

TRANSACTIONS

AND

REPORTS

OF THE

Fruit Growers' Association

AND

INTERNATIONAL SHOW SOCIETY

OF

NOVA SCOTIA.

1887.

HALIFAX:

PRINTED AT THE OFFICE OF THE NOVA SCOTIA PRINTING COMPANY.
1887.

TRANSACTIONS

OF THE

ROYAL SOCIETY OF LONDON

AND OF THE

ROYAL SOCIETY OF EDINBURGH

1881

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FRUIT GROWERS' ASSOCIATION

AND

INTERNATIONAL SHOW SOCIETY

OF

NOVA SCOTIA.

Patron.

HIS HONOR THE HON. MATTHEW HENRY RICHEY, q.c., LIEUTENANT-GOVERNOR.

OFFICERS FOR 1887.

President.

REV. J. R. HART.....Bridgetown. N. S.

Senior Vice-President.

W. H. BLANCHARD, ESQ.....Windsor, N. S.

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HALIFAX ".....	PROFESSOR LAWSON.....	Halifax.
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DIGBY ".....	JOHN S. McNEIL, ESQ.....	Barton.
YARMOUTH ".....	C. E. BROWN, ESQ.....	Yarmouth.
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COLCHESTER ".....	PROFESSOR SMITH.....	Truro.
PICTOU ".....	GEO. H. MacKENZIE, ESQ.....	Four Mile Brook.
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C. R. H. STARR.....Port Williams, N. S.

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 SENIOR VICE-PRESIDENT,
 SECRETARY-TREASURER,] *Ex officio.*
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 T. H. PARKER.....Berwick.
 R. W. STARR.....Port Williams.
 DR. CHIPMAN.....Grand Pre.

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GEO. H. WALLACE, ESQ.....Wolfville.

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 ROBERT MARSHALL.

Publication Committee.

THE PRESIDENT, } *Ex officio.* A. STANLEY FISHER,
 THE SECRETARY, } R. W. STARR,
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 D. W.
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 F. C. S
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 CHAS.
 PROF.

J. W. F
 HENRY
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 EDWIN
 R. W. S
 CHAS. F
 W. C. SI
 JAMES I
 GEORGE
 JOHN S
 THOS. A
 THOS. A
 A. K. MA
 J. F. KE
 M. P. BI
 HON. P.
 EDWARI
 JAMES F

HONORARY MEMBERS.

	<i>Date of Election.</i>
ROBERT GRANT HALIBURTON, M. A., F. S. A.....	Jan. 30, 1873.
JOSEPH R. HEA, D. C. L., Toronto.....	" 6, 1874.
GENERAL SIR HASTINGS DOYLE, K. C. M. G. (deceased).....	April 9, 1875.
ADMIRAL SIR JAMES HOPE, Harriden, Bo'ness, Scotland.....	" "
HON. MARSHALL P. WILDER, Boston, Mass., (deceased).....	" "
HON. CHARLES DOWNING, Newburg, New York, (deceased).....	" "
EDWIN W. BUSWELL, ESQ., Boston, Mass.....	" "
REV. ROBERT BURNET, D. D., Hamilton, Ont.....	" "
D. W. BEADLE, ESQ., St. Cathreines, Ont.....	" "
ROBERT MANNING, ESQ., Boston, Mass.....	" "
RICHARD STARR, ESQ., Cornwallis, N. S., (deceased).....	" "
F. C. SUMICHRAST, ESQ., Harvard University, Boston.....	Jan. 10, 1886.
JOHN LOWE, ESQ., London, G. B.....	" 15, 1886.
THE HON. SIR CHAS. TUPPER, G. C. M. G., C. B., Ottawa.....	" 20, 1887.
PROF. WILLIAM SAUNDERS, F. R. S. C., F. L. S., F. C. S., Ottawa.....	" "
PROF. JOHN MACOUN, F. R. S. C., F. L. S., Ottawa.....	" "
PROF. JAMES FLETCHER, F. R. C. S., F. C. S., ".....	" "
PROF. D. P. PENHALLOW, F. R. S. C., Montreal.....	" "
CHAS. GIBB, ESQ., Montreal.....	" "
PROF. H. W. SMITH, B. Sc., Truro, N. S.....	" "

LIFE MEMBERS.

	<i>Date of Election.</i>
J. W. BIGELOW, ESQ., Wolfville.....	April 9, 1875.
HENRY B. WITTER, ESQ., ".....	" "
CHAS. E. BROWN, ESQ., Yarmouth.....	Oct. 1, "
EDWIN CHASE, ESQ., Cornwallis.....	Nov. 1, "
R. W. STARR, ESQ., Port Williams.....	" "
CHAS. R. H. STARR, ESQ., Port Williams.....	Jan. 3, 1876.
W. C. SILVER, ESQ., Halifax.....	Dec., 1876.
JAMES SCOTT, ESQ., ".....	" "
GEORGE LAWSON, Ph. D., ".....	" "
JOHN STAIRS, ESQ., ".....	" "
THOS. A. BROWN, ESQ., ".....	" "
THOS. A. RITCHIE ESQ., ".....	" "
A. K. MACKINLAY, ESQ., ".....	" "
J. F. KENNY, ESQ., ".....	" "
M. P. BLACK, ESQ., ".....	" "
HON. P. C. HILL, ".....	" "
EDWARD BINNEY, ESQ., (deceased).....	" "
JAMES FARQUHAR, ESQ., ".....	1883.

ANNUAL MEMBERS--1886.

ARMSTRONG, E. J. P'rt William Sta.	LEARD, JAMES. Grand Pre.
BANKS, E. C. Waterville.	MILLER, WILLIAM. Bridgetown.
BLANCHARD, W. H. Windsor.	MORSE, T. H. Berwick.
BLACK, P. C. Falmouth.	MORSE, GILFORD D. Middleton.
BLIGH, HOWARD. Halifax.	MUNROE, DR., M.P.P. Pictou.
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CURRY, MARK. Windsor.	PINEO, W. W. Waterville.
	PORTER, MATNARD. Woodville.
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DIMOCK, STEWART C. Windsor.	REID, DR. A. P. Dartmouth.
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DODGE, T. L., M.P.P. Kentville.	
DONALDSON JOHN. Port Williams.	HAW, ANDREW. Falmouth.
	SHAW, ISLAC. Berwick.
EATON, L. S. Kentville.	SLOCUMB, J. P. Middleton.
ELLS, A. C. Port Williams.	SMITH, T. E. Port Williams Sta.
	SUTTON, WILLIAM. " " "
FISHER, A. S. Berwick.	
FITCH, LEONARD. Aylesford.	TAYLOR, H. H. Aylesford.
	THORNE, J. H. Kentville.
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GRIFFIN, B. S. Clarence.	
	VAUGHAN, C. M. Grand Pre.
HARRIS, T. R. Aylesford.	
HAMILTON, J. W. Wolfville.	WEBSTER, WARDEN B. Kentville.
HIGGINS, PROF. D. F. "	WENEZEL, R. W. Bridgeville.
HIND, PROF. H. Y. Windsor.	WETHERBE, JUDGE. Halifax.
	WHITMAN, ALFRED. Waterville.
JOHNSON, G. C. Wolfville.	WOODBURY, DR. FRANK. Halifax.
	WOOLHAVER, NELSON. Newport.
KIMBAL, L. W. Kentville.	

FINANCIAL STATEMENT.

FRUIT GROWERS' ASSOCIATION OF NOVA SCOTIA in acct. with C. R. H. STARR Secretary-Treasurer.

DR.	For Year ending December 31st, 1886.	CR.
To Expenses Meetings, etc.....	\$ 36 83	By Balance from acct.—1885.....
" " Annual Dinner.....	27 00	" Amount Tickets Annual Dinner.....
" " Reporting Annual Meeting.....	29 50	" Membership Fees.....
" Stationery and Printing.....	6 00	" Government Grant.....
" Postage and Telegrams.....	13 20	" Interest on Securities.....
" Printing Reports.....	160 00	" Amount Securities.....
" Express Charges.....	3 70	
" President's Expenses, 2 years.....	20 06	
" Secretary's Salary.....	100 00	
" Amount of Securities included in bal. from 1885....	365 37	
" Balance carried to acct.—1887.....	673 16	
	\$1435 42	\$ 671 05
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		61 00
		300 00
		15 00
		365 37
		\$1435 43

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C. R. H. STARR, *Secretary-Treasurer.*

AUDITORS' REPORT.

We, the undersigned Auditors appointed by the Fruit Growers' Association, have examined the books and vouchers of the Secretary-Treasurer and find them correct.

January 17th, 1887.

R. E. HARRIS.

QUARTERLY MEETING,

HELD AT WINDSOR, APRIL THE 27th, 1887.

Pursuant to notice, meeting convened at the Court House, at the hour appointed.

PRESIDENT HART in the chair. The SECRETARY being absent from the Province, MR. R. W. STARR was appointed Secretary, *pro tem*.

The PRESIDENT in a short address adverted to the absence of the Secretary, who was then on the way to England, having been commissioned by the Dominion Government to take charge of the Fruit Department at the Colonial and Indian Exhibition.

He regretted very much the absence of Prof. Fletcher, who had been expected to arrive from England, en route for Ottawa, in time to attend this meeting.

The minutes of the last Annual Meeting being in the hands of the printers, were passed, *pro forma*.

The Programme was then taken up.

The PRESIDENT called upon PROF. HIND to open the first subject of *Fruit under Glass*.

The Professor, whose orchard house near Windsor is about 80 feet long, 17 feet broad, and 16 feet high at the apex, reviewed the several sorts of *grapes* best suited for growing under glass, recommending Blk. Hamburg, Duchess of Buccleugh, Sweet Water, Chasselas Musqué, and Fosters Seedling, and referred at some length to their cultivation and management, the insects which had to be contended with, markets, etc. The advantages of a glass house for starting early vegetables, etc., was also noticed.

In reply to SENR. VICE-PRESIDENT BLANCHARD, PROF. HIND said the cost of a glass house need only be that of rough lumber and the

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glass. The cheapest form of building, with open cracks for ventilation, was all that was necessary, and could be erected by unskilled labor.

R. W. STARR asked about the Royal Muscadine, and thought it should do well under glass. Had seen good Blk. Hamburgs grown out of doors on the renewal system, at the residence of our late President Hamilton, and elsewhere.

PRESIDENT HART referred to a disease he had observed in a grape house at Yarmouth, where the fruit had withered and become sour.

PROF. HIND thought this disease was called Shanklin, and is supposed to be caused by the absence of potash.

MR. J. FRASER, Torrence, said the Niagara grape was very successfully grown out of doors by Mr. Jack, at Chatagua, Quebec.

PROF. HIND said he considered the Clinton best for this locality. It had proved very hardy and productive, and when left on the vine till ripe was of good quality.

THE BEST APPLES FOR HANTS COUNTY

Being the next subject the PRESIDENT called upon ANDREW SHAW, who said:—My orchard is an old one. Baldwins do well if the tree is well trimmed, and if the fruit is also thinned it is better. I do not grow Ribstons. Northern Spy does well when grafted on bearing trees. King of Tompkins do well.

VICE-PRESIDENT BLANCHARD.—The Ribston does well with me, bearing every year. Blenheim also is very good. I am disgusted with Greenings and grafting in Golden Russets, which I consider the best. Baldwins are a failure.

MR. WOOD—The market value of the different sorts should be considered. Gravenstein is, of course, the best autumn apple, and Ribston the best winter. Believe the Spy to be a coming apple, and every one wants a Bishop Pippen tree.

MR. MAXNER.—We must look for profit. I have sometimes thought the old Flushing Spitzenburg, (Vandevere,) the most profitable. They bear well, and are all good. Highly colored Spys are good, but when not colored are the meanest fruit I know.

MR. BLANCHARD.—We should like to hear from the President and Mr. Starr, on this subject.

PRESIDENT HART.—The Ribston is certainly very successfully grown in some parts of Hants Co., especially on the limestone soil. I believe also that Baldwins will do better on limestone. While the Baldwin is not always satisfactory, I know of no reliable substitute.

R. W. STARR said.—“The result of my observation of the relative values of the different apples grown in Nova Scotia, and especially those grown for export, leads me to confine the list to few sorts. I will place ‘Gravensteins’ first on the list, as we can grow them to as great perfection for market purposes as it is possible to grow them in any part of the world, and they are always reliable growers. And next I will name ‘Ribstons.’ They attain great perfection, and are good average producers, with first-class market qualities. “Blenheims” are also very profitable in most localities, well liked in all markets, and reliable growers and producers if well cared for, but do not come into full bearing until fairly well grown. “King of Tompkin” is also a good apple, of much the same class, and is, perhaps, better suited to light, sandy loam than the other. It has a good record from wherever heard from in the province, and is well liked in the English market. “Golden Russet of N. Y.” This apple, though comparatively new in Nova Scotia, is rapidly coming into favor and evidently “come to stay.” For a long keeper it is competing successfully with the “Nonpariel,” and as a grower and bearer has a good record, and seems at home on light soils where “Nonpariel” is not a success. London quotations for this apple show that it takes a first rank in that market. We cannot omit the “Nonpariel” from this list. It is one of the longest keepers known, a strong growing, healthy tree, and a most reliable cropper, when planted on deep, strong soils. As a market apple has a reputation on both sides of the Atlantic, and is about the only apple considered safe to hold over for late spring shipments.

EVENING SESSION.

PRESIDENT HART.—The next subject is: What are the best methods to be taken to enlarge our markets? The Secretary was enquiring into the matter in England, and would see what the chances were for getting our fruit into the inland and manufacturing towns and cities of Great Britain. At present it only gets there second-hand.

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We should be able to put it into the hands of retailers without so many middlemen sharing in the proceeds. Mr. Starr said he had several letters from fruit brokers in Manchester, Birmingham, Edinburgh, Leeds, and other cities, soliciting consignments of apples. So far the through rates of freight to these points have not been satisfactory, and nothing has been done towards testing those markets. He was in hopes that the Secretary would be able to make some satisfactory arrangements before his return, that would enable us to take advantage of any opening in the future. Mr. Torrance thought that at the Indian and Colonial Exhibition there would be a chance that might never occur again for introducing Nova Scotia fruit to the notice of the English people. There will be a market opened on the grounds for the sale of colonial produce of all kinds, and the restaurants are bound to purchase supplies as far as possible from that source. Now, we have only to keep that market well supplied with fresh provisions, and we will give every visitor to the grounds a chance of testing the quality of them. This then is the opportunity to place our fine fruits in the hands of the British public. We must send them over in such a manner as will ensure their arrival in as good condition as when they leave here, and he hoped to be able to submit a scheme by which that most desirable object may be accomplished. Mr. Torrance then read a lengthy and interesting paper on the subject, showing different specimens preserved by his method in a model case, and specimen quantities of infusorial earth, which is the substance used for packing and insulating the fruits in his method. Considerable discussion ensued, and a number of questions were satisfactorily answered by the gentleman.

PROF. HIND said he had Prof. Saunders' report to the Dominion Government recommending the establishment of experimental farms in different parts of the Dominion. He thought this an important matter, and urged the association to express its opinion in regard to it, and especially in regard to the proposed station in the maritime provinces and its location.

MR. STARR fully agreed with the professor, that this was an important matter to us, and thought we should do everything in our power towards furthering so good an object. He thought its location should be some where in the fruit district of Nova Scotia, as it is as good a district for agriculture and stock raising as any other, and also so much better for fruit of all kinds. As the

fruit industry of these provinces is likely to be among the first in the near future, provision must be made for increased knowledge of the subject.

MR. BLANCHARD moved the following resolution :

Whereas,—Nova Scotia, and especially its central counties, have assumed a high position in respect to agricultural possibilities.

And whereas,—Their very superior capabilities as a fruit growing district, in the judgment of this association, renders it extremely desirable that an agricultural experimental station should be there established.

Therefore resolved,—That this association express great pleasure upon learning that the Dominion Government proposes to establish such stations in various sections of the Dominion, and would earnestly urge that the proposed station for the maritime provinces should be placed in the fruit growing district. Passed.

R. W. STARR, *Secretary, pro tem.*

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THE SUMMER MEETING

Of the Fruit Growers' Association was held, as announced, at Saltsprings, Pictou, on Friday, July 2nd, in connection with the meeting of Pictou Division Grange, who kindly adjourned their session and opened doors to the public.

The chair was taken at 2 P. M. by W. M. MILLAR, Esq., V. P., for Annapolis Co., who was supported by the Worthy Master of the Grange, BRO. McINTOSH.

There were present about 50 representative farmers of Pictou Co., a large number of young men and ladies, and several prominent members of the Association from the Western Counties.

Minutes of April meeting read and approved. Letters were read from President HART and Vice-President A. J. DAWSON regretting absence.

CHAIRMAN announced the first subject for consideration, "BEST METHOD OF GROWING AND CULTIVATING AN ORCHARD," and called on D. B. NEWCOMB, Esq., who responded by reading a paper on the subject in which he insisted upon thorough cultivation of the soil before setting the trees, and the preparation of a compost to be generously used in the planting. He advised ploughing the land in ridges as wide as the rows, following the slope, and deepening the cultivation in the dead hollows, then setting the tree in those hollows, on the surface, using plenty of compost and surface soil, future cultivation to level up the land. Distance apart to set trees depending on soil and variety, but from 30 to 40 feet was recommended. Cultivation of potatoes and clover alone advised. Grain and grass to be avoided. Young trees require clean mellow soil frequently stirred, if that cannot be given, mulch heavily. MR. NEWCOMB believed in surface manuring, and would not plough the manure very deep, only cover it. The paper was very practical and valuable, and was listened to with a great deal of attention.

MR. MACKINTOSH.—I have a small orchard that is fairly successful. I set trees on the surface and then plough up to them.

MR. MCGILL.—I am pleased with this paper, the ideas are sound and practical. I agree in the advice to rotate hoed crops with clover alone; but I would add to the compost sulphate of iron (copperas) as an antiseptic and preventative of fungoid diseases, as well as a fertilizer.

MR. STARR.—I think that deep culture is essential while the trees are young, say first eight to ten years. I have no fear of manure leaching down beyond reach of the roots, or so far that clover cannot bring it back. Surface manuring has a tendency to keep the roots close to the surface, where they are more liable to be injured by severe drouths and frosts; we also frequently find such trees upset by the action of high winds. Deep cultivation in the orchard means deeper rooted trees, with stronger powers to resist adverse climatic influences.

MR. SMITH.—I believe, in cultivation, two inches of mellow earth is better than three or four of straw, as a mulch. Keep the hoe moving, treat each tree as if it were a hill of corn or a turnip.

MR. CHASE.—I agree with Mr. Newcomb, except that I would plant on the crown of the ridge instead of in the hollow, so that I might have the advantages of the deeper and richer soil.

MR. NEWCOMB.—Perhaps I did not make myself fully understood. My system is to plow back after the trees are planted, and thus deepen the whole soil.

THE CHAIR.—The system is correct; it deepens the soil at the least expense, and gives a sort of drainage by making one long hole down the hill instead of numerous round ones to act as tubs to hold the water around each tree.

T. H. PARKER.—Constant cultivation is the great essential to success in orcharding. We should take as good care of the trees as of any hoed crop. I have known of some instances of success without cultivation, but they are the exception rather than the rule.

