of the Dominion is the Colorado spruce. This spruce assumes a lovely tint of blue in the spring time, and during the winter it becomes steel blue. It grows native in the

rocky canyons of Colorado. If you take the seeds of this Colorado spruce and try to grow them in Canada, you will find them tender. But, if you went up to the mountain tops and got a hardened race of seedlings, you would have no difficulty in growing this tree. Whenever a seed has ripened, that seed is better able to grow and stand the severe weather than its parent, and I hope that law will apply to the population of this country and that the youth will be better able to do the work than their parents. The Japanese spruce and *Arbor vitae* would enable you to decorate a good large space about your house. Then there is the lilac. We have 120 varieties, and we could enlarge that number twice over if we could get all the varieties in the nurseries in Europe produced during the last ten years. We can now carry them for eight or ten weeks, where they only lasted at one time for ten days. We have a common lilac which is crossed with an Hungarian lilac called the Josephesky. We have also another variety which is produced in the greatest profusion from the Himalaya Mountains. We have one from Japan, which blooms for four weeks, and is an excellent variety.

Good Flowers to Grow.

In flowers I would refer you to the peonies. Those of you who have seen some of the more recent productions of peonies must have been delighted with them. We have one-hundred and forty or more varieties which have been gathered together from different parts of the world. One we have from Siberia, has a beautiful form with a leaf cut as fine as threads all over. The flowers are a beautiful, bright scarlet. There is also a cultivated form double. Then we have the Siberian peony crossed with some European varieties. The Japanese have done a good deal of this work.

The florists of Europe have aimed in the past to get large double flowers. We have some that will measure from six to seven inches, and they are every shade of color from the purest white down to the deepest scarlet. The Japanese have cultivated a variety with yellow crown in the centre of the flower which is one of the most handsome things I know of in the florist world. This large collection, which any of you could imitate, would be a great source of pleasure to you. All these perennial flowers are like old friends. Every year you go out and look at them in all their beauty and magnificence of growth, which affords you a world of pleasure for very little labor. I must thank you for listening to an address so full of fragments. (Applause).

W. H. Blanchard said it afforded him a great deal of gratification to be present. He was glad to see such an interest taken in the work of the association as compared with when he used to be a more active member, and he would congratulate it upon its excellent standing. He said he had listened to the remarks of the various speakers with much attention. There could be no question about the elevating influences plants, flowers and trees, and he hoped that the monument he would have when he departed hence would be the trees he had been setting out since he was a small boy. He was glad to see that the handsome trees in Windsor which he had set out forty years ago fortunately are there now, having escaped the fire, and he trusted they would long be there as a memento of the past.

SCHOOL OF HORTICULTURE.

Announcement for 1900.

The establishment of the School of Horticulture is one of the most important works of the Association, and one of which every member is justly proud, for it is the only horticultural school in Canada, or, indeed, in America. The school is aided by a grant from the provincial government, but many members have spent both time and money in the up-building of this institution. It offers to the young men and women of the province a thoroughly practical course in horticulture, where the principles taught in the classroom are illustrated and enforced by the actual performance of the different operations.

The school is located in the most prosperous fruit growing district of the province, a fact of no small significance, for on every hand the student may see evidences of the importance of this industry, and examples of men who have made a success of the growing of fruit. And, aside from this, it gives the student an opportunity to observe the details of orchard management, as performed by practical fruit growers.

The school is equipped with much valuable apparatus, making it possible to illustrate practically many of the subjects taught. The greenhouse is supplied with many plants which furnish material for microscopical study of their structure. A number of fruit trees are also grown in the house, so that students may become familiar with budding and top-grafting by performing these operations themselves. Root grafting of various kinds is performed in the grafting room, attached to which is a root cellar, where materials for such work may be stored. A room adjoining the greenhouse is fitted up as microscopical laboratory, with compound microscopes, dissecting microscope and various accessories. By the use of the microscope the student is made familiar with the structure and growth of such fungus diseases as the black knot of plums and the black spot of apples, which knowledge will aid them greatly in combatting such pests in the orchard. The library and reading room are also connected with the greenhouse and form a very important part of the equipment of the school. Besides many scientific works, the library contains books on the spraying of plants, injurious

insects, fertility of land, and many other practical subjects. The leading horticultural journals are kept on the reading room table, and bulletins are received from all the experiment stations and experimental farms in Canada and the United States, so that the student may become familiar with what is being done in all lines to advance our knowledge of horticulture.

Text books have been substituted for the lectures formerly given in the different studies, it being believed that in this way a more thorough knowledge of the branches taught could be gained in the time devoted to each subject. The first year of the course includes the following subjects: 1. "The Propagation of Plants: (a) by seeds, including requisites for germination, seed temperature, preparatory treatment of seed, sowing, requirements of temperature, regulation of moisture, etc.; (b) by layers including a description of the different kinds of layers, how made and with what plants they are used; (c) by cuttings, including parts of plants used, treatment to secure best results, different kinds of cuttings, etc.; (d) by grafting, including a comparison of the different methods, with the special use of each; (e) by budding, including the growing of the stocks for different trees and various methods of performing the operation. In all cases where possible the student is given illustration work in the different methods. 2. "The Spraying of Plants," including a discussion of the various materials used, the preparation of each, spraying pumps and nozzles, and a study of the more important insect and fungous pests, with the treatment for each. 3. "The Principles of Pruning," which embraces the season for pruning, the effect of winter and summer pruning, best method with different fruits, etc.

The second year is devoted to the general principles of fruit growing, much time being devoted to a study of the soil in its relation to fruit growing. Briefly outlined, the course will embrace the following: The selection of land for different fruits, the tillage of fruit lands, the use of commercial fertilizers and barnyard manure, cover crops, planting of fruit grounds, renovating old orchards, wind breaks, picking and packing fruit, packing houses, storing fruit, shipping and reaching consumer.

The character of the town in which an institution is located is always of the utmost importance, and in this respect the school of horticulture is particularly fortunate. Wolfville is strictly a temperance town, and the social atmosphere is exceptionally good. The fact that Acadia university is located here is also of advantage to the students in many ways.

The school year is arranged to suit the needs of farmers, opening on November 1 and closing May 1. A diploma is granted for full two years' course with certificate of proficiency for special courses. To all students, whether regular or special, a hearty welcome is extended. Tuition is free to all. Further information will be furnished upon application to Director F. C. Sears, Wolfville, N. S.

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| Burgess, C. R., Wolfville. | Chipman, Mr. Justice, Kentville. |
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 Richards, C. C., Yarmouth.
 Rockwell, F. P., Wolfville.
 Sperry, J. D., LaHave.

Spurr, Col. S., Kingston.
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