J. F. TORRANCE.—I wish to see the Pictou Fruit Growers take more part in this discussion. We must not think that Pictou is not a fruit growing county, and needs to be taught the first rudiments of the science. We have seen good specimens of her apples and plums at our Provincial Exhibition, and we have the testimony of the ex-President of the Ontario Fruit Growers' Association, Dr. Burnett, that his success in growing pears in Pictou was exceptionally good.

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T. A. McDONALD.—We Pictou men are very chary of accepting new theories and customs ; we are apt to follow the paths worn by the feet of our fathers, even after convinced that there are other and better ways, we are apt to plant trees as our predecessors did, and to cultivate, or rather neglect them, as they did also. The Fruit Growers of Kings will be disgusted when I tell them that the largest proportion of the apples grown in this County are shaken off the trees and carried to market in bags ; but they will laugh when I tell them that the most profitable apple I grow is the "Alexander," an apple they are discarding ; but the miner boys will buy them in preference to any other, I presume on the same principle on which they choose their sweet-hearts for their good looks.

DR. MUNROE.—I think that the difference of opinion between Newcomb and Starr on the depth of cultivation is easily accounted for by difference of soil. Light soils better be manured on the surface, while heavier soils require deeper culture. The Alexander is a favorite with us, and I think a better apple here than in the Western Counties, especially for table use. I approve of the use of clover and hoed crops in the orchard, and in the exclusion of grass and grain. I fear that we are all astray in the names of our fruits, as we are the victims of the "tree pedlar" from the first. I would like to ask some questions on this subject at the proper time.

CHAIR.—As we have spent some time over this subject we will proceed with the next, which is :—

BEST SORTS FOR GENERAL CULTIVATION AND EXPORT.

SECRETARY.—*Mr. Chairman*,—I did not think it necessary to get any one to take especial charge of this subject, as it has been so fully discussed at the various meetings of the Association that we are pretty well decided upon the best sorts for export, and also for general cultivation in the West. What we want to know is if the same sorts will answer for general cultivation in this part of the Province, and if not, what have you that is better.

J. T. FRASER.—I think that the first and greatest effort we must make is to supply our own local markets, and to do the best we can it will be a score of years before we accomplish this. (A voice : Oh, no !) Yes, it will ! Why we are going to double our population in the next ten years, Repeal or no Repeal, and every man will

want two apples where he uses one now. (Laughter and applause). We don't want to export apples, we want to capture the local trade that you Kings' and Annapolis men now enjoy, and you may have all the foreign markets to yourselves.

T. A. McDONALD.—Mr. Fraser is not far out of the way, the local trade is large and rapidly increasing; for instance, one of our Pictou dealers told me that his sales averaged seventy-five barrels per week during the season, but we should plant the best sorts, then they will do for any market.

SECRETARY.—Perhaps I had better read the list of sorts generally considered most profitable to grow for export by Western orchardists, viz : Gravensteins, Ribston, King of Tompkins, Blenheim, Golden Russet, and Nonpariel, for the first place; and Baldwin, Greening, Vandervere, and Spy, for second. Some interesting conversation then occurred on the values of some of the sorts, and on the identity of others, which was closed by the Chair calling for the third subject for discussion, viz. :—

SPECIAL SORTS FOR EASTERN COUNTIES AND LOCAL MARKETS.

GEORGE MCKENZIE.—I must first say a few words about the paper read by Mr. Newcomb. I like it, it is plain and practical, full of good common sense, but I think that every locality needs a system of its own, which can only be ascertained by close observation and experiment. We also need a list of fruits best adapted to the locality, and these can only be got in the same way. Now, if we combine all our experience, and give to others the results of our observations we shall get along faster. I have tried a good many kinds of apples, and I choose Alexander, Oldenburg, Red Astrachan, and Gravenstein, which is first-rate. I think plums pay me as well as any other fruit. I have been growing for thirty years and have no black knot yet. When buying trees from agents one gets puzzled to know what to do, they tell such big stories about their new varieties that one is tempted to buy, but when they come into bearing we find them worthless.

T. E. SMITH.—A good rule for a novice is to go to his nearest nurseryman and find out from him what sorts are most called for. Don't put too much faith in tree agents stories. Their business is to sell trees for their employers, and that is usually about all they care for. I have had opportunity for seeing some of the fruit of those Eastern Counties at local exhibitions. I found that our fall apples

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are winter fruit here, and I found a great confusion among names. I found Bishop Pippin under various names, but good and free from the spot which troubles us so much.

A VOICE.—They black spot here too sometimes.

THE CHAIR.—I have had forty years experience with Bishop Pippin, and every few years it will "black spot" badly for two or three seasons, and then come all right again. When good it is one of the best for Home markets, but is not liked in England.

DR. MUNROE.—Does not Golden Russet wilt and become tough and leathery?

R. W. STARR.—If gathered early and exposed to the atmosphere it will, and so will any other Russet; but pick late and barrel up at once and there is no danger of wilting.

T. A. McDONALD.—I want to give my experience in selling my own apples. When I first went into the town of Pictou with a load of apples the dealers would not look at them, did not want "country fruit." Why? "They are no good; can't sell them." "Come and look at mine and see if they won't suit?" Well, the result was, I sold my load and have had no difficulty since. Now my fruit on the trees is no better than my neighbors, but I don't shake them down, I don't market in bags, I pick carefully and sort into barrels, pack tight, and my apples sell now for all they are worth.

The SECRETARY having asked several of the local Fruit Growers to give a list of some 6 or 8 most approved sorts for the County, now read the papers handed in:—

T. A. McDONALD.—Gravenstein, Ribston Pippin, Baldwin, King of Tompkins, Bishop Pippin, Red Astrachan, Alexander.

GEORGE MCKENZIE.—Greening, Ribston Pippin, Bishop Pippin, Ben Davis, Red Astrachan, Alexander, Baldwin, Gravenstein.

JAMES A. STROMBURG.—King of Tompkins, Gravenstein, Canada Baldwin, Yellow Bellefleur, (Bishop Pippin), English Russet, Red Astrachan.

T. A. McDONALD.—I am very much interested in this matter of best sorts, as I think that we can compete in most of kinds mentioned with our Western friends, both in size and flavor if we give the same cultivation. I know that Gravenstein, Bishop Pippin, and Baldwin, do well, and why not the rest? I won't recommend Alexander for

extensive planting, for although they sell well at the mines the people of Pictou won't buy them, and I suppose that even the miners will soon learn that there are better kinds. Plums pay well, and if there is an overplus at any time there is an outlet for them in the States at fair prices. But the trouble is, we don't plant orchards enough, we have lots of money, but instead of spending it on the farm in improvements that will pay 6 to 10 per cent., we put it in the bank and get 3 to 4 per cent. There is nothing that pays better than growing fruit.

J. F. TORRANCE.—I believe in preparing for the foreign market. Quebec ships lots of apples from a colder climate than this. If they can make it pay we should be able to make it pay better.

J. T. FRASER.—I won't take back one word of my statement that this County is going to double its population in the next 10 years. Look at our coal and iron mines, our glass and steel works, all calling for more men every year. We must furnish our own people first before sending abroad. When we grow more than we can consume it will be time enough to think of sending it across the Atlantic.

J. J. STAMBURG.—I am glad to be assured that the population will double in ten years. I am a dealer in fruit trees, and this must help my sales. I used to urge people when buying trees from me to fence them at once, to preserve them from the cattle, but I found them pay so little attention to my advice, that I now seldom mention it, and I have to sell them trees every year to fill vacancies, making a market for that many more. I advise planting late flowering varieties as being most successful. Plums pay best of any fruit, and will do well where apples fail, that is near the sea coast.

T. E. SMITH.—There can be no iron rule laid down. Each one must be guided by his own common sense, and the requirements of his own local market. I see no reason why all the best sorts of the Western Counties will not do well here.

R. W. STARR.—I remember having seen Ribstons, Greenings, and Bishop Pippins grown by the late Mr. Hockin, of Pictou, that would compare favorably with the same sorts grown in Kings, and Baldwins grown by Mr. T. McDonald equally as good as the best that I can grow at home.

THE CHAIR.—As it is nearly six o'clock we will adjourn for tea, and resume the discussion of the subjects yet untouched at 7 o'clock.

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EVENING SESSION.

CHAIR.—The next subject for consideration is the BEST METHOD OF PREPARING FRUIT FOR MARKET. This is of great importance, as every year large quantities of valuable fruit is rendered worthless, and destroyed by careless and unskilful handling.

T. A. McDONALD —As I cannot stay to take part in the rest of the discussions, I wish to give my opinion on this subject in a few words. To prepare apples for market, hand pick carefully, sort well, pack in good clean barrels, press the heads in tight, even if you have not more than one mile to carry them. I think it best to put them in the barrels at once from the tree, and not disturb them after, except to fill any shrinkage. If you have to keep them any time, store where the air is cool, sweet and pure. The same principles hold good in small fruits. Take your boxes to the berry patch and fill as you pick, rejecting all poor, unsound, or immature fruit, handle carefully, and get them into market as soon after picking as possible.

THE CHAIR.—I am glad to hear so good an exposition of this subject. It is the whole theory in a nutshell.

MR. TORRANCE made some remarks strongly recommending the use of his patent fruit case, and infusorial earth, in the export of fruit, claiming that by his method the most delicate fruits could be sent to England with safety. (It now appears that subsequent experiments did not give satisfactory results.—Sec'y.)

The CHAIRMAN then called upon MR. GEO. B. MCGILL, who read the following paper:—

DISEASES OF AGRICULTURAL PLANTS.

Although the analogy between the diseases of plants and animals is not very distinct, yet in certain instances we find striking resemblances. Take for example canker and death of some parts of a plant, and mortification in the animal subject. Then again we find congenital defects in individuals among plants,* just as we do among animals. Some varieties seem possessed of inherent disease, which perpetually prevents them from displaying the requisite strength and vigor, so much desired by the cultivator.

A careful consideration of the different varieties of diseases will, perhaps, warrant the following classification:—

1.—Those produced by changes in external conditions of life, such as a redundancy or deficiency of the ingredients of the soil, of light, of heat, air and moisture.

2.—Those produced by poisonous agencies, as poisonous gases miasmata in the air, or by poison in the soil.

3.—Those arising from the growth of parasitic plants, such as the various fungi.

4.—Such as are caused by mechanical wounds, and by the attacks of insects.

The first consideration in the healthy growth of a plant is a temperature suited to its nature. Although some plants require high temperature and some low, yet there are certain extremes, beyond which no plant can grow and maintain its healthy condition. When the temperature is maintained at a higher degree than is natural, the plant is excited to undue activity of growth; but this is attended with enfeebled condition, often seen in badly managed green-houses and hot-beds of the horticulturist.

A diminished temperature on the other hand retards the growth, and leads to the suspension of vital action in proportion to its reduction, and it is probable that at freezing point all action ceases; yet in this regard there is a great difference among plants, as instanced by mosses, lichens, and chickweed, growing at a temperature very little above freezing point. Also, some plants will endure, uninjured, a great depression of temperature, while others will be destroyed by the slightest approach of frost.

The influence excreted by the soil upon the healthiness or unhealthiness of plants, is an important subject of enquiry. A redundancy or paucity of some particular ingredients produces its effects upon plant life; and Liebig has pointed out how chemistry may be brought to our assistance in solving such a problem. As all the inorganic elements found in a plant and its fruit must have been derived from the soil in which it grew, he suggests that the ashes of the plant would show exactly what is needed, and then an examination of the soil would inform us whether it contains all the necessary elements in the right proportion. And from this proposition has arisen the

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doctrine and practice of applying special manures. It must be borne in mind, however, that though Liebig is correct, in so far as his experiments were carried, yet his theory is defective in one respect, which has been supplemented by experiments carried on by Messrs. Laws and Gilbert, in which they show that the nitrites, which do not appear in the ash of the plants, are also derived from the soil. These gentlemen have proved somewhat exclusively that plants cannot live on the free nitrogen of the atmosphere, but that it must be obtained from the soil in such compounds as nitric acid and ammonia.

Light is the third great element essential to the existence of vegetation, and like temperature, there are extremes to its healthy stimulus; and it is also observable that the various parts and the several products of vegetation require very different degrees of light for their perfection. The influence of light in the developing, maturing, and coloring of fruit is very great; a fact that should be borne in mind by the fruit grower in trimming his trees and vines, so as to admit as much sunlight as possible to the growing fruit.

The second class of diseases is so uncommon with us that we have little to fear, except from want of proper drainage, in wet or heavy soils. Badly drained land, holding poisonous substances, which must of necessity give to the plant, whether fruit, cereal or vegetable, an imperfect or stunted growth. The remedy, of course, is thorough drainage. As a test, to ascertain what land needs draining, several holes may be dug in the field, say three feet deep, and if water remains in them for some days after a wet spell, the soil needs draining, notwithstanding it may become dry during other parts of the season. The good effects of proper drainage cannot be fully dealt with in this article, but, to simply enumerate some of the results without going into details, it is found that drainage: 1. Deepens the available soil, by removing the superfluous water from the lower portions, and allowing the roots of plants to penetrate freely. 2. It warms the soil by diminishing evaporation at the surface. 3. It gives the opportunity of early cultivation, and of thoroughly mellowing the soil, which cannot be done if too wet. 4. Plants are better able to withstand a cold winter without freezing out. 5. It guards plants against the evil consequences of drought. 6. It prevents surface washing. 7. The soil is fertilized by the freer action of the atmosphere.

A rich soil, rendered deep and mellow by thorough cultivation, and by a system of underdraining, is thus the best preventive to the consequences of drought, and is also the most effectual against the evils of excessive rains.

Passing to the third class of diseases. — “Ferments and microscopic fungi are certainly inconspicuous, but they cause an untold and untellable amount of trouble, vexation and loss, not to mention the pain, misery and death which these low forms of life produce, when they find entrance into the system of the lower animals, or man himself. Their small dimensions, their invisibly minute organs, their ever present germs, floating about in the air, and carried in the water, until they find surrounding circumstances, and a suitable medium in which they can live, their life histories—all combine to render us helpless to a certain extent, in one strife and struggle with them.”

One cannot observe the influence exerted upon vegetation by the growth of parasitic plants, without being convinced of their prejudicial effects. Attaching themselves to the bark, and interfering with its function, as in the case of lichens and mosses; or decreasing in size, but increasing in importance, we find the minute but innumerable fungi attacking the wood, the bark, the foliage, and the fruits of our gardens, orchards, and field crops, committing incalculable damage, by entailing serious diseases.

It is not intended to discuss the question whether these fungi are the cause or consequence of disease, but rather to suggest a remedy for some common fungi. In doing so, I wish to call attention to the “Researches on the vitality of the spores of Parasitic Fungi and the antiseptic properties Ferrons Sulphate,” by Dr. A. B. Griffiths, F. R. S., Edinburgh, F. C. S., London and Paris, Lecturer on Chemistry in the Technical School of Manchester, etc., than whom there is no more reliable authority on this subject. This gentleman has advocated the use of iron sulphate (Copperas) called also Ferrons Sulphate, as a manure for some four or five years; and by careful experiments has shown that the same salt, besides being a plant food to a limited extent, has antiseptic properties sufficient to destroy certain *low* forms of plant life.

Dr. Griffith's experiments with the spores of *Peronospora Infestons* (the fungus that causes the potato rot) are interesting and instructive.

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He shows by these experiments that the spores of this fungus may be dried up with calcium sulphate and calcium carbonate (which principally constitute the dust of the atmosphere) for a period of eight months in a dry warm oven (35° C or 95° F), without destroying a vitality. He next points out the action of a solution of iron sulphate upon certain parasitic fungi. An aqueous solution containing as little as one-tenth grain of iron sulphate in one hundred grains, of water was found to have the power of destroying the *Peronospora Infestans*. A crop of this blight was cultivated by Dr. Griffith on the cut surface of diseased potatoes, in a warm damp atmosphere under a bell glass. Also the leaves of the potato (*solanum tuberosum*) were placed under the same bell glass. The spores of the fungus threw out hyphæ which penetrated the tissues of the leaves. By taking a portion of the fungus and its spores (conidia) by the point of a needle, and placing them upon a microscopic slide, mounting them in a drop of water, then running in between the slide and the cover slip, the above solution of iron sulphate, it was observed that the cellulose wall of the hyphæ, and of the spores of the potato blight (*Peronospora Infestans*) were perforated in all directions.

Further experiments have shown that iron sulphate does not attack the cellulose wall of the higher forms of plant life, not even when we get so low as the fresh water algal. Then again iodine and sulphuric acid do not color the cellulose walls of the fungus of the potato disease a blue color, whereas it is well known that the cellulose walls of the higher plants are colored by iodine and sulphuric acid. Then it is reasonable to conclude that Dr. Griffith's conjecture is correct. He says, "It is probable that the cellulose of parasitic fungi is different in its atomic structure from the cellulose of the higher plants. It is most likely an isomeric modification of ordinary cellulose." This agrees with the statement of Dr. Grew, F. R. S., which he made some two hundred years ago.

Then from the nature of plants, and the action of iron sulphate upon them, the following most important truth has been disclosed to the agriculturist, viz. : That while iron sulphate to a limited extent is valuable as a fertilizer for agricultural plants, it is a remedy against those fungi which cause so much loss to the farmer through disease ; and it is none the less pleasing that practical experience, so far as applied, has proven the principles which science has set up.

Turning from these experiments to fungous diseases of fruit, I think that ferrous sulphate may be recommended with some degree of confidence for a large number of these diseases. The disease of the pear tree, very aptly named the Pear Blight, is now known to be of fungous growth. We are indebted to Prof. Arthur, who received his degree of M. S. in 1886, for valuable information on this subject, which he gives in his articles entitled Biological Study of Parasites. He and others have proven beyond doubt that the pear tree blight is of fungous growth.

Dr. Kirtland, in an address before the Ohio Pomological Society about twenty-three years ago, laid down the following hypotheses: "1. The pear tree blight is produced by the poisonous impression of the seeds (sporules) of a microscopic fungus. 2. Several combinations of iron, especially the sulphate (copperas) will to some extent counteract that impression." Dr. Kirtland goes on to say: "It will be understood, that these two propositions are merely hypothetical. If sustained by analogies, subsequent observations, and experience, they will be accepted as truths. If not thus sustained they will of course be rejected."

His analogy with the dreaded cholera disease is clever and somewhat conclusive. Observation has shown that specks, cracks, and discoloration of the skin of the apple and pear are of fungous growth; and also Pear Tree Blight, Black Knot of the plum tree, as well as the various diseases of grain, grasses, and vegetables. To show how far experience sustains the hypotheses laid down, I will quote from the lecture in question:—

"1. It is a popular belief that iron exerts a favorable influence over the health of fruit trees. Hence arises the practice of driving nails into the body of such trees, and loading their limbs with scraps of iron. But the belief and the practice may be visionary, yet in such instances of popular belief investigation usually discovers them to be founded on some shadow of truth.

"2. An intelligent and observing gentleman of Cleveland informs me that he prevents the curl of the leaf of the peach tree by depositing in the earth, about the bodies of the trees, fragments of rusty stove-pipe, and worthless pieces of iron.

"3. Twenty-four years ago (that would be in 1840) I called the attention of the public to the isolated fact, without reference to any theory, that a large pear tree in Columbiana Co., Ohio, with its body

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surrounded with many waggon loads of boulders, scoria, scales of iron, and accumulations from a blacksmith shop, retained its health, vigor, and fruitfulness, while all other pear trees in that region of country were either dead or were suffering from blight. At this late date this tree still continues healthy (1864).

"4. I recollect reading in that reliable journal, *Hovey's Magazine of Horticulture*, some years since, a statement that the finest prize pears in the Parisian market were produced by investing the growing fruit with folds of cotton or linen cloth, and daily, or oftener, moistening them with a solution of sulphate of iron, this treatment was said to result in developing the size, beauty and quality of the fruit to a high degree, and especially to free them from parasitic blotches.

"5. Four years ago Mrs. Willer Dean, of Rockport, Ohio, informed me that blight might not only be prevented in healthy trees, but might be successfully arrested in many trees after it had made considerable progress, by means of repeatedly washing the bodies of the trees with a saturated solution of sulphate of iron (copperas) at a time when the sap was in active circulation.

"This was a confidential communication with the condition annexed that I should thoroughly test the plan, and if it should prove successful I was to publish it; and furthermore, if any merit or more substantial reward should be deemed due to any one by the public, she was to be the recipient.

"This plan has been but yet imperfectly tried. Age and infirmities will probably prevent its completion by me. I will therefore report that I have tested it on a number of my partially blighted pear trees, while a greater number has been left to die unmedicated. Of the former not one has yet died, while of the latter very few survive. It has appeared in every instance to arrest the progress of the disease and impart a healthy condition to the bark whenever applied."

Twenty-three years have passed since the essay, from which the above extract is taken, was written; and now as we call in view the important scientific discoveries of Dr. Griffiths, we find that that, which a few observing, thoughtful minds, were investigating in the dark a quarter of a century ago, is now revealed in the light of scientific research. But this is characteristic of the history of science.

It also shows its value as applied to agriculture.

It does appear that with all confidence the use of iron sulphate may be recommended as an antiseptic to pear and kindred blights, but it should be applied to the soil as a fertilizer also.

Next let us briefly consider one or two more of the most important cryptogamous diseases, taking first Black Knot (*Spheria Morbosa*). It is scarcely necessary to occupy space in describing the Black Knot in our day; but for the benefit of some who very properly like to consider the nature of a disease, and the principles of the remedy, I shall call attention to the fact that the old theories of it being a mere disease like gout, or what naturalists term a gall, produced by some unknown insect depositing its egg in the twig have all exploded, but that it is a parasitic plant is proven beyond any doubt.

The remedy generally given for this disease is removing with a knife; but a preventive may reasonably be expected in washing the plum or cherry tree with a solution of iron sulphate, for two reasons at least: 1. The action of this salt upon the cellulose of the cell wall of all these lower cryptogamous or parasitic plants is the same, viz.: destroying the cell wall by perforation, and thereby destroying the life of the plant. 2. The study of the life history of the Black Knot shows that the spores fasten themselves upon the surface bark, and send their hyphæ into the young bark the season previous to their breaking through and forming the "dense psuedo-perenymators tissue" which rapidly grows into the knot-like mass.

Before the iron sulphate is applied as a wash to the trees (plum, cherry, or pear), all dead branches, and in case of the plum and cherry, all limbs bearing the black knot should be removed and burned; for it is not claimed for the remedy that it will raise the dead, but that it is more of a preventive than a curative. Its use has always proven conducive to a healthy, vigorous growth of the pear, and we see no reason why it should not apply equally as well to the plum.

MILDEW.

Perhaps in dealing with this disease I cannot do better than give a synopsis of two articles that appeared on this subject in the rural *New Yorker*, January 30, and February 6, 1886. In these articles two varieties are described and commented upon, and as the nature and life histories of the varieties of mildews dealt with, agree so well with the description given by the best works on plant physiology, such as Bessey, we are induced to give them some consideration.

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1. The *Umicinula Spiralis*, or Powdery Grape-vine Mildew, flourishes most in a dry atmosphere. It is not particularly destructive to the hardier varieties of grapes, and is easily controlled by the use of sulphur. It develops chiefly on the upper side of the leaf, and produces simple ovoid summer spores, and more complex and ciliate winter spores which are found upon both the leaf and the cane. According to the most trustworthy evidence it was introduced into Europe many years ago. It is only known there in the conidial form as *Oidium Tucheri*, and works more injury in Europe than it does with us in America.

2. The *Peronospora Viticola*, or Downy Grape-vine Mildew, which ramifies its mycelium in the substance of the leaf, and even of the fruit, develops most readily in moist or wet weather. It produces its summer spores on the under side of the leaf, and a winter spore in the tissues of the dry and fallen leaves. It is not amenable to sulphur, but is checked by a dilute kerosene emulsion, in which a small amount of carbolic acid is mixed; but is far more effectively checked, and even prevented, by a mixture of slaked lime and sulphate of copper. This should be applied early in the season, say June, so as to act as a preventive; while the gathering and burning of the old leaves in winter time is important. This species is more injurious than the other, and is especially troublesome on the European vines. It was introduced into Europe in 1877, when it was found in Hungary, and has since spread through the greater portion of France, Italy, Switzerland, and Austria.

This last variety (*Peronospora Viticola*) appears first as a whitish down, sending its mycelium into the adjacent tissues of the leaf, destroying it parts, which scorches and turns brown as if sunburnt. Sulphate of copper will prevent mildew on grape vines (1 per cent. solution). A 10 per cent. solution in water, with enough lime added to make a thin whitewash, if applied after the mildew has appeared on the vines (foliage), the progress will be stayed and the spores of the fungi destroyed."

The foregoing is gleaned from an able article by Dr. C. V. Riley. I would venture to recommend the use of iron sulphate applied in compost or other fertilizer as a preventive to the development and growth of the mildew, since the iron and sulphur are both useful to plant growth, and the compound has proven an effectual preventive to the growth of similar fungi. It has also been used successfully on

the foliage to cure as well as prevent the disease. Dr. Griffiths informs us that Dr. H. Muller recommends the use of a solution of iron sulphate for washing vines as an antiseptic against the vine mildew; and adds "no doubt the action of iron sulphate upon the vine mildew is the same as I have already described concerning *Peronospora Infestans*" (potato blight).

The treatment of the grape vine mildew will apply equally as well to the Gooseberry Mildew; but it must not be forgotten that careful culture and pruning, and, for the plum and gooseberry especially, the application of salt (sodium chloride) to the soil, will do their part in a healthy growth, favorable to the warding off of disease.

The following data will aid in guiding those who may wish to experiment with any of the proposed antiseptics to fungous growths. Sulphate of iron (copperas) .0269, sulphate of copper (blue vitriol) .0073, and sodium chloride (common salt) 5.0000 in 100 parts of water have proved equally effectual in destroying the spores of fungi. In whole numbers these will stand in the proportion 1, 4, 700 parts by weight of blue vitriol, copperas, and common salt respectively. Also it has been shown by actual experiment that an application of fifty pounds of copperas to the acre has prevented rust in wheat. Is it not possible that an application of some of these salts, in moderate quantities, to the soil will prevent the cryptogamous growths that now so much injure the Bishop Pippin (Yellow Bellefleur), Greening and some other varieties of fruit?

As the Potato Blight and Scab, Wheat Mildew, Bunt, Ergot, etc., do not belong to the subject of fruit culture, I will withhold the publication of that part of my paper treating of those diseases, and will close this, perhaps already too lengthy article, by adding that as the virgin soils are fast becoming used up, new discoveries which help the fertility of the soil, and place in man's hands the means of destroying parasitic diseases, are of rational importance, especially in this age of competition, in which success so much depends upon a large yield of good quality at small cost.

This paper was listened to with much interest, and followed by considerable discussion.

MR. KING then read a very interesting and instructive paper on INSECTS, which called forth much intelligent discussion.

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(We regret this paper was not furnished for publication.—SECY.)

MR. TORRANCE gave the results of his observations on Plum Culture in Cape Breton. Formerly they were very successful in growing this fruit, but of late years the Black Knot has been making such strides, that it seems almost as if every tree was doomed. The only remedy is to cut off every vestige of the disease and burn it. If too far gone, cut out the tree, and plant another in place of it.

D. B. NEWCOMB moved the thanks of the F. G. A. to the Pictou Division Grange, for their kindness and hospitality.

Responded to by Worthy Master McINTOSH.

MR. TORRANCE moved thanks to Messrs. McGill and King.

Responded to by MR. MCGILL.

The whole audience then joined in the National Anthem, and at 11 o'clock one of the largest, best sustained, and most enthusiastic meetings ever held by this Association was adjourned, to the call of the Executive.

R. W. STARR, *Secretary, pro tem.*

ANNUAL MEETING,

Held in Witter's Hall, Wolfville, on January 19th and 20th, 1887.

(Phonograph Report by W. W. McLELLAN.)

The Association met at eleven o'clock in the forenoon of January 19th, 1887, with the President, REV. J. R. HART, in the chair. The REV. MR. HEMEON opened the meeting with prayer.

The following reports were then submitted :

SECRETARY'S REPORT.

Mr. President, and Members of the F. G. A.

GENTLEMEN :—I beg leave to submit a brief report of the doings of the Association during the past year.

The last annual meeting held in Kentville, on the 26th and 27th January last, proved most successful. The presence and assistance of the gentlemen who kindly consented to address the Association on that occasion, added unusual interest to the meeting. The practical suggestions offered by the Dominion Entomologist have been freely and successfully adopted by Nova Scotia farmers, in contending with some of the few insects with which we, in common with others less favored, are troubled. Professor Hind's interesting paper, contributed on that occasion, has been favorably commented upon by horticultural journals throughout Canada and the United States. The last volume of the transactions of the Association, including the proceedings of this meeting, is considered the most valuable of the Association's publications, and should be read by every fruit grower in Nova Scotia.

On the 27th April, the usual spring meeting of the Association was held in Windsor. In the absence of your Secretary, Vice-president R. W. Starr, was appointed Secretary, *pro tem.* The attendance at that meeting was not large. J. Fraser Torrance, Esq., read a paper upon his system of preserving fruit in infusorial earth; and discussions upon several important questions were maintained throughout the afternoon and evening.

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The summer meeting took place at Salt Springs, Pictou County, on the 2nd July, and was largely attended by representative farmers of that fine county, and while it is to be regretted that so very few added their names to our roll of members, the records of the meeting note a pleasing feature, in that there was a large proportion of ladies present. Some half dozen prominent members of the Association from Kings and Annapolis counties were in attendance, and took part in the discussions. Interesting and instructive papers were read by ex Vice-President D. B. Newcomb, Esq., of Kings County, and Messrs. McGill and King, of the Provincial Agricultural School at Truro. These papers were greatly appreciated by those present, and will form valuable additions to the next volume of our transactions.

I regret that I cannot report an increase in the number of members for the past year. I think, Mr. President, the Association has a right to expect a more general support from the fruit growers of Nova Scotia, who cannot deny that they have been in a greater or less degree benefitted by the work of this Association during the twenty-three years of its existence. The usefulness of the Association is limited in a great degree by the want of a larger revenue, and the support of many who have unquestionably been receiving the benefit of the work done by the Association, without contributing in any way to its support. The question of the best means to be taken to increase the membership, and at the same time extend the usefulness of the Association, is one which commends itself to the careful consideration of every well-wisher of this all important industry of growing fruits. I presume there are none but who will admit that we require all the information possible to obtain, and that of the best kind, to enable us so prosecute this great and rapidly developing industry to the best advantage; and it is only by the combined efforts of a society of this kind that these advantages can be gained. Our efforts to obtain a frost proof warehouse in connection with the Railway at Halifax, have not yet been crowned with success. The necessity of such a building is being realized more and more every day, and that additional accommodation of this character must be provided by some one, or in some way, in the near future, does not admit of a question in the minds of apple shippers and steamship men. Let not the Association relax their efforts in this direction, until this reasonable demand shall be granted.

In compliance with the recommendation of this society, at its last annual meeting, your Secretary was commissioned by the Dominion Government to succeed Professor William Saunders, the President of the Ontario Fruit Growers Association, in charge of the Canadian Fruit Department at the Colonial and Indian Exhibition, that gentleman having engagements which prevented his remaining to fill the position which he had occupied with so much ability throughout the preparation and installation of the exhibits. I have to again thank you, Mr. President, and members of this Association, for the kind recommendation that led to the appointment; and I trust that the humble services rendered may prove of substantial benefit to fruit growers in all sections of the Dominion. As it is my intention, time permitting, to make some remarks later on, relative to this department of the great Colonial Exhibition, I will not now weary you further.

The financial statement and Auditor's report were then read, and on motion of MR. SMITH and MR. WHITMAN, adopted.

PRESIDENT'S ADDRESS.

The following address was read by PRESIDENT HART.

To the Members of the Fruit Growers' Association, and International Show Society of Nova Scotia :

RESPECTED FRIENDS,—Permitted again to address you at our annual meeting, it becomes me to give with you, devout thanks to God, the giver of all good, for his kind favors bestowed during another year.

We are closing the twenty-third year of our existence as a society, and it is pleasing to be able to say that there has never been a year in which so great and varied interests have gathered around the culture of fruits in our country, as have come to us during the past one.

The work which our Association is endeavoring to perform, calls for the sympathy and aid of all classes in the country, and it is a matter for congratulation, that as our aims become better understood, and as we are able to show that our efforts do largely benefit the whole province, especially those most immediately concerned in the culture of fruits, the purpose of our organization is better appreciated.

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With thankfulness, we acknowledge that the ranks of our official membership remains unbroken for another year. There is a name however, which, without doubt, readily occurs to you all, as that of one who has been for years intimately connected with the culture of fruit in America, and who has recently passed to the realms of immortality. The Honorable Marshall Pinkney Wilder, was born at Rudge, N. H., Sept. 22nd, 1798, and died at Cambridge, Mass., Dec. 16th, 1886. He early exhibited a love for agricultural pursuits. He recently said "I cannot remember the time since my sainted mother took me into the garden to help dress and keep it, that I did not love the cultivation of the soil above all other pursuits." At the age of 16 he began seeking qualification for a farmers life, and though his career after he had reached manhood was chiefly connected with mercantile matters, he never lost his interest in the cultivation of the soil. One of his friends recently writing of him says :—"It was for his successful labors in agriculture, horticulture, floriculture, and especially pomology that Col. Wilder was most widely and favorably known." Col. Wilder was looking forward to the meeting of the American Pomological Society at Boston, in the autumn of this year, with much interest. In his last presidential address to that society at its meeting in September, 1885, he says :—"I console myself with the hope that you will accept the invitation of the Massachusetts Horticultural Society, and come to Boston in 1887, when I may be permitted to lay off the robes of office with which you have so long honored me, unless, ere that time, I shall have been clothed with the robes of immortality, and gone up to gather celestial fruits, which ripen not in earthly climes."

The year which has recently closed will be marked as one in which an impetus was given to the cultivation of our fruits, by the fine show displayed at the Colonial and Indian Exhibition. The government of Nova Scotia made special efforts to gather and forward the finest specimens of our fruits in their fresh and preserved states, and thereby testified to the excellency of our country for the production of these valuable sources of comfort and wealth.

The Dominion Government, by sending as Commissioners Professor William Saunders and our own Secretary, to take charge of the fruits forwarded from all parts of the Dominion, and by providing for a collection of fruits, vegetables and field roots for exhibition,

showed that it took a deep interest in our welfare. We have reason to congratulate the Government on the success of their efforts to show the capabilities of our province, and we believe that our people will not be slow to avail themselves of the benefits which will accrue to them from the wide knowledge diffused with reference to the capabilities of our country. The past year has shown us more fully than any previous one something more of these capabilities. The crops of small fruits, with the exception of strawberries, were large in quantity and fine in quality. Strawberries gave early in the season good promise, but the scarcity of rain in the early summer caused a non-fulfilment of this promise. Plums, according to the reports I have received, were abundant through the whole peninsula, while in the Island of Cape Breton the crop was immense. Never before have so many apples been harvested by us; and as these form much the largest part of our fruit crop, and as the prices of superior fruit have been fair to good, a large sum will be received by growers.

It is a source of great gratification that the Dominion Government have made arrangements for the establishment of experimental farms, one of which is to be located in the Maritime Provinces. The whole matter has been placed in charge of Prof. William Saunders, of London, Ontario, than whom probably there is no more capable agriculturalist in the Dominion; and in his hands our fruit interests will be safe. As was anticipated, arrangements for the carrying of our fruit to Great Britain, at more favorable rates for the shipper, can now be made, and we may well hope that the high charges which have till recently prevailed, have quite passed away, never to return.

Allow me to reiterate the advice to our fruit growers, to take the greatest care in sorting and packing. The time has entirely passed by when it is possible to deceive the buyer by exposing the fine and fair fruit on the outside of the package, and filling up the centre with imperfect and spotted specimens. Buyers want fruit of good quality through and through, and he who attempts to deceive will soon find that his name will justly suffer reproach.

Bear in mind that the biennial meeting of the American Pomological Society is to be held in the City of Boston, in September of this year, and I urge you to make arrangements to have a full representation of our fruit growers at that meeting. It is especially desirable that any new fruit of good quality, not hitherto described, should be reported to that meeting, so that its merits may be made known.

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You have observed, doubtless, that a scheme is proposed for the establishment of an Imperial Jubilee Institute. Recent advices show that the committee appointed by the Prince of Wales to consider this matter, recommend among other things, the formation of such an institute, having a Colonial and Indian section, as well as a section for the United Kingdom. In connection with the former, it is further recommended that provision be made for an adequate display of the best natural and manufactured products of the Colonies and India, and in connection therewith the circulation of typical collections throughout the United Kingdom. I commend this matter to your consideration for such action as you may deem desirable.

And now I will no longer detain you. May you, friends, be successful not only in growing the fruits of the earth, but much more so in the cultivation of the fruits of righteousness, unto the praise of Him from whom all blessings proceed; and when done with pleasant and profitable toil of earth, may you gather the fruits of the tree of life, which groweth on either side of the river "proceeding out of the throne of God and of the Lamb," (Applause.)

The SECRETARY.—I know we have all listened with great pleasure to the interesting address of the President, and I trust that other members will speak of some of the matters referred to by him. With reference to the meeting of the American Pomological Society, I might say that it is a very important matter, and should not by any means be lost sight of; and I hope that many of our members will avail themselves of the privilege of attending that meeting. As to the establishment of an Imperial Institute, I do not think that I am sufficiently informed on the subject to offer any remarks, but I regret very much that the scheme, which it was thought had developed so far as to be considered an accomplished fact, has fallen through for the present. It is understood that when the exhibition is again opened, it will become a permanency. I move that the thanks of this Association be tendered to our President for his admirable address.

The PRESIDENT.—I received the paper containing the report of the Prince of Wales, naming the committee to take this matter of the proposed Institute into consideration. The only difficulty, so far as I can ascertain, seems to be the securing of an eligible site. South Kensington is spoken of, but at present the matter remains in abeyance.

PROFESSOR MACOUN.—I think the real reason why the Imperial Institute scheme has not been fully carried out, is, that Englishmen and Londoners do not desire to see such an institution established, unless they have an opportunity to compete. They are anxious to place their exhibits side by side with those of India and the Colonies. When the proposition to place it at South Kensington was made, the London folk objected, and demanded that it should be situated on the Thames embankment. A compromise is about being arrived at, and Englishmen are to have an opportunity of competing in one section.

R. W. STARR.—I have much pleasure in seconding the motion. In following out the ideas presented in the address of our President we would be taking a great step in advance.

PROFESSOR SAUNDERS.—I wish to express my hearty concurrence in the spirit of this resolution. In reference to the death of Hon. M. P. Wilder, I had the pleasure of meeting him in Boston, and he assured me of the sincere interest he took in fruits in all parts of Canada, and wished me to convey to any of the associations which I might have the privilege of attending, his warm sympathy with us all in this great fruit raising movement. I know if he were still living, it would afford him a great deal of pleasure to learn of the work that is being accomplished by your association. I would suggest that the President name a committee to prepare a resolution, expressing the regret of this association at the loss occasioned by the death of the late Mr. Wilder, and expressing your appreciation of his valuable services and assistance in fruit culture in America.

The resolution to tender the thanks of the Association to the President, for his valuable address, having passed unanimously, the vice-President, MR. W. H. BLANCHARD, tendered the feeling of all present accordingly.

PRESIDENT HART.—The remarks of Prof. Saunders remind me of the fact that I have lost a great deal in the death of Col. Wilder. I have learned to love him as one of nature's noblemen. I approve of the suggestion to draft a resolution to be sent to the family of the deceased.

R. W. STARR.—I have met Col. Wilder in private life, and I was looking forward to meeting him again. He was a man admired by all

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who knew him. The loss to the fruit growers of this province will be hard to estimate. I move that a committee be appointed to draw up a memorial resolution on the occasion of his death, and that such resolution be recorded on our minutes, and sent to the family of the deceased.

W. H. BLANCHARD.—I second the resolution.

Passed accordingly.

W. H. BLANCHARD.—We have to-day with us some of the most eminent men in their several spheres, in the Dominion of Canada. I have much pleasure in moving that the names of Professors William Saunders, F. R. S. C., F. L. S., F. C. S.; J. Fletcher, F. R. S. C., F. C. S.; John Macoun, F. R. S. C., F. L. S., F. C. S., of Ottawa; and Professor D. P. Penhallow, F. R. S. C., of McGill College, Montreal, and Professor H. W. Smith, of Provincial Agricultural School, Truro, Nova Scotia, and Charles Gibb, Esq., of Abbotsford, Quebec, be placed on the list of honorary members of this Association. I do not make this motion expecting that these gentlemen will consider it a very high honor conferred upon themselves by this humble Association, but I desire to state that this society will, as any society might feel, honored by having such distinguished names placed among its honorary members.

Upon the suggestion of A. S. FISHER, the name of Sir Charles Tupper, G. C. M. G., C. B., Executive Commissioner at the Colonial and Indian Exhibition, was added.

The SECRETARY.—It affords me very much pleasure to second the resolution and endorse the sentiments therein contained.

Motion was then passed unanimously, and the President extended a hearty welcome to the gentlemen named.

PROFESSOR SAUNDERS.—I thank you sincerely for the kind recognition you have given in advance of any service which I shall be able to render you. I assure you of my hearty sympathy in all your efforts to extend fruit culture, and I think that Nova Scotia should be placed in the front rank, for the reason that your society is the oldest one in the Dominion of Canada.

PROFESSOR FLETCHER.—Last year I had the pleasure of meeting with you at your annual conference, and now I feel overcome with a sense of my unworthiness of the honor just bestowed. On the

occasion of your last annual session I gained very valuable information, and I have reason to know that I was the one most benefitted from the discussions had at that time. I can reiterate every word that Prof. Saungers has spoken. This Association is well known all over the world as an active body; and its works are appreciated even in conservative England. I have referred to the English people because they have the money, and there is no limit to the wealth that may accrue to this province from the operation of such a society as this. I thank you for the honor conferred upon me.

PROFESSOR MACOUN.—I thank you, for the reason that I like to be associated, even in the honorary sense, with live men. In England I found that your Vice-President and Secretary were alive to the interests of Canada, as well as the interests of Nova Scotia. I claim to be a live man myself.—(hear! hear!) I feel pleased to be associated with practical men, and am not in favor of fogies.—(laughter.) I tell you that it is the live element which must come to the front, and push the fogies aside. Fruit is a grand factor in your province. I speak as an Ontario man, but were I a Nova Scotian, I would say that you can out do Ontario, in the business of fruit culture. In ten days from the date of shipment from your own homes, you can get a remittance from England by telegraph. Be careful in packing, and do not put the fine fruit on top, and the poor in the middle, as some Ontario shippers have done; be honest from top to bottom. Again I thank you, and if at any time I can be of any service to you, I shall be happy to respond to your demand.

PROFESSOR SMITH.—At your last annual meeting I told you that I was not a fruit grower, and that not from choice but from circumstances. In Truro we manage to put a few flower pots in the window for the smaller plants, but there is no land for growing fruits. As soon as the experimental farm is provided, I will do all in my power to assist in advancing this great and increasing industry. My attention was directed to this Association when I first came to Nova Scotia, but I scarcely expected at that time I would be among you, and meet with such a pleasant reception. I thank you for the honor conferred on me.

The SECRETARY referred to the absence of Prof. Penhallow and Mr. Gibb, who were detained at a meeting similar to this in Quebec. Prof. Penhallow had sent his paper to this Association, and it would be produced at a later stage of the proceedings.

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PRESIDENT HART.—I will now name Prof. Saunders, R. W. Starr, W. H. Blanchard, and our Secretary, as the committee to draft a resolution in reference to the death of Col. Wilder.

Meeting adjourned till 2 P. M.

—
AFTERNOON SESSION.

WEDNESDAY, *January 19th, 1887.*

QUESTIONS.

"Is decaying animal matter, such as dead carcasses, hide trimmings, etc., buried under fruit trees, beneficial or injurious?"

PROFESSOR SAUNDERS.—It is not generally known that I am a farmer, but I wish to announce myself as such to-day. I operated a farm for ten years, and I once made an arrangement with a pork packing establishment to secure all their offal, which I used among my pear trees, grape vines and apple trees, and judging from the results, I should say that I found it equal to any other kind of manure. In fact I think it was worth double the amount of stable manure; though I cannot say exactly what the detailed results were; at all events they were satisfactory.

"What is the value of marsh mud when compared with stable manure valued at \$1.00 per ton, and what are its ingredients?"

PROFESSOR SMITH.—I have requested a number of times, that gentlemen who had marsh mud should send me samples, that I might analyse them. I am anxious to get samples from the different places along the coast. It is well known that some sorts are better than others, and so far as its ingredients are concerned I can speak but little. Its value on trees can best be ascertained by applying it to the trees and watching the results; that is the best analysis.

PROFESSOR SAUNDERS.—When in Charlottetown last autumn, I found that they used mussel mud.

PROFESSOR SMITH.—Mussel mud is made up of shells, while the mud in the Bay of Fundy is of a different character.

PROFESSOR SAUNDERS.—I was informed that they used it very freely in P. E. I., and that the crops did not appear to be much benefitted before the second year after application. In that case it would take some time to work out Professor Smith's suggestion.

PROFESSOR SMITH.—Most farmers along the Bay of Fundy will tell you that there is nothing like marsh mud for manure, and I think its value is well illustrated by the tree in this valley.

REV. MR. HEMEON.—From enquiries I find that some say it is very good, while others say it is no good at all. I have come to the conclusion that it depends on the nature of the soil on which it is to be used, and the advantage to be obtained from it can only be discovered by individual experience.

W. H. BLANCHARD here referred to page 53 of the report of the proceedings of last year, in which this subject was mentioned.

PROFESSOR HIGGINS.—I hope that Professor Smith will get several collections of this marsh mud, both new and old, for I entertain the impression that there is a great deal of difference in its quality, and that the varieties of opinion, as to its value, arise from these differences in the mud itself.

PROFESSOR SMITH.—In sending the mud to me, gentlemen will please put it in glass bottles or tin cans, so that it will retain its moisture, as I wish to notice its physical as well as its chemical nature.

The SECRETARY.—What quantity would you require as a sample?

PROFESSOR SMITH.—About a quart.

PROFESSOR HIGGINS.—Marsh soil and marsh mud do not appear to be the same, the former is red, heavy and stiff, while the latter is quite dark, or almost black.

PROFESSOR COLDWELL.—Marsh mud is simply that washed up from the shore. At Truro it will be found much finer than it is here. The farther it is from the coast the finer it is, and that accounts for the difference between the mud at Truro and that which we see about here. It generally changes its color after being washed up.

REPORT OF FRUIT COMMITTEE.

The past season has been one of the most successful ever known to the fruit culturists of Nova Scotia. This may seem a bold assertion; but when we take into consideration the quantity grown, the quality of the products, and the fairly remunerative prices obtained, there can be no doubt but that the assertion is fairly proven.

Strawberries came through the winter in good condition, and gave promise of heavy crops, but the severe drought during the season of ripening, shortened the crop considerably.

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Gooseberries, Currants, and other small fruits were a fair average in quantity, but rather under sized, from the effects of the drought, unless where well cultivated.

Cherries were a fair crop, and the quality good.

Plums were a full crop, and the favorable weather at the time of ripening brought the quality of the fruit up to the highest standard of excellence.

Pears were a very full crop, and the fruit was of the highest average quality, showing but little of "scab or crack," or of the "knots" so prevalent in some years past. The sorts paying best results to the cultivator seem to be "Clapp," "Bartlett," and "Suttons Great Britain." These three ripen in the order named, and seem to possess good market qualities, vigorous growth, freedom from disease, and are good bearers. "Souvenir du Congress" and "Doyenné du Comice," are not so well known, but are promising well, and may yet take a first rank.

Apples.—This may be called our especial fruit, as no matter what may happen to the other fruits, we always have apples for ourselves and to export. The crop of the past year appears to have been the largest ever grown in the Province, the fruit also was exceptionally good, being large, well formed and well colored, with less than the ordinary amount of that troublesome disease or fungoid, known as "scab" or "spot." (*Fusicladium Dentriticum.*) This has given us an unusually large surplus, which has found markets in London, New York, Boston, Halifax, St. John, Moncton, Charlottetown, and St. Johns, N. F. The prices for ordinary soft kinds, have ruled rather low in the local markets, but the demand has been well sustained, and the heavy stocks worked off, at prices fairly remunerative to the producer. For varieties suitable for foreign markets much better prices have been paid. In Kings' County the "*Gravenstein*" gave enormous crops, and were largely shipped to New York and Boston, by dealers who paid the producer \$1.25 to \$1.50 per barrel. Large quantities were also sent to London, and sold there at prices ranging from 12/ to 16/.

"*King of Tompkins*" have had the greatest demand, at prices ranging from \$1.50 to \$2.50, and have been largely shipped to New York. Considerable quantities have gone to London, and sold at 18/ to 21/.

"*Blenheim*," which in former years had rather led in price in the London market, has this year sold at slightly less figures; quotations ranging from 16/ to 20/. New York buyers have taken up some small lots, to test the market, paying the same rates as for Kings.

"*Ribstons*" have held their own in the London markets, and have been enquired for in Liverpool and Glasgow, while New York has taken some on trial. London quotations during the season have varied from 16/ to 24/.

"*Baldwins*" have been quite largely bought up for New York, at from \$1.50 to \$1.75, and large quantities were sent to London, and sold at from 10/ to 18/, late in the season.

"*Spys*" and "*Greenings*" rank the same as Baldwins.

"*Golden Russets*" have been in demand for the London markets, realising from 16/ to 20/.

(During March this variety sold for 24/ to 28/.—SECV.)

"*Nonpariel*," is very extensively grown in Annapolis Co., and the crop this season was extremely heavy. As a long keeper it is always in demand, and is sent to London during February, March, and April, and frequently to Boston in May. The prices realised in London during the season ranged from 15/ to 20/.

"*Fallawater*."—This is a comparatively new apple, but seems to suit our locality remarkably well. It is a strong vigorous grower, good bearer, a long keeper, stands shipping better than almost any other, and can be put on the London market as a first-class cooking apple, when all others but the Nonpariel are gone. Sales for the season ranged from 27/ to 32/; mostly at 30/.

Referring again to the opening sentence of this paper, if further proof of its correctness is required, we may find it in the following statement, taken from the traffic returns of the Windsor and Annapolis Railway, for the last five years, which will show the ratio of increase of the apple crop of this valley. At the same time it must not be supposed that this comprises the whole amount shipped, as large quantities are put directly on board schooners, from the orchards, amounting in the aggregate to nearly as many more.

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Number of barrels of apples carried by W. & A. R. R. during the season, 1882-83.....	94,704.
“ 1883-84.....	60,021.
“ 1884-85.....	142,712.
“ 1885-86.....	106,810.
“ 1886-87.....	199,172.

Thus shewing an increase of more than 30% over the season of 1884-85, which is the next largest.

Signed on behalf of the Committee,

R. W. STARR, *Chairman.*

MR. C. Y. JOHNSON.—I shipped 10 barrels of Gloria Mundi, and realized 19 shillings a barrel for them.

PROFESSOR SAUNDERS.—I observed that the Gloria Mundi stood at the head of the list in London, and I thought it was strange that this was so. This variety is something like the “Ben Davis,” and will soon find its level. I do not think it would be wise to plant that variety.

R. W. STARR.—Last year I grafted out about a half dozen of Gloria Mundi, as I could not grow them with profit.

MR. E. E. DICKIE.—Some six years ago I had one barrel of this variety in London. Buyers would come in and turn them over, and put them down with a shake of the head. When that barrel was sold it brought 4 shillings; now that they realize 19 shillings, the English people must have changed their minds as to their value.

PRESIDENT HART.—There is no accounting for the taste of English people. An apple that will be in demand and bring a good price this week, will not sell at all next week. The varieties mentioned in the Fruit Committees' report are those best suited for the English market.

REV. MR. HEMEON.—Are we not at sea as to what the coming apple is to be? We do not know what the leading apple in the market five years hence will be; therefore we should raise good apples, regardless of what the popular taste to-day may be. I am strongly of the opinion that there is no better eating apple than the Bishop Pippin, yet the English buyers will not have them at all.

PROFESSOR MACOUN.—An apple may be good when it is shipped, but be in a very different condition when it reaches the English

market. Your Secretary can tell you that apples went over to England, which he had recommended, but after their arrival he regretted having anything to do with them. An apple shipped in a ripe condition, and kept in the atmosphere of the vessel, is not the apple that meets with the tastes of the Englishmen; and if he gets a bad apple one year, he will not buy that variety the following year. We should allow them to ripen, not here, but in England. John Bull wants a good thing, and he is willing to pay for it when he gets it.

REV. MR. HEMEON.—Is it advisable to pull apples early, and before they are ripe?

Many voices.—No, no.

PROFESSOR MACOUN.—Heat ripens apples. I know farmers who cut their wheat just before it is ripe, and they say that they can get more flour from it on that account.

DR. CHIPMAN.—Is it not true that certain varieties always bring good prices? If that be so, we should raise those particular kinds. In my opinion we have too many varieties.

R. W. STARR.—I think there is a proper time to pick all fruit, and that is when it will break from the tree with a slight bend upwards. I know that there was a large proportion of the fruit sent over to London on the 14th September last, that had been picked in an unripe condition, and when they arrived there they were lacking in flavor, and were somewhat wilted. The second steamer must have carried over a much better lot than the first one, but the market was not so good. If fruit is shipped early, we should go over the trees carefully, and avoid all unripe specimens, and take only the 'matured ones.

PROFESSOR HIGGINS.—There may be some question as to when an apple is ripe. If we allow it to stand on the trees until it reaches its full growth and color, it is not then nearly so good for eating purposes as it is at an earlier stage. Then there is the Gravenstein, which does not get ripe until a month after it is picked, and the Nonpareil does not ripen until the month of February or March.

R. W. STARR.—There are some fruits that are suitable for the table perhaps one week after being taken from the tree, but such a variety would not be fit for foreign markets. There is a difference between maturity and ripeness.

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PRESIDENT HART.—Maturity has reference to the time of picking, and ripeness to its suitability for eating. Many of our fruits color more quickly in the package than on the tree.

PROFESSOR HIGGINS.—Does not that apply more particularly to the yellows than to the reds?

PRESIDENT HART.—Yes.

PROFESSOR MACOUN.—The first lot that went over to London was far inferior to the second; the former had been picked too green.

MR. SHAW.—Those who have tried the experiment, have found that apples picked before they were mature, kept longer than those picked later in the season.

MR. NORTH.—I have had some experience in picking apples early. A heavy gale broke from my Gravenstein trees about a half barrel of fruit, and I put them on a shelf in my cellar; about two weeks afterwards I picked the balance of the crop. The former lot kept for months after the last lot had become rotten.

THE SECRETARY.—I think there is a difference in the variety as to the time that they should be gathered, some requiring to be left on the trees to mature, while it is necessary to pick others at an earlier stage. The "St. Lawrence" was received in London on the 20th September; they had been gathered quite green, and many of them were more or less decayed. On the 28th Sept. we received a further consignment of the same variety, from the same locality, and they turned out in good condition. Later on we received a consignment from Montreal, some of the varieties of which were in excellent condition. At that time the Gravensteins showed many slack barrels and spotted apples; but the following boat brought this variety in a more satisfactory state.

On motion of W. H. BLANCHARD and DR. CHIPMAN, the report was received and adopted.

FRUIT GROWING IN CANADA: ITS PRESENT CONDITION AND FUTURE PROSPECTS.

ADDRESS BY PROFESSOR W. SAUNDERS.

The subject of fruit culture is one of great importance to Canada. The shipments of fruit to other countries bring us yearly a large sum of money. As an article of diet, fruit is also of great value to us all. It is a luxury to which many of us have become so accustomed that

we are apt to fail to appreciate the full value of the privileges we thus enjoy, until we are awakened to a sense of their importance, by a removal to some remote section of the Dominion, where fruit is scarce and dear.

Great progress has been made in Canada in fruit growing, within a comparatively few years, indeed it is within the memory of many persons present that the greater part of this advancement has been made. Formerly Canada was considered to have a climate and soil wholly unsuited to the production of fruit, and in the early settlement of some portions of America, now included in the United States, similar views were entertained, regarding many sections now noted for the abundance of the fruit which they produce. Some of these erroneous ideas had their origin in the fact that the varieties of fruit then introduced were unsuited to the climate. European fruits, accustomed to entirely different conditions of moisture, rainfall and temperature, were tried, and when they failed, the conclusion was reached that the soil and climate were unsuited for fruit culture. Thus it was with the grape. The old European sorts were tried again and again, and because they mildewed and proved a failure, it was held that grapes would not grow in America. Some 40 or 50 years ago an American seedling grape, known as the Isabella, was introduced, which gave a new impetus to grape culture, and it became exceedingly popular as an outdoor market grape. But within the past few years other varieties, earlier in ripening and superior in quality, have been introduced, and the Isabella has almost entirely disappeared from our markets. These earlier ripening sorts have much enlarged the area of grape culture, and grapes are now grown with success in many parts of Ontario, Quebec and Nova Scotia.

This advancement has been chiefly brought about by taking the wild grapes of America as a foundation in originating new varieties, instead of the European sorts, and by crossing these natives and selecting the best of the seedlings so produced. Other cultivated fruits have been similarly improved, and new varieties are being constantly introduced. The diversity of climate found within the Dominion of Canada necessitates a large number of varieties to meet the requirements of the country. Having lately travelled the entire length of the Dominion, and spent some time in each of the Provinces, I will briefly refer to some facts in connection with our fruit interests, gleaned by personal observation.

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Beginning with the western extremity of the Dominion, we find in British Columbia, three distinct climates. The coast climate, which includes Vancouver Island and that part of the mainland west of the coast range of mountains is very moist with much more rainfall than you have in Nova Scotia. The weather is mild, flowers bloom in the winter months, and gardens are luxuriant with green foliage the year round. Pears grow in great abundance, with almost a total absence of blight or any other disease, the codling moth, as yet seems to be unknown, and the trees are laden with fruit every year. The specimens of pears which came under my observation, were not of the finest quality, and whether fruit of as high a flavor as that which we produce in more northern climates can be grown there, is a question yet to be determined. Plums are also produced of very large size and good quality; cherries are a remarkably fine crop, and apples grow of very large size, but their flavor is not as good as the same varieties grown in the east. The cultivation of fruit will admit of very great extension in British Columbia, and the towns and cities of the North-West will form a good market for such products. Should the supply exceed the demand, canning might be resorted to with profit.

East of the coast range a climate is found of an entirely different character. The clouds which come from the Pacific, part with some of their moisture when they strike the coast range, and thus lightened, rise into the air, and are carried over the intervening plateau without losing any more until they strike the next range of mountains, when further precipitation takes place. That interior district is dry and warmer than the coast climate, but the rainfall is so slight that fruits cannot be grown without irrigation, which is here and there accomplished by use of the mountain streams, which are numerous in that country. With such privilege available, many sorts of fruits and crops can be grown most successfully. Further east the climate becomes colder, and approaches in character to that of the great western plains. Notwithstanding that so much of that country is favorable for fruit growing, a considerable proportion of the fruit consumed there is brought from the United States, chiefly from San Francisco. The people are, however, becoming yearly more alive to the advantages by which they are surrounded, and the cultivation of fruit is rapidly extending.

Coming east as far as Calgarry, we find a section of country about the foot hills of the Rocky Mountains, which promises to be well adapted to the growth of many sorts of fruit. The winter is mild, but variable, and cattle feed out of doors all the year round. Several orchards have recently been planted in that district, but what the future of that country will be as regards fruit production, remains to be determined. In the more thickly settled portions of the North-West Territories, further east, and in Manitoba, the climate is much more unfavourable, the extreme cold of winter is followed by warm summer weather, and experiments thus far tried in apple growing have met with little or no success; the trees have winter killed down to the snow line. Hardier varieties than any hitherto tried, are needed for this part of the Dominion. These it is hoped we shall find either in trees from Northern Russia, or among seedlings yet to be raised. Small fruits can be successfully grown in almost every part of Canada, and there is no reason why every farmer in the Dominion should not have a small fruit plantation of his own, sufficient to meet the requirements of his family; thus home would be made more attractive to the young people as well as their parents, and the contentment and happiness of the occupants materially increased.

In Ontario there is a very large area adapted to the raising of fruit, especially in the western district, extending from Niagara to Windsor. All varieties of fruits are grown, including large quantities of small fruits, grapes and pears, and in the Niagara peninsula peaches also, but everywhere apples are the staple crop, of which large quantities are grown for export.

In Quebec, the island of Montreal is one of the most noted apple producing sections, where the Fameuse is grown of unsurpassed flavor. In the eastern townships abundant crops of apples are secured, of high color and fine flavor. Pears are also grown in limited quantities, but fruit is not so generally cultivated in Quebec as in Ontario, and here there is room for improvement. No doubt the introduction of more suitable varieties for that Province would give a great impetus to fruit culture generally. Plum culture in the Island of Orleans is successfully carried on, but not to that extent which one might expect in so favored a district.

In New Brunswick some varieties of apples, and many sorts of plums are grown along the St. John River, with much success.

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Apples are also grown in many other parts of New Brunswick. In Prince Edward Island some very excellent apples are grown ; some pears, and a number of very fine sorts of small fruits. Many sorts of grapes are being tested, and there is a growing interest among the people in fruit production.

In Nova Scotia you have some of the finest apple orchards in the Dominion ; indeed, I know of no locality where trees bear so abundantly and continuously, as in your own favored Annapolis Valley, and I am convinced that you owe much of the success which has been achieved here to the efforts of your Fruit Growers' Association. Through the agency of this organization, wisely aided by your Local Government, much useful information has been disseminated as to the best and most profitable varieties to cultivate, and excellent markets found for your surplus. Apple production in this beautiful valley might be increased to any reasonable extent with profit. Pears also, and cherries might be made a profitable industry. The Bear River district is noted for its Cherry orchards, and I see no reason why the cultivation of this valuable fruit might not be indefinitely increased in your favored Province. Plums, I am told, grow well here, and not only in this valley, but in many other parts of Nova Scotia, including Cape Breton. With increased push and enterprise, there is a great future for Nova Scotia in this respect, and the success you have reached is only a foretaste of that which awaits you.

I wish to say a word or two as to how it is proposed that the *Experimental Farms* of the Dominion shall aid in stimulating fruit culture. In addition to the central experimental farm, the site of which has already been secured, it is as you are aware, the intention of the Government to establish one of these farms in the Maritime Provinces, one in Manitoba, one in the North-west Territories, and one in British Columbia. At these farms all the standard varieties of fruits of which there is any probability of success will be tested, also promising seedling, sorts, hardy varieties from foreign countries will also be introduced for the especial benefit of the colder sections of Quebec, Ontario, Manitoba, and the North-west Territories. Efforts will also be made to originate new varieties by selection and cross fertilization. Already some 200 varieties of hardy sorts have been obtained, chiefly of Russian and northern European origin, and

it is proposed to add to this number every season, until that degree of success is reached which will provide hardy fruits for every province in the Dominion. When we consider the rapid strides which have been made in fruit production during the past forty years, and take into account the increased facilities we now have for obtaining and disseminating new sorts, it is difficult to estimate what grand results may be reached in a few years more. I am firmly of opinion that this system of experimental farming which the Government of this country have now undertaken will be highly successful, and that it will prove of great use to farmers and fruit growers in all parts of the Dominion. Fruit growing is a subject in which as you know, I have taken a lively interest, and with increased opportunities for doing good in the future, I trust my interest in it will continue unabated. (Applause.)

PRESIDENT HART.—While on a visit to the south shore I noticed that strawberries were looking very satisfactory. Fameuse showed remarkable vigor, without the slightest indication of the existence of fungus spot. It may yet come to pass that Montreal culturists will be obliged to go to Shelburne for this fruit.

R. W. STARR.—I saw larger fruit in some of the small orchards in the valley of Upper LaHave than I have seen in the Annapolis Valley. I might say the same of New Germany. In Bridgewater the various kinds of fruit looked as well as those we have here under ordinary cultivation; and there is no reason why the whole of that central portion of the country should not be equally successful with Annapolis in this industry. Unfortunately, they have very poor means of transportation, and are in the same position that we were 25 years ago. They do not require any more drainage than we do, and their soil is naturally better than ours, though they have not the same facilities for manuring.

PROFESSOR SMITH.—I was surprised to find grapes and apples growing nicely on the north shore of Tatamagouche Bay, on an arm projecting out into the bay. When these fruits grow and ripen in the cold and icy winds of Tatamagouche Bay, I see no reason why they should not do well anywhere.

MR. RAND.—I presume that I have the earliest cherries in the country. We have no native cherries. They were probably imported from France.

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PROFESSOR SAUNDERS.—What about those growing around the fences?

MR. RAND.—They are probably suckers. One of the great difficulties that we have to contend with is the birds. At Bear River birds are almost unknown during cherry time. My cherries ripen on or about the 15th June; and I notice that the birds have a decided preference for the dark colored species.

R. W. STARR.—I cannot say that I have ever succeeded in getting a large crop of cherries for market, as the birds generally take more than half of the fruit, but I have never regretted it. I do everything to induce the birds to stay with me and destroy the insects. The result is I have never used poison on my farm to destroy insects. The Purple Guigne variety will always give a good crop. I have planted different varieties, and from the early ones I got a fair crop, but the birds succeeded in getting the later ones. There is scarcely a tree in my orchard that does not contain a birds nest, but I am afraid that we will soon have trouble with the English sparrow, as they are gathering about the villages in large flocks, and driving away the other and more useful birds.

In speaking of the origin of cherries I think we are indebted to the late Hon. C. R. Prescott, for all the varieties except the Purple Guigne. The cherries grown at Bear River are chiefly of two varieties; a dark and a light. The dark is a "Mazzard," improved from the original, and the light colored one is a cross with the "Morello." The Bear River cherries did not come from the Hon. Mr. Prescott, but are of French origin.

MR. T. E. SMITH.—One year I attempted to shoot the birds, but I noticed that every one killed was replaced by a half dozen of new ones. I have every reason to believe that there are many sections of the country well adapted to the growth of apples, but they are a long way behind us both in varieties and in cultivation. A man at Musquodoboit asked me to go and look at his trees; and I found that he had cut the tops off to within three feet of the ground, and had put in 13 scions, and 12 of them were growing, with the whole tree surrounded by suckers. (Laughter.)

MR. SHAW.—I would like to ask Mr. Starr if the English sparrow does not destroy the canker worm.

MR. STARR.—No, that is the cedar bird.

MR. BLANCHARD.—We have all, I am sure, listened to Professor Saunders with a great deal of pleasure. There is one point that interested me more than any other, more even than this cherry question, viz: experimental farms. That is a question in which every man is interested. We who have carried on fruit culture to a greater extent than they have in the eastern part of the province, and, we who believe that fruit growing cannot be quite so successfully pursued in any portion of the Maritime provinces as it can in this valley, believe that such an experimental farm should be located somewhere in this Annapolis Valley. At a meeting previously held, a resolution upon that subject was passed, and forwarded to the proper authorities. Should this experimental farm be situated in a remote locality, and out of a fruit growing district, the benefits derived by fruit culturists will be small indeed. I feel, that after the subject has been kindly brought to our notice by Prof. Saunders, that we would not be doing justice to ourselves or to him in omitting to state where we think this farm should be placed.

FRUIT GROWING IN KINGS COUNTY IN 1886.

The following paper was read by Dr. Henry Chipman, of Grand Pre:—

Mr. President and Gentlemen,—

In view of the prosperity brought to so many of our fruit growers by the fine weather, extraordinary fruitfulness, ready market, and high price of the past season, I have been led to pen the following, entitled by your Secretary in the programme, "Fruit Growing in 1886." Strict honesty will not allow me to accept this title without a word of explanation, as it confers a greater scope and dignity on my paper than it deserves.

In gathering these few notes, illustrating the "great apple crop" of 1886, I had neither the time nor opportunity to go beyond the orchards of my own county, and those of you who wish to "spy out the land" across the lines, can find other and better guides to lead you Westward through Annapolis, the premier fruit growing County of the Province, or Eastward through Hants, or Southward into Lunenburg, which ranks third in productiveness.

My subject is "Fruit growing in Kings County in 1886." "There is a Providence that shapes our ends rough, hew them how we may." I

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can remember when potatoes were the staple crop for exportation in this County, and successful farming meant in those days the raising of potatoes to the exclusion of almost every other crop, and the consequent exhaustion of the soil of many farms where fertilizers were not easily obtainable. Horticulture was an almost unknown art. The ubiquitous tuber crowded almost everything else out, occupying the ground even in the old orchards among the trees. On the newer farms there were no orchards, but on some old homesteads there were orchards of old French trees and others, planted by our English ancestors, who took possession of the farms after the expulsion of the Acadians. The trees were mostly seedlings, big, old fellows, bearing annually an abundance of very small apples; some were very sweet and some very sour, and nearly all soft and worthless. In the late Autumn, after potatoe digging, it was fun for the boys to shake and beat them off in showers until they lay upon the ground "thick as leaves in Vallombrosa." They were picked up and hauled out of the orchard in cart loads; the largest were used for paring and drying, and the rest made into cider or fed to the pigs and cows. But there was some grafted fruit in the County even then; a few farseeing men, Mr. Prescott, the Starrs, John Byrne and others, were making a business of orcharding, and this Association took up the work and carried it on until it stands to-day the leading industry in Kings. In those days all the hard apples raised were scarcely sufficient to supply the St. John and Halifax markets. They were packed in flour barrels costing 10 and 12 cents, a willow withe being nailed around inside to support the head, and another outside to fasten it in. My father's orchard produced 50 or 60 barrels of grafted fruit, the varieties being Baldwins, Spitz, Greenings, Russets, Bishop Pippins and two trees of New Town Pippins. I believe those trees are still bearing in Mr. Pineo's orchard, and the apples are the genuine New Town Pippin. Very few farmers then made any calculation on an income from fruit; whatever came from that source was considered a sort of donation from Providence, and if nothing was received it was counted no loss. The farmer of twenty years ago based all his calculations on his potatoe crop. Circumstances over which we had no control,—the abrogation of the reciprocity treaty, a duty on potatoes, increased production in the U. S., changed all this. Our American cousins having protected their own producers, as they had a perfect right to do, thereby spoiled the market for us, and our farmers were obliged to seek for some other

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crop upon which to depend for an income. At this crisis the advantages and profits of fruit growing were impressed upon our farmers by your Association and every effort made to introduce our apples into the world's markets, and the events of last season prove that your labor has been crowned with the most distinguished success. But trees that are in bearing now had to be planted then, and these were years of waiting and hard struggle for our farmers; they were equal to the occasion, and their patience and pluck have been rewarded. The hand of Providence can be clearly seen shaping our ends through the past years. What seemed like a great calamity in 1866, viewed in the light of to-day, is seen to be a blessing in disguise. By shutting our potatoes out of their markets our neighbors forced us to amend our system of farming by raising a greater variety of crops, and potatoes were relegated to their proper place. It had become known that the climate, soil, and protected position of this valley were especially well adapted to the production and perfection of apples and other hardy kinds of fruit, and the attention of our farmers was turned in this direction. Many young orchards were planted, and the old ones improved by pruning and grafting; under-draining, mulching, fertilizing, and careful culture took the place of the old neglect or slipshod treatment; the yield steadily increased—five, ten, a hundred fold, This Society sent exhibits to Exhibitions all over the world; a market was opened up in the great city of London, and reliable firms, undertook to handle our apples. Careful picking and packing and swift steamers, placed them in the market in good order, and the unsurpassed quality of Nova Scotia apples secured the highest prices; and the happy result of Yankee protection and Bluenose patience and pluck, was shown in the magnificent crop and stirring returns of the past season. After this long preamble, we come to the subject of our paper,—“Fruit Growing in Kings Co. in 1886.” I have sketched the beginning and growth of our orchards in Kings, to show that the great crop of last year was neither accidental nor exceptional, but governed by the law of cause and effect. Many, I might say most, of our farmers have become (thanks to this Association) skilled horticulturists, and given a certain number of trees and a certain number of years of careful culture, and, with God's blessing of fine weather, a certain number of barrels of apples will be gathered. In other words the splendid crop of 1886 was the certain result of years of labor, the labor of each successive year becoming

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more and more skilful and scientific, and consequently there is every reason to anticipate still better results in the future.

It is admitted by all that last season's crop was the largest and finest ever produced in this County, and the market was very satisfactory. The Real Estate Gazette places the figures at 70,000 barrels, of which 20,000 were Gravensteins. If we add to this estimate 30,000 barrels we shall still be on the safe side, and for these 100,000 barrels a net price of \$1.50 per barrel will come within the mark, making \$150,000 received by the fruit growers of Kings for the crop of 1886. How does this compare with the potatoe crop. In 1885, 230,000 bushels were shipped, and for 1886 we shall place the shipment at 300,000, and 30 cents a bushel gives \$90,000 to our farmers, or \$60,000 less than the orchard. We must also credit the orchard with 20 cents a barrel, or \$20,000, paid the coopers in the County, bringing the total receipts up to \$170,000. Let us add the \$90,000 for potatoes, and we have \$260,000 cash received by our farmers for only two of their crops. And this money has not gone into the pockets of the rich. Every household in the County has received a share; for every acre of upland will raise potatoes, and as fine apples as ever the sun shone on. There is scarcely a homestead now without its apple trees growing around it, and they grow and bear fine fruit whether planted on the sandy plains of Aylesford, the light sandy loam of West Cornwallis, the richer, deeper loam of East Cornwallis and Horton, or the clayey soil of Lower Horton; and they grow and yield equally well in the Western part of the County, where the sun heats up the sandy soil, and there is not a breath from the salt water, or along the banks of the Cornwallis and Avon Rivers, and on the shores of the Basin of Minas, exposed to the cool salty wind from the water. I believe, however, the fruit ripens and colors up earlier in the season in the Western part of the County. The buyer for Austin Kimball & Co. told me that Henry Shaw, of Berwick, beat the Province in Gravensteins, and Charles Borden, Hamilton's corner, carried off the palm for Ribstons. Now, I know that Gravensteins in Lower Horton were picked too early last year, and many of them were not well colored, but Ribstons, Kings, Blenheims and other varieties picked later, were as fine as any grown in the County. The locality seemed to make no difference in the yield, which was immense, exceeding the most extravagant estimates; every tree that could bear was laden with fruit, and that of the finest quality. I cannot recall

a year when so many limbs in the orchards were propped up or broken down by the sheer weight of the fruit on them. In West Cornwallis, within an area of one mile from Somerset corner, 30 orchards produced 4,180 barrels, the number for each orchard ranging from 50 to 320 barrels. From Berwick Station there will have been shipped by the close of the season, 20,000 barrels, exceeding by 8,000 the shipment of any previous year. These apples were gathered within a radius of three miles, including Somerset. Coming East, it is more difficult to obtain figures, as shipments are made at different stations and from the ports of Canning, Port Williams and Wolfville. I have figures sufficiently accurate, however, to warrant the statement that fully 80,000 barrels were shipped from the Stations East of Berwick and the three Ports mentioned. Messrs. Rand, Chase, Austin Kimball & Co., shipped by water to New York, 30,000, some of which were re-shipped to London. A few thousand were shipped from Canning to Havana. Leander Rand, M. P. P., shipped 1,200 barrels of Gravensteins to New York, and C. F. Eaton, a cargo to the same place from the Pickets. The largest orchards in the County are in Cornwallis and Horton. The orchard of the late D. R. Eaton, now owned by Mr. Harris, produces 1,000 barrels; the Judson Harris orchard, on Belcher St., 700 or 800; the old Starr orchard, Town Plot, 5 or 600; R. W. Starr's not quite as many more; the Dwight DeWolf orchard here in Wolfville, part of it now owned by Major Cusack, 800 barrels, besides 300 or 400 bushels of plums and pears, and these are only a few selected at random. In my own locality, within a radius of little more than a mile from Grand Pré corner, 30 orchards produced 4,000 barrels, the number for each running from 50 to 400 barrels. At my place there is a quarter acre of garden, and on half of this are 15 trees, half of which were cut away and grafted in the Spring, and from these I picked 50 barrels, among them fifteen barrels of Blenheims and Five Kings. The trees are 22 years old, and all but two of them have been growing in green sward for fifteen years. Those two are in the midst of the highly cultivated and manured garden plot, but they bore no more and no better apples than their neighbors in the grass. I have always pastured or mown the grass, but top dress both Spring and Autumn and leave five or six inches of aftermath. A. McN. Patterson, Horton Landing, raised 50 barrels of Gravensteins from a quarter of an acre, which at \$1.50 means \$300 per acre. In two different orchards in Grand Pré, single

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Gravenstein and Baldwin trees produce 14 barrels of marketable apples. Over in Canard I was told that ten Gravenstein trees in Leander Rands orchard produced 120 barrels, and twelve trees of the same kind in R. M. Rands orchard, the same number. The foregoing is sufficient to illustrate the enormous yield of 1886, and to show how thickly the County is studded with orchards; but only a part appears here after all, for there are almost as many more young orchards that have not yet come into bearing. It is wonderful how many trees have been planted during the past five years. Our people seem to have become fully alive to the magnificent prospects that await the horticulturist in this valley, and are beginning to take advantage of these privileges in real earnest. In my neighborhood, as I drive around, I can see thrifty young orchards growing on every side. Judge Weatherbe's orchard covers a whole farm, with rows of trees half a mile in length, and twenty years hence its yield will be from 5,000 to 10,000 barrels. Just across the Gaspereau River, opposite this farm, the Mitchell and Vaughan brothers have acres of young trees growing, and we find more on either hand as we drive up the mountain to its very summit, and the same through the valley East or West, and every one of these men is a practical horticulturist, who does his own pruning and grafting, raises the greater part of his trees in his own nursery, and gives those trees most careful and intelligent culture. Albert Mitchell uses 15 tons of salt hay yearly for mulching, and marsh mud is used freely as a fertilizer. C. M. Vaughan in addition to his apples has 200 plum trees nicely started, and others intend to combine plum culture with the apples, and this is only a corner of the ground work that is being done through the whole of our county. The nursery business is also taking root at home. Alex. Jones has quite a large one in Grand Pré from which he has already sold a number of trees; there is Smith's in Church St., two in Kentville, and a number in Cornwallis. This paper is already too long, but it will not be complete without a word about varieties and markets. The Gravenstein has won its way by sheer merit until it stands King of apples in Kings. A plate of Kings Co. Gravensteins is a pretty dish to set before a King. Its large size, perfect shape, smooth, richly-colored skin, and crisp, pure-grained flesh, as juicy as an orange, stamp it a royal fruit; while the ease with which the tree is made to grow in any and every soil and locality, its rapid growth, clean healthy look, strong limbs, large size and unsurpassed fruitfulness, make it the

poor man's tree as well the rich. A great many varieties are raised, but Gravensteins were a fifth of the whole crop. It doesn't command the highest price (\$1.50 to \$2); but the enormous yield and the uniform size and beauty of the apples make it the most profitable apple grown. It is destined to be the apple of the future, and will crowd out many other varieties. The buyer of Austin, Kimball & Co. pronounce it superior to any Gravenstein grown in the States, and said there was a market for all we could raise in New York. Next in order of merit come Ribstons, Kings, Blenheims and Baldwins. The first are shy bearers, but brought the highest price in the London market. Our Baldwins brought only 10/ 6d., 12/ 6d., and 14/ 6d. for x, xx, xxx, but the trees are hardy, rapid growers, adapt themselves to any soil or place, and are only second to the Gravenstein in the yield, while the apples will hang on until they freeze and are improved by the frost and will keep sound in a cool place till April, and bear more rough handling without injury than any other apple grown. I believe they are profitable; the quantity makes up for the low price. Two other varieties I would add to these—Golden Russet and Nonpareil. Far too many varieties are raised—Spitz, Pearmain, Vandeveres, Greenings, Ben Davis, Ministers, all sold low in London, and shippers are urged to send only standard varieties and no odd barrels of outside sorts. The markets were excellent. For the first time in our history buyers from New York and Montreal came here for our apples, and some of those, I have a shrewd suspicion, were re-shipped to London as American apples. Prices paid were \$1.50 for Gravensteins, \$2.00 for Ribstons, Kings and Blenheims; and for other varieties \$1.50 and \$1.25 for No. 1 and 2. Prices in London for first shipments were, for Gravensteins, 15/; Ribston, 23/; Blenheims, 20/; Kings, 18/; Russets, 18/; Pomme Gris, 17/; Baldwins, 13/; Spitz, 14/; later a hundred barrels of different sorts averaged \$1.70 to \$1.75. Ministers, ex B. Queen, sold Dec. 23, didn't pay expenses. We have had sufficient experience now to teach us the suitable and profitable varieties to ship, and these should be cultivated, for London is *the* market for our apples, a fair price being obtained even when thousands of barrels are thrown into the market from the world over. The opening of this great market to our fruit has solved the problem of profitable agriculture in this County and the whole valley; and in ten years I predict that instead of shipping 100,000 barrels, 500,000 will be shipped from Kings, and in twenty years the number will reach

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1,000,000. And this is not all, Mr. President, the cultivation of small fruits has proved a very successful and profitable business in the hands of some of our farmers, and is rapidly assuming large proportions. I have only space to give one instance among the many that might be mentioned. One of our farmers, in 1885, gathered from one acre 8,000 quarts of strawberries and 300 quarts of gooseberries and currants, which netted \$664 for the acre, and the same patch realized \$648 in 1886. A hundred can do this as well as one, and, Sir, do not the above facts, hastily gathered and incomplete as they are, prove that a comfortable home and modest income can be now had at home by our young men, and girls as well, who go away to the "States" to seek their fortune? After a year of such splendid prosperity, should we as a people grumble and complain and talk of ruin? It seems to me that the history of the past twenty years plainly teaches that the abrogation of the reciprocity treaty in 1866 was a blessing to us. We were thrown on our own resources, and obliged to develop the hidden possibilities and best resources of our Country, and in consequence, we occupy to-day a more dignified, independent and prosperous position than we ever could have gained had we remained in a state of commercial dependence upon a foreign nation. We were obliged to seek new channels for our trade, and in exchange for their markets we have obtained a place in the greatest market in the world, in the dear old mother land. By shutting us out of their markets they only helped to drive us *home* to old England, and to strengthen the ties which bind Great and Greater Britain so closely together. It matters not whether we ever again have reciprocal trade with the United States or not, the old trade relations can never be re-established. Confederation has welded the Provinces together, and settled forever the possibility of annexation. The Indian and Colonial Exhibition has drawn Great Britain and her Colonies into a nearer relationship and a better mutual understanding in one year, than a decade of ordinary events could have done, and the result will be an immense increase of trade between England and her Colonies, and between the Colonies themselves, with the coming result of Imperial Federation in the near future. Patriotism is only a sentiment, Mr. President, but it is stronger than despotism, and has moved men and nations to deeds of heroism that shall live forever. I pity an exile from home and country, but I pity more the man who has no true patriotism in his heart. I believe there is a great future in store for

this "Canada of Ours," and that Nova Scotia will have her just share of that future greatness and prosperity. Better than Independence, better than Annexation, will be a place in that great federation of Britain and her Colonies, which forms the grandest Empire the world has ever seen ; with a close commercial union with 330,000,000 people, independent, yet subjects of and loyal to our beloved Queen, joined with the mother land and our sister Colonies for purposes of mutual protection and defence, what grand possibilities present themselves ! Is this " consummation devoutly to be wished by all loyal British subjects, possible ? Ask your Secretary and Professors Maccoun and Saunders, our distinguished fellow countrymen here from Ontario, who have seen what they have at the Colinderies in London, if it is possible. I believe that is the destiny which God has designed for all the English speaking peoples in the world, and thus shall be brought about, in the words of a scholarly writer in the Herald, " the emancipation of humanity through the genius of Britain's laws, Britain's religion, and Britain's freedom."

H. CHIPMAN.

Grand Pre, January 19th, 1886.

PROFESSOR HIGGINS.—We ought to be very grateful to Dr. Chipman for his valuable paper. I have some young trees bearing "Golden Russetts," and I find that the fruit shrivels up. I wish to know whether or not that is a characteristic of that variety of fruit ?

R. W. STARR.—Those specimens on the table are not fair samples of that fruit. If Prof. Higgins would allow his apples to remain on the tree till they pick easily, then place them in tight barrels, to protect them from the air, he would find that they would keep very well.

PROF. HIGGINS.—I gather them at the same time that I pick the Baldwins and Nonpariels. They are placed loose in a box and subjected to the same treatment as the other varieties.

R. W. STARR.—All Russetts are more liable to shrivel from dry atmosphere than are the bright skin varieties.

PROF. HIGGINS.—I have kept apples in my cellar for years. I have the cellar partitioned off by an air tight division. The question is this : if I can keep Tompkins till the end of February, and Baldwins till the first of June, and the Russett not longer than the first of

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January, without feeling it yield under my fingers, should I not cease to grow this latter variety?

REV. MR. AXFORD.—I generally keep my apples in bins; usually two kinds, separated by a piece of paper, in one bin. My experience has shown that where covered with paper, the fruit was firm. I had a bin of Nonpariels covered with an old carpet, and around the edges where the air had entered the apples were soft and inferior in quality, while those nearer the centre and where the air was excluded, were firm.

Adjourned till 7 o'clock, P. M.

EVENING SESSION.

QUESTIONS.

What is the quality of the "Fallwater" apple?

T. E. SMITH.—It is a very vigorous grower and a fair bearer; sells well in the English market on account of its color.

THE SECRETARY.—This apple takes well in London on account of its large size and fine appearance. It is not a high flavored variety, but comes into bearing early, and is a strong and vigorous grower. (Samples shown and cut.)

PROF. SMITH.—Is this a fair representative in flavor?

THE SECRETARY.—No, it appears to have been tainted by something.

What success has attended the use of Infusorial Earth in the preservation of fruit?

THE SECRETARY.—My experience during the last season will enable me to answer that. While in London we received several cases of fruit and melons, packed in this earth, and I must say it was not a success. The products so packed did not keep any better than if packed in any other substance; besides making the unpacking of the fruit a very serious matter, as every apple had to be washed in order to get the earth off. Many of the specimens, sound when packed, were spotted and decayed a month afterwards.

W. H. BLANCHARD.—I happened to be present when two of the boxes to which the Secretary has reference were opened, and I can say that the difficulty of removing the earth from the fruit was very great indeed. Unless it can be placed between the outer and inner

boxes, and kept separate from the fruit, it should not be used. I was very sorry to observe such a result, because if the object the promoters had in view had been accomplished, it would have proved an excellent thing, and an important element in the shipment of fruit.

PROFESSOR SAUNDERS.—I have had experience with earth in the preservation of flowers. It was supposed that by encasing a bouquet in a double box it could be sent across the Atlantic, and be received on the other side in all its original freshness. This was done, and the bouquet was to be presented to Her Majesty. Well, upon opening the case, there was only one flower that you could recognize at all, and that was a rosebud, and the leaves were as black as your hat. The theory advanced to sustain the reputation of this earth was that it was composed of a multitude of little cells or hollow chambers, which excluded the air. I subjected a portion of the infusorial earth to a test under the high power of a microscope, and found the cells disconnected, and many of them broken, thus making the earth diathermanous. Therefore the claims for the value of the earth fall to the ground, and are shown to be without foundation. As the subject has been given considerable prominence, by discussion and otherwise, I think it is but just and right that this association should give to the people the results of these tests.

What insects have been most injurious during the past year?

PROF. FLETCHER.—I may say that question was handed in by me. I am desirous of finding out if there are any insects which it is necessary to speak about particularly in my address. As the time allotted for the discussion of this subject is very limited, it will be necessary for me to economise words in my address to you to-morrow.

R. W. STARR.—The canker worm has been the most injurious this last year. This village has been pestered with it for years, but where a persistent effort has been adopted, it has been pretty well killed off. This fall some orchards have been alive with this insect. The only other insect that has caused much trouble in my section of the country is the Fall web worm, and where there are large trees it is difficult to destroy them. I think spraying is an effectual remedy.

PROF. FLETCHER.—The object of my question was to bring out the kinds most difficult to deal with. Those mentioned by Mr. Starr are easily subdued.

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R. W. STARR.—The squash bug and cabbage worm, are not perhaps as well understood as they should be.

T. E. SMITH.—The apple twig borer and the apple tree borer have caused a great deal of trouble.

PRESIDENT HART.—A man at Pictou washed his trees shortly after the blossom had formed, with strong pickle or brine, and he found it a perfect cure for these insects.

PROF. SAUNDERS.—Was it brine or fish pickle?

PRESIDENT HART.—Brine, and not fish pickle.

T. H. PARKER.—The apple twig borer is very troublesome in Annapolis County, and I know of an orchard in which 8 or 10 trees were killed last year. I have here a specimen of the damage done by this insect.

What has been found the best means of destroying the "bark louse" on apple trees?

SECRETARY.—MR. JOHN A. DAWSON of Pictou, writes that he has found salt and water, (one pint of salt, to two gallons water,) a most effective remedy for these pests. One application of this solution, with a paint brush, about the 10th of June, has been found quite sufficient. Care must be taken not to wet the leaves, as the brine will destroy them. Mr. Dawson assures me that this remedy may be relied upon. It is a very simple matter to give it a trial, but I think the success of this, as well as of other remedies, will largely depend upon being used at the proper time.

The following paper by PROF. D. P. PENHALLOW of McGill College, Montreal, was read by PROF. TUFTS :

THE SPOT DISEASE OF THE FAMEUSE.

Within a few years the attention of fruit growers has more forcibly than ever been directed to a consideration of those diseases, which not only affect the produce of their orchards, but in some cases threaten to completely destroy the value of their trees. Such a disaster would produce serious effects in two directions. The first effect is to render the most attractive field of labor no longer a source of profitable livelihood, while the constantly enhancing value of the fruit, continually tends towards placing one of the most benefitting and enticing of foods, among the class of expensive luxuries, and

thus beyond the reach of the majority. The general tendency at the present time is towards the cheapening of fruit, until it is within the means of all classes of people, who thus come to look upon it as a necessity rather than a luxury. There is also a strong tendency toward the more general consumption of fruit of all kinds, and this increasing demand is so great as to render fruit culture a profitable industry in spite of low prices, and is among the most encouraging signs of the day. People have now become so accustomed to the every day use of fruits, a luxury fifteen years ago, that any cause which tends in any way to curtail these beneficial enjoyments, must be looked upon with serious consideration. The history of the peach industry in New Jersey and Delaware will illustrate what I have said. While in some places and in particular localities the difficulty may appear to be a growing one, this does not hold true in all cases of orchard disease; since some of the maladies known to us now have been of long standing, and apparently as powerful in their operation one hundred years ago as to-day. Our average fruit grower of to-day makes note of many facts which his father or grandfather would have ignored. A more critical knowledge, combined with sharp competition in the market, makes the horticulturist keenly alive to all that affects his interests. Thus we see that what in some instances may pass for an increase in the operation of a given disease may, after all, be only the result of better and more systematic observation. Be this as it may, however the fact confronts us most seriously that there are diseases now ravaging our orchards which demand prompt and vigorous measures, if many of our choice varieties are to be saved to those districts, where they have been grown profitably up to the present time.

Of all the diseases now known, that which claims our special attention is the so-called spot disease of the Fameuse apple. Within the last two years this disease has assumed such proportions in the vicinity of Montreal as to render it a serious question if the Fameuse apple will not become wholly worthless as a market fruit. To such an extent have the orchards been affected that I have yet to learn of one that was wholly exempt. In most cases entire orchards have been so completely involved as to render the fruit wholly unmarketable; or marketable only at a very serious sacrifice. In three instances orchards were comparatively exempt, and those were all situated on the Sherbrook Street level, and more or less completely sheltered

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from the prevailing winds. At the time of the last harvest, Fameuse apples of fine quality commanded five dollars per barrel, while those which were only a little spotted could be obtained at two dollars per barrel, the price ranging downward, according to the degree of injury. One or two estimates will assist us in forming an idea of the loss incurred from this cause. The orchard of Mr. R. W. Shepherd, Jr., of Como, has a bearing capacity of one hundred barrels. Owing to the spot, however, which affected the entire orchard, the apples were sold for one dollar and fifty cents per barrel; and if we deduct a reasonable percentage for seconds and thirds, and also allow for unusual prices as determined by scarcity, there would, even then, remain a margin of loss of a most serious nature.

Mr. C. GIBB informs me that his orchard, which is more exposed to the action of the prevailing winds, was more seriously affected than any other orchard in his vicinity; so serious were the effects in his case that his apples brought on an average only twenty-five cents per bushel. If free from spot, the same apples would have sold for seventy-five cents per bushel, or in an ordinary year, for at least fifty cents per bushel. Out of fifteen barrels he had

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The effect of the disease in diminishing the size of the fruit is most marked. Mr. Gibb states that the diseased apples were to the normal apples in point of size as 1 to 2 or 1 to 3; and since the direct loss is at least 50 per cent., the actual loss involved in his orchard is represented by the ratio 1 to 4 or 1 to 6.

The disease is by no means a recent one, nor is it confined to this side of the Atlantic. The most recent contribution, to our knowledge of the subject, was published by Prof. Trelease, in 1883, in which the active cause of the disorder is illustrated. As indicative of the wide knowledge of this disorder, Prof. Trelease mentions the following varieties which have suffered in Wisconsin and vicinity:—Fameuse, Walbridge, Late Strawberry, Haas, Northern Spy, Winesap, Sweet Pear, Rawels Janet, Roman Stripe, Fall Stripe, McMahan's White, Ben Davis, Talman Sweet Pewaukee, Tetofsky, Plumbs Cider, Duchess, Alexander, Golden Russetts, Wealthy, Red Astrachan,

Bethlemite, Fall Orange, St. Lawrence, Coles [Quince, Lowell, Baldwin, Early Harvest, Rhode Island Greening, these are however not all subject to the disorder in an equal degree. The Fameuse are considered the most susceptible, while it is noticeable that the Russians are, on the whole, comparatively exempt. This fact is shown by statistics to the effect that in one locality the different varieties were subject to disease in the following proportions:—Fameuse and Walbridge, 99 per cent.; Haas, 40 per cent.; Plums Cider, 20 per cent.; Pewaukee, 10 per cent.; Tetofsky, 5-10 per cent.; Duchess somewhat less than 5 per cent. The disease appears in the form of black spots, which develop on the surface of the fruit. The spots are often less than one-eighth of an inch in diameter, increasing to three-eighth or one-half inch. When they increase much in size, and more particularly when they become more numerous, they often become confluent, and thus form one spot, which may cover the greater part of the apple. The spots are of a dull black, with a whitish border, caused by the dead and ruptured epidermis in which the parasite grows. As the disease progresses the scab often cracks, and exposes a brown layer of cork, which forms beneath as a healing tissue, in an evident attempt of nature to throw off the parasite. The spots are directly caused by the growth of a fungus, known technically as the *fusicladium dentriticum* wall, which thus becomes the active agent in producing the disease as we generally see it. The observations of Prof. Trelease show that the fungus does not penetrate the fruit deeply. It appears rather to be confined to the superficial layers in the immediate vicinity of the epidermis, to which tissue it is with few exceptions confined. That it indirectly affects the other parts of the structure is apparent in the bitterness of the parts lying just below the scab, and possibly in the reduced size of the fruit also, though this may arise from other causes. Wherever it operates it sooner or later determines the centre, from which decay rapidly extends into the surrounding structure, as may readily be seen by an inspection of the apples at this season.

Leaf blight, due to the action of the same fungus, upon the leaves and young branches, often accompanies the scab on the fruit. While a recognition of this disease is not difficult, so far as the parasite immediately concerned as an active agent is involved, it is not equally easy to suggest efficient methods of treatment. The principal methods suggested involve, first, judicious pruning. This is to be regarded as a

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wise measure in any disease where a parasite is largely involved, since it not only removes, to a certain extent, the active agent, but it removes structure which is in process of decay, and thus offers a constant menace to the sounder parts. Then secondly, the local application of fungicides is made under the impression that their destruction of the Parasite must thus remove the disease. This is true however in a very limited sense only, since if the fungus establishes its hold only through the operation of previous causes and conditions, the removal of the parasite can not effect any permanent measure of relief. This can only be secured by attacking those conditions, which are the primary cause. For the purposes above indicated sulphur kerosene emulsion, and caustic potash have all been used, but, so far as we are aware, no lasting benefit has resulted. The remedy is but a temporary one at best, and if the agent employed like alkali, be of a very destructive nature, it will not only kill the parasite but be liable to exercise such an injurious effect upon the tree as to further invite the growth of the fungoid parasites with their attendant decay. While we by no means wholly condemn the use of antiseptics, but would rather encourage their judicious use, we would at the same time feel disposed to look at the nutrition of the plant as offering a channel through which disease is invited to enter the system, and through which it may be controlled, or at least influenced. Experiments with other fruits, based upon those considerations, have already shown that a condition of health may be wholly independent of the growth of fungi, while the results already obtained are of such great economic importance, as to make this a most hopeful direction for further enquiry. The question naturally arises in this connection is the disease contagious? This is a query which cannot be readily answered, since there are at present no facts which prove that it is or is not contagious, beyond our general knowledge relative to the ready dispersion of its spores, and the possibility of their development, whenever suitable conditions are encountered. The spores from their diminutive size are easily suspended in the air, and find in the wind a ready vehicle for their distribution over long distances, gradually to settle down and grow with characteristically destructive energy whenever they find suitable conditions of warmth and moisture, and the plants especially adapted to their requirements. It is also a well known fact as characterising the growth of all fungi, that usual conditions of warmth and moisture

are specially favorable to their development; hence it is frequently observed that diseases of this character are particularly prevalent during muggy weather, especially if this follow a period of low temperature and slow growth. From the preceding statement one fact is conspicuous, viz: that our knowledge of such diseases is altogether too limited, and that we at the present time with one or two exceptions, know of no efficient mode of treatment. That such disorders may be brought under control eventually, however, is amply illustrated in the Peach Industry of New Jersey. The ravages of the yellows, so prevalent and disastrous ten years ago, are now no longer looked upon with the same degree of alarm. Orchardists feel that they have the means of controlling its operation within their own hands. The same mode of treatment however will not necessarily apply to other diseases, but this one fact is most encouraging, and permits us to hope and believe that other diseases will eventually be brought under control. (Applause.)

THE SECRETARY.—Prof. Penhallow wishing to attend a meeting of the Montreal Horticultural Society, in Granby, P. Q. this week, was unable to be present at our meeting to-day; a fact very much to be regretted.

PROF. SAUNDERS.—I dislike to enter into the discussion of a paper in the absence of its author. As the use of muriate of potash in manures is claimed, in the United States, as a remedy for peach yellows, so it appears to me, some such practice might cure the spot on the apple. I am not quite clear however that the use of muriate of potash is considered as a specific by peach growers; there seems to be a great difference of opinion with regard to it. The paper goes a little too far in discouraging the use of antiseptics or anti-fungoid remedies applied externally. It can scarcely be said that this fungus on the apple is due to diminished nutrition in the tree; for it is not at all probable that all the trees in one district would become diminished in vigor in one year. It seems to me that it resolves into a local skin disease, which prevails where the conditions of the atmosphere are such as to favor its attachment to the fruit. If we can apply anything to the skin on the fruit that will prevent the germination of the spores of this disease, we will solve the difficulty, but the "if" must come in. The loss to the country from the existence of this trouble is enormous. Two or three years ago I suggested the use

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of sulphur stirred in water, in the proportion of one pound to one pailful of water; also a solution made from boiling sulphur and lime together.

PROF. FLETCHER.—I, too, regret that Prof. Penhallow is not present. The black spot disease belongs to one of two large classes of fungi, one of which permeates the whole body of the fruit, the other is a skin disease, and affects the surface only. This belongs to the latter division, and commences in some slight injury to the skin. You have, no doubt, noticed that sometimes the skin bursts, thus affording an opportunity for the spores of the disease to increase to the detriment of the apple. We should treat it with some antiseptic, and also use some means to remove the germs. We must give up saying that we cannot destroy it. I would suggest the use of carbolic acid, and the destruction of all the leaves affected.

PROF. MACOUN.—I know at least 700 species of fungi, and I have seen them on fruit, dead wood and living leaves; and if I had been Prof. Fletcher I would have told you to burn down the whole orchard, leaves, fruit trees and all. There is not a tree in Canada which has not 3 or 4 species of fungi on it.

PROFESSOR COLDWELL.—These spores find a lodgment on the apple. Why is it that they do not rest on more than one spot on the fruit?

PRESIDENT HART.—I think it falls in different places. I would ask if it has been known to affect the leaves in Nova Scotia.

PROFESSOR SAUNDERS.—When it attacks the leaf it is not very conspicuous, and in some cases it is scarcely seen at all. It will generally be found on the upper side of the leaf, but it often attacks both sides.

PROFESSOR SMITH.—Professor Griffiths, F. R. S., of England, has by a series of experiments, proved that sulphate of iron, in a weak solution, will destroy the fungus which causes the potato rot; and the same solution applied to the higher plants will not injure the plants at all, and will probably be of a great benefit. As to whether this solution would have a like effect on any other form of fungus growth I cannot say, but I would suggest a trial of it.

PROFESSOR SAUNDERS.—I am very glad that Prof. Smith has mentioned this sulphate of iron. Mr. Demsey once won a large number of prizes at an exhibition for pears, and I asked him what

was the secret of his success, when he replied that he watered his trees with a solution of iron, and made his fruit to order. It is used in large quantities of one quarter of a pound to a pail full of water.

PROFESSOR SMITH.—I might say that the results of experiments on this subject will be published in the report to be issued by our school at Truro.

MR. GEO. V. RAND.—A solution of sal soda, in the proportion of one quarter of a pound to a gallon of water, can be used with impunity, both on the trees and leaves. Lime water made from a few grains to a pint of water, is also a very useful preparation. It being caustic would have a serious effect on the tree if used in too strong a solution. A little lime sprinkled on the ground will act as a manure. The best form of potash, to my mind, is wood ashes.

MR. E. DICKIE.—I have had some experience with the washing-soda spoken of by Mr. Rand, and I think it no better than water.

MR. BORDEN.—In Antigonish a man had a few trees growing a few yards apart, and on one tree, at fruit picking time, the apples were spotted, while on the others there were no signs of spots. The trees were of the same variety.

PRESIDENT HART.—Can you tell us whether the trees came into blossom at the same time?

MR. BORDEN.—No, I cannot.

REV. MR. AXFORD.—I had some trees heavily laden with spotted fruit; I sprinkled ground bone around the tree, and the following year I had a good crop without a spot on them.

REV. MR. DAY.—This is a question which interests us all. There is an apple that stands second in the English market, viz: King of Tompkins, but it is subject to this black spot. The question is shall we graft it out? We wish to learn whether there is a remedy or not. The President has stated that he saw, at Cape Sable or thereabout, a famous tree which bore fruit with no appearance of the spot. Now why was it that that tree was not troubled in this way? Was it the salt in the air and its effects on the skin of the fruit that prevented the growth of fungus? If that be the fact I think we should apply brine to our trees.

PROF. FLETCHER.—Last year in the discussion concerning black knot on the plum tree, some gentleman stated that he had applied

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brine to his trees, and the black knot was destroyed, and I have since wondered why the fungus was not grown on the seaboard. Notwithstanding all that, it is not safe to argue that salt will prove a satisfactory cure, but it is certainly worth experimenting with. The coffee trees in Fiji are troubled with a fungus similar to the one under discussion. It has been absolutely cured by the hanging of small tins, filled with carbolic acid in the trees.

MR. RAND.—I think I have heard of persons losing their trees from the use of carbolic acid.

PROF. FLETCHER.—Of course it is not safe to use any of these remedies without first ascertaining in what proportion they are beneficial. Sulphur can be used with much greater carelessness, because being insoluble in water it will not hurt the plants.

MR. A. S. EATON.—I had 20 Gravenstein trees, some treated with marsh mud and others not. Those not treated were well laden with fruit, but it was spotted with this disease, while those to which the mud had been applied were free from any spot.

PRESIDENT HART.—Did the trees flower at the same time?

MR. EATON.—I cannot tell you. The trees have only been bearing five or six years.

MR. R. W. STARR.—My own experience has been that where barn-yard manure is applied it induces a too luxuriant growth to produce healthy wood and the fungus easily finds a lodgment there. I would ask some information concerning copperas. We all know that iron in the form of scales, applied to unhealthy trees, will in course of time produce fine healthy trees and excellent fruit. Is the good result due to the iron or the sulphur?

PROF. SMITH.—I would not say that it was due to either the iron or sulphur. It is just possible that the beneficial effects are produced from the fact that this solution contains both the iron and the sulphur, and neither may answer in a single state.

PROFESSOR SAUNDERS.—I am reminded of a theory of a gentleman who applied charcoal to his pear trees, and for 19 years he obtained fine fruit, while his neighbors were never free from the blight; but on the 20th year his trees lost confidence in him, and we never heard any more of the remedy after that.

MR. WHITMAN.—I purchased three plum trees at \$1 each; two died and the third one lived. I dug in around the roots two quarts of salt, but the tree has never borne anything yet. With reference to dead carcasses as a manure, I may say that I had a fine sheep which died; I cut it up and put it around the roots of two Northern Spy trees and they have borne ever since. (Laughter.)

PROFESSOR MACOUN.—It is pretty late, and I am a terrible man to talk, but I shall not take up much of your time. The whole tendency of this discussion goes to show that vigorous vitality in a tree lessens the power of disease. It may be very important that chemists should examine the soil of this valley, to ascertain whether it contains much iron; and if that fact be established we may have the reason why you have such grand crops of fruit. The doctors charge the human system with iron to strengthen it, why should we not apply it to all vegetable life as well? I know little of your country and you know much, yet I am going to talk to you as if I knew a great deal about it. I do this simply because I believe in telling you what I think, and if you find my observations are not in accord with what you know to be truth, then the best thing is to enlighten me; on the other hand, should I make statements which you can believe, then I ask you to take them away with you to your homes.

I had the honor of being associated with your secretary, Mr. Starr, on the other side of the water, and we had a great deal of talking to do. Mr. Starr would talk about Canadian fruits from 10 in the morning till 10 at night, without any apparent desire to stop. He spoke not of Nova Scotia only, but of Canada. At the exhibition there were 45 species of Canadian trees, and it fell to my lot to speak of Canada. I told the English people that Nova Scotia was a great country—great, not because of its great agricultural facilities, but because it is well known in England as a great mineral country. I heard a gentleman say that there was not a tract of country in America that contained more minerals, and yet we were not aware of it. I showed them that you had a great untouched forest, and asked them why they hunted all over the world for woods that we Canadians could supply. I told them that we could supply them with everything; and I noticed some counterances that did not appear to believe me. It was pointed out to them that they were too conservative in their views in believing that we had only the 3 or 4 kinds which we supplied, and that we could supply dozens of others. I

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read a paper before the Carriage Builders' Institute, and referred to the fact that Canadians had been in the habit of shipping square timber, such as oak, ash, hickory, pine, etc., and I said, you tell me that our timber is not as good as yours. I say it is, and I will prove it. They said to come and see it for myself, and I said it was poor, miserable stuff, the man who sent it to you was following in the tracks of his forefathers, and that the large evergreen trees which we ship have the best of the wood hewn off. We send the poorest part of the tree to England, and we expect them to accept it as first-class material. The small trees which you in Nova Scotia cut down and leave in the woods because they will not split, are the very ones required by Englishmen, and trees from one foot to 18 inches in diameter should not be allowed to go to waste in this manner. I showed them that if we cut our lumber into the sizes required by them that we would be getting rid of a large quantity of wood which we consider of very little value. The carriage builders stated that they wanted ash, hickory, etc., and Mr. DeWolfe, of Halifax, told them that we had no hickory in Canada. I informed them that Mr. DeWolfe was from Nova Scotia and had not been in Western Canada to any great extent, and consequently did not know anything about it. From the census tables I was able to prove to them that Ontario sent over to England 177,000 feet of hickory in the year 1881. Notwithstanding that Mr. DeWolfe purchased his hickory from North Carolina, and made wheels from it, and obtained orders from England for the product of his labor, I showed them that Canadian hickory was far better than that imported from North Carolina, from the fact that wood grown in northern countries is acknowledged to be superior to that grown in a more southern district. The woods of your forests, which are at present considered worthless, will, if cut down and shipped, prove a valuable and productive industry. You have miles upon miles of young forest which you no doubt consider as an eye sore, but I wish to tell you that it is all of merchantable value. The birch can be manufactured into barrel hoops, and I may say that there is nothing like ash for almost any purpose whatever, and especially in the construction of agricultural implements. Englishmen seem to know nothing of black ash at all; and I intimated to them that they were using white ash for black, and they were not aware of it. (Laughter.) It is prized very highly by English joiners for panelling purposes. We exhibited doors made of birch with panels of black

ash, and others again with panels of black ash and cherry intermixed. Some of them were very much admired. They require the woods dried as we dry them here, and shipped to them in the forms desired. We should plant trees that will prove of commercial value in the future, and not allow our descendants to accuse us of neglecting such an important industry. Small ash trees make better wood than do the large ones. You have ash, oak, beech and maple, but there are varieties which we do not at present cultivate, such as the walnut and the butternut. I am acquainted with the characteristics of every tree in the Dominion of Canada, and through the medium of these trees I can determine whether the soil be dry or otherwise, because certain species grow in certain soils. When the Acadians first came to this country it was all covered with a dense forest, and in time the wood was cut away and it was found that apples would grow. The North Mountain is a grand protection to the fruit growing industry of this valley, and without it apples would not be heard of here. The Saskatoon berry grows 500 miles north of Calgary, and I am not surprised to hear gentlemen say that plums grow in Cape Breton because the same air floats over Cape Breton that you have here. Variations in the heat account for failure of fruits in one section of country, which are a success in another section. The effect of cutting away the forest in Nova Scotia is directly opposite to that in Ontario. There moisture is secured by the existence of trees, while here the absence of trees allows the air to become wet and cold. Tamarac requires moist soil, so does the Balsam; then there is the Spruce and the White Birch. I noticed these trees growing on the banks and slopes as I came to Nova Scotia, proving to me that your soil was damp, and by the system of drainage followed out you could be successful in fruit culture; you require more under-drainage, and then you will have less of the black spot. We can learn a valuable lesson from England in the matter of wind breaks. There every farm is bordered with trees, and when a storm comes along its destructive effects are wholly overcome and valuable property protected. When you go into the field in the spring you will notice the grass near a clump of trees will be quite green, while that in a more distant locality and away from the trees will not have the first appearance of life. Now, why is this? It is not because it has received any more sun heat than the other, but because it has been protected from the cold wind by means of these trees. The Canadian North-West will become a

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great country when trees are planted to afford sufficient protection. Trees in this valley do not live so long now as they did 50 years ago ; this result is brought about by changes in the atmosphere and lack of nutriment in the soil. The leaves of a tree are its lungs, and if they do not get proper nourishment from the roots below, the whole tree becomes weakened and its arterial sap is disorganized, and loss of vitality is the result. My remedy for many of these evils is draining, and you need not expect to raise a good crop in a cold wet soil. When land is properly drained double the crop will be taken off, in comparison to what is now taken, and soil that now will not grow wheat will then produce a good harvest. Then I would strongly recommend the planting of forests on rough and stony ground ; it should be cultivated as much as you now cultivate your orchards. If there are not enough small trees growing around the fence corners then I say you should plant more, and see that they are properly cared for. I am noted for modesty, but I believe that some day in the future I will stand up and say, didn't I tell you so, and that will be when a belt of trees are planted in the great North-West, and its beneficial effects realized. You must remember that any kind of trees will suit for wind breaks, care being taken to adopt the varieties of thick foliage. It was my misfortune to be out in a blizzard in Manitoba, and we had to run 12 or 14 miles to a clump of poplars, and when we got there we went into the centre, cleared away the snow, made a fire and sat down and told stories, while the storm raged madly all around, and we scarcely felt it. Now and again we would see the trees bend down to their roots, but we never felt the storm. We remained there two nights and a day. When we came out we found that men and beasts had been frozen to death, while we enjoyed ourselves in perfect safety, simply because we had been in that little clump of bushes. I tell you that you should protect your farm lands by cultivating trees, then you will be a happier people, because you will have less bother. There is another thing, and that is mulching, which is a very important matter. Mulching is better in Nova Scotia than in Ontario, because the roots in Ontario are brought to the surface by that means, and the dry winds kill them, while in Nova Scotia they are only brought up from the cold subsoil, and thereby much benefited. Ploughing material into the soil is a big mistake, it should be left on the surface. The reason for these things is a great thing. When I was teaching the young I generally said to a boy who could

ive me a reason for the faith that was in him that "he would do." When a forest is cut away and the land changed, then a new species of trees will grow up and take the place of the old ones, but if the conditions are not changed the same species will again appear. If you are growing spruce and cut it down and that is followed by a second growth of spruce, you can at once say that land is still too wet; but should the land be drained or otherwise changed, then a different variety of wood will take the place of the old. Here in Nova Scotia no change takes place, hence the cutting does not dry the land. On the hilltops some trees will grow, but if tried in the valley below they are a failure; the reason is that the land in the valley is too wet and requires drainage. I call your attention to the fact that we have an immense quantity of poplar in Canada, and that England wants poplar pulp. I was asked if they could get pulp from Canada, and I told them that we had more poplar land in Canada than Norway and Sweden combined and doubled. Now, in conclusion, let me say that I like to talk to an audience such as you are, and I would not give a snap for a man who would swallow down all that I might say without first giving it a thorough examination. We are obliged to consider our resources throughout the length and breadth of this Dominion, and utilize the materials at our hands. (Applause.)

PROFESSOR SAUNDERS.—I am aware that you have a pulp factory in N. S., and that England prefers spruce to poplar. Your market for pulp is the United States.

DR. BOWLES.—Why does Mr. DeWolf use American hickory for his spokes?

MR. WOODMAN.—Because the American is better and harder?

PROFESSOR MACOUN.—In my opinion I am correct, and that gentleman thinks he is correct; you can take your choice. (Laughter.)

DR. BOWLES.—Every carpenter knows that he cannot sell wheels made from Canadian hickory as readily as he can those made from American.

PROF. MACOUN.—Where does the American hickory come from?

DR. BOWLES.—I do not know.

PROF. SMITH.—A gentleman told me that carriage builders invariably imported their wheels from the United States; from Ohio I think he said; and the bodies were made here.

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PROF. MACOUN.—There are a number of saw mills along the Canada Southern, engaged at nothing else but sawing second growth hickory. This hickory is sawed into spokes and hubs, and shipped across to Toledo, and very likely some of it goes to Cincinnati, and there it is manufactured, and sent back to us an excellent American hickory. (Laughter.)

R. W. STARR.—I should like to know whether or not Shelbark Hickory will grow here.

PROF. MACOUN.—Yes, it will grow along the gravel banks of rivers.
Adjourned till 10.30 A. M. Thursday.

MORNING SESSION.

THURSDAY, January 20th, 1887.

QUESTION.

Is there any way to protect inexperienced fruit growers from American tree grafters?

MR. BLANCHARD.—Our people used to think that a foreign article was superior to anything we had at home, consequently our country was flooded, among other things, with what we call Yankee tree grafters. That had a discouraging effect upon those who undertook to engage in the nursery business, and the result was we were obliged to depend on the American trees for the natural supply of our orchards. It appears to me that the proper answer to the question is to encourage our home nurseries conducted by reliable men, and if our nurserymen were not honest they would soon find that it would be necessary to be so. Nurseries are now being started all over the province and C. B.

PROF. MACOUN.—My own experience has been that we get far more gratifying results from dealing with our own men than with the Americans.

PRESIDENT HART.—It is grafters and not nurserymen that the question refers to. Grafters will come along and engage to put in any kind of grafts required for 5 cents each, and I have known as many 40 grafts being put into one tree.

MR. JOHNSON.—A party last summer agreed to set grafts for 20 cents each, and he took scions from my orchard and placed them in my neighbors, under a new name.

Would not a number of small experimental fruit farms do more to further the fruit growing interests than one central experimental fruit farm?

PROF. SAUNDERS.—I should answer that question very briefly and say no. I think that the remarks that I made yesterday, showing how it was intended to conduct these experimental farms, so as to benefit, not any one community, but the whole Dominion, should be accepted as satisfactory.

PRESIDENT HART.—Is it not the intention of the Government to establish smaller stations at some future time?

PROFESSOR SAUNDERS.—I am very glad that question was asked. I mentioned yesterday that it was proposed to disseminate the surplus products, which might be propagated on these several experimental farms, among different farmers in various localities; thus making each farmer an experimenter at his own expense. He will be supplied with the material free of charge, and will be required to report the results of his experiments. In that way the same benefits can be attained as from the establishment of a great number of experimental farms throughout the country.

MR. BLANCHARD.—I think Professor Saunders' idea a very good one, but I would suggest that these experimental stations should be watched over, not only by the man who owns the farm, but by some competent person from the experimental farm in the district.

PROFESSOR SAUNDERS.—That can only be determined by actual experience. The plan followed in Iowa is similar to the one just mentioned by me.

CANADIAN FRUIT AT THE COLONIAL AND INDIAN EXHIBITION.

ADDRESS BY THE SECRETARY.

In attempting to speak to you on the subject of fruit at the exhibition, I feel that I am undertaking a task of great magnitude, and one which I am not competent to deal with. The time at my disposal since my return has been so limited, that I have had very little opportunity to prepare my notes and put them into shape. Professor Saunders, who had charge of the department previous to my arrival on the scene, is present, and can give you much more information than I possess on the preparatory arrangements. I may

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say that we, while there, were endeavoring to promote the interests of the Dominion as a whole, rather than of any one province.

The whole exhibit was arranged on the agricultural trophy, which many of you have seen. I applied some weeks ago for photographs of this trophy, but unfortunately they have not come to hand in time for this meeting. This I very much regret, as they would give you an excellent idea of the exhibit. The trophy reflected very great credit on the gentlemen who were instrumental in its design and construction, and was one of the most attractive features of the display, causing the tens of thousands of visitors to stop and gaze at it with astonishment and admiration. This huge pyramid, reaching high into the arch of the roof, was made up entirely of agricultural productions. There in grand display stood sheaves of grain, bags and barrels of flour, specimens of ham and cheese, tubs and tins of lard and butter, interspersed by the highly colored labels of tins and packages of canned fruit; evaporated vegetables from the factory of S. G. Kerr & Sons, of Canning, cans of condensed milk and coffee from Truro, and many other exhibits, too numerous to mention. The structure was supported on four towers, and around these towers, which were covered with maroon cloth, on a succession of narrow shelves, stood about one thousand glass jars, containing the collection of fruits in preserving fluids, which were prepared under the direction of Prof. Saunders. Over each of the four arches between the supporting towers, specimens of Canadian ploughs were displayed, and bristling out at points were smaller agricultural implements, such as forks, rakes, scythes, etc., etc. In central positions on opposite sides stood life-sized figures of a milk maid and her pail, and a woodman with his axe, presiding over the whole, a wonderful collection, and a marvel of artistic skill. The fruits around the base formed the most interesting and attractive portion of the exhibition. As might naturally be supposed, the Ontario collection was by far the most extensive and complete, comprising beautifully preserved specimens of grapes, pears and peaches, with nearly every variety of summer fruits and berries, and a large collection of apples.

On the 11th of May the Royal Horticultural Society held a Flower show, in the Conservatory, adjoining the Exhibition buildings, when we displayed 15 plates of the following varieties of apples, all in good condition, viz:—Baldwins, King of Tompkins, Northern Spy,

Golden Russet, Rox Russet, Nonpariel, Canada Red, Vandevere, Ben Davis, Limber Twig, Phoenix, Mann, Swaar, Seek-no-further and Wagner.

An exhibit of Australian green fruit, which had been harvested in March, and sent to England in cold storage, arrived a few days previous to this Exhibition, and was shown in splendid condition.

Both collections were considered of high merit by the judges, who awarded the Society's Silver medal to each.

Specimens of apples in their natural state were also shown on plates, at the Trophy, up to the middle of July. The longest keeping varieties were Nonpariel from N. S., and Fallawater from Middlesex, Co., Ontario. The latter were packed in oat hulls, which served a good purpose in preserving their beauty, but imparted an unpleasant flavor. The Nonpariels had been packed in the usual way for export.

The first arrival of fruit from Nova Scotia was shipped on the 15th August, and in due time was displayed on the Trophy, but we were not at all proud of that collection, and some of our friends enquired in a very significant manner if that was to be taken as a specimen of our productions. Some of the earlier kinds had decayed, and others being picked too early were not matured, some of the larger sorts being only about half grown, and of poor color; so that while it relieved the monotony of the collection in glass, it was not as creditable as we could have desired. A few days later however, we received a more satisfactory collection from N. S., and a very fine lot of Duchess of Oldenburg from Ontario, which far exceeded our expectations. The several collections sent from the Province of Quebec, were all very fine, considering the date at which they had been gathered; but the Montreal society's collection excelled all the others in brilliancy and beauty of color, as well as maturity in development. The above collections of fruits, together with one of vegetables from Wm. Rennie & Son, of Toronto, were displayed on tables in the conservatory, and attracted much attention until removed on the 13th October, when the Royal Horticultural Society, who had exclusive right to the conservatory on certain dates, opened their show of hardy fruits. They, however, kindly allowed the Canadian Commission the use of one table during their show, and we greatly hoped that our fruit, ex Vancouver, would arrive in time to be displayed side by side with the English specimens, but we were disappointed,

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and could only fill the table with the best of our former show. This fruit which had been off the trees some three weeks, and exhibited for several days, did not appear to advantage in comparison with the freshly gathered products of the English gardens. The Royal Horticultural Society made the finest display they have had for years; but while their fruit was remarkably large, and showed evident signs of extreme cultivation, it certainly lacked the high color of our Canadian fruits. The shipment ex Vancouver was the largest of the season, comprising 317 cases of fruit and vegetables, from B. C., Ontario and Quebec. The B. C. collection having, I believe, crossed the C. P. R. in a refrigerator car, and supposed to have been in the refrigerator on the steamer, opened in very good condition, as did also some cases of grapes from Ontario, and the harder fruits from Ontario and Quebec. Closely following this came 25 cases and barrels of fruit and vegetables, from Nova Scotia and New Brunswick, in good condition. The Conservatory being vacated on the 14th, with the assistance of Messrs. Allen and Dempsey of Ontario, we began the opening and arrangement of the recent consignments. By special permit from the Royal Commission, we were able to work all night, and succeeded on the following day in displaying upwards of 2400 plates of fruit, representing nearly every province in the Dominion of Canada. Out of some 50 varieties of grapes from Ontario, a seedling of Professor Saunders', the Emerald, a bright green grape, was pronounced the best. Our Canadian grapes did not create a favorable impression; while they will undoubtedly make good wine, they are not up to the Englishman's idea, and they will not compare with their own, which are grown under glass exclusively. An inspection of the Canadian fruits was made, and a very interesting report compiled by the Fruit Com. of the R. H. Society.

PROF. SAUNDERS.—I understand that they have made a comparison of Canadian apples and pears, with the English varieties, and decided in favor of the English; if so, I do not think they have done us justice.

The SECRETARY continues.—Yes, they have tested one or two varieties. Cox's Orange Pippin was pronounced far below their expectation, and the Ribston not by any means superior to their own. A friend sent to me a specimen of the English Ribston Pippin, and as far as my taste could direct me, I am firmly of the opinion that it

was not superior to our own samples of that variety. We also had an opportunity of comparing the fruit of the different provinces. The Gravenstein of B. C., which had been shipped in a refrigerator, was firmer and crisper than the N. S. Gravenstein, which had been shipped in the usual way.

PROF. SAUNDERS.—Those apples had not been in a refrigerator car, but came as far as Montreal in an ordinary freight car.

The SECRETARY continues.—The general character of the British Columbia fruit appeared to be more like the specimens shown at the Royal Hort. Society, and less highly coloured than ours. After the close of the Chrysanthemum show, we replaced such of the fruit as was presentable, and made a grand display of field roots and vegetables, by constructing a huge pyramid of gourds in the centre, with smaller pyramids of roots at the ends of the tables, and it was in that shape that they were photographed. In this collection the largest specimen came from N. S. ; a squash from Mahone Bay, weighing something over 200 lbs. The latest consignment was a case of very handsome apples from the Shefford County Agricultural Society, which were much admired for their brilliancy, as the fruit on the table was beginning to lose much of its freshness. On the whole the fruit and vegetable show was a decided success, and has done much towards dispelling the general ignorance prevailing in England, regarding Canada's climate and agricultural capabilities. The greatest astonishment was expressed by thousands that such fruit and vegetables had been grown in Canada, and "all in the open air," and we found it necessary to have that information placarded about in all directions, and the English people then would scarcely believe it. A new and sincere interest has been awakened in this country, which hitherto, by a large class, has been supposed to be covered with ice and snow for a greater part of the year, and inhabited mainly by Indians. Many have been the inquiries from persons eager to know more of this Dominion, with a view to trying their fortunes among us. Some persons started last summer to make homes for themselves in our colony, while many more prudent will follow in the spring, after having made better arrangements than their fellows, and will doubtless be a much better class of people than the average emigrant of the past.

Early apples of such varieties as the Fameuse, Oldenburg, Alexander, etc., etc., will never take a high place in the English market on

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account of being too soft, when sent in the ordinary way, besides which, they reach the market at a time when there may be plenty of pears and other autumn fruits ; but if by means of cold storage on the steamers they could be put upon the market in a crisp condition, which is essential to a good apple from an English point of view, fair markets might be found for large quantities during some seasons. That these soft varieties may reach the market in such a condition is proved from the fact that the lot of St. Lawrence from Montreal, ex "Sardinian," in a refrigerator, reaching London on the 5th October last, were so hard as to be thought unfit to eat by a Canadian, while those of the same variety, received on the 20th and 28th September from Ontario, were ripe and spotted, and Alexanders received from Montreal on the 2nd October were ripe, and more or less decayed. Where soil and situation are favorable, among the best kinds to grow for foreign shipment, and those commanding the highest prices may be named the Ribston, Golden Russet, King of Tompkins and Blenheim. During the last season the English market was unprecedentedly glutted with plums and pears, and many shipments did not realize sufficient to meet the freight charges. In many localities the fruit was not gathered at all, so it is readily seen that, even with cold storage, we may not always be able to compete.

The demand for apples is greatly on the increase throughout G. B. as well as on the Continent, therefore with improved facilities for transportation, we may hope to place Canadian apples on many new, and what may yet prove extensive markets. Trial shipments of small lots of apples were made to Hamburg, Paris, Leipsic, Berlin, Stockholm, Gotlenburg, Copenhagen, Christiana, and other cities, with a view to testing the requirements of those markets. Although the financial results of these shipments were not, on the whole, as satisfactory as we could have wished, enough has been done to demonstrate the fact that with reasonable rates of freights there are likely to be seasons when satisfactory markets for good apples may be found in a number of these great cities.

At the request of Sir Charles Tupper, I made enquiries in many of the great commercial cities of England and Scotland with a view to ascertain the advisability of recommending direct consignments of apples to Canada. The majority of those cities are mainly supplied at present with what are known as "American Apples," by parties who buy at auction sales in London, Liverpool and Glasgow. Direct trade

with many cities is not yet practicable, for although they may be large centres of population, the demand for apples is too limited to constitute a market sufficiently reliable to be supplied from so great a distance, but in addition to London, Liverpool, and Glasgow, which are and must continue to be the chief markets, considerable direct trade may be advantageously done by Canadian shippers with such cities as Manchester, Birmingham, Sheffield, Newcastle-on-Tyne, Leeds, Wolverhampton, Hull and Plymouth in England; and Edinburgh, Dundee, and Aberdeen in Scotland.

And now a word as to the universal but most unsatisfactory custom prevailing in Liverpool and Glasgow, also very largely in London, of selling Canadian apples at auction sales. From personal observation during the present season, and ten years previous experience, I am convinced that good apples should be sold at private sale, instead of being slaughtered, as is too often the case, under the hammer. The fact that one firm in London have, during the past few seasons, sold at private sale a large proportion of the Nova Scotian apples sent to that market, supplying many of the best retail shops in the city, abundantly disproves the assertion that our apples must be sold at public auction. It is an undeniable fact that there is an increasing demand for our fruit; and with the present growing disposition of the English people towards temperance habits, we may look for a more rapid increase in the future.

I believe that a large amount of money, which formerly went for the purchase of liquor, is now appropriated for fruits, as a substitute. The Bishop Pippin is too acid an apple for the English taste, and only meets their requirements for cooking purposes. The Ribston Pippin makes the best dessert apple. (Great applause.)

The PRESIDENT here read the following letter from General J. W. Laurie :—

“PRESIDENT HART :

Dear Sir,—As you are possibly aware I was in London during the greater part of the time the Colonial and Indian Exhibition was open, and being well known to be intimately connected with Canada, I naturally received many opinions on the Exhibition our Dominion had made. The fruit show was perhaps to the old country people the most surprising, because the most unexpected part of our display; and our Nova Scotia fruit showed well, although the loss of color in

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the fruit somewhat marred the effect, but it seemed to me that all that it was possible to do was done to restore its natural appearance. I think it was fortunate that your association was so well represented by your Secretary, who was able and willing to give information as to commercial possibilities as well as to details of cultivation, and so serve one of the objects of the Exhibition in opening up markets for our products, and stimulating enterprise. I feel that I should be neglecting my duty if I did not bring before the association how well and satisfactorily to the unofficial on-lookers Mr. Starr performed his duties; and I trust that owing to his efforts and the creditable display made by our fruit growers, our productions and returns will be largely increased.

With apologies for absence from your meeting, on account of other engagements, I am faithfully yours,

J. WIMBURN LAURIE."

MR. PARKER.—Will fruit deteriorate in flavor and quality in the transportation across?

The SECRETARY.—Yes, the earlier varieties are so affected; but the winter varieties, such as the Ribston Pippin, are in my opinion equal to the English when brought into competition in England.

Adjourned till 2 P. M.

THURSDAY AFTERNOON.

Resumed at 2 P. M.

The committee appointed to report on the proposition to amalgamate the association with the Small Fruit Growers' Association not being prepared to report, was, on motion, continued.

PROFESSOR SAUNDERS.—There are some matters in connection with the preparation of the exhibits on the trophy before your Secretary came to take charge, which may interest you. The first intimation that I had that there was any desire on the part of the Dominion Government to make a display of fruit at the Exhibition, was in June of the year preceeding the show. The Association in Ontario pledged itself to do all in its power to assist in the work. Nothing was heard of it till late in the season, about October, when there was a change in the Minister of Agriculture, and I received a telegram to present myself at Ottawa; then the question began to assume a definite

shape. I was asked to collect fruit in the Dominion that would do credit to Canada at the Exhibition ; so I sent out a great number of circulars to farmers and the different associations throughout Canada, urging upon them to secure specimens of fruit which might be put up in some preserving fluid, in order to keep them so that they could be exhibited during the following year at London. I studied up the subject of preserving fruit and consulted all the patents in America and England, with a view to obtaining some light on the matter of preserving fluids ; and I found that they all referred to the preservation of fruit for eating purposes, without any regard to their appearance on the table. As none of these were of any value I was driven to the necessity of experimenting, which then constituted nine-tenths of my work. I mention this to show that the scheme was surrounded by many difficulties. I considered the texture of the fruit, the preservation of the form as well as the color, and other points ; and experimented with about 17 different kinds of fluids suggested to me by physiologists both in the U. S. A. and Canada, combined with some of my own ideas, and conducting these experiments I spoiled a good many specimens of fruit. During the space of about two months I put up a large number of jars, and finally succeeded in diminishing the number of fluids to be experimented with, to five or six. I found that salicylic acid was the best preserving agent for red and dark grapes and for some of our green apples, while sulphurous acid was best adapted to the preservation of all the light colored fruits. I learned during the progress of my work that sulphurous acid had been used with great success in Berlin, and I was strongly advised to place all varieties of fruit in it ; the result was that I put up a bottle of King Tompkins in it, but in a couple of days they had undergone an entire change of color. Mr. Starr has very truly remarked that some of our high colored fruits turned out unsatisfactorily, and so they did, from a fruit grower's standpoint but not from a public standpoint. I think the undertaking was a grand success, for notwithstanding the many little drawbacks in the partial bleaching of the red and crimson colored varieties, yet we were able to maintain the white and yellow specimens in their natural condition. The fact of our success in preserving a large collection of fruits for nearly a year beyond their season was an unprecedented performance. Our pears, which were put up in salicylic acid, soon turned very dark, but after being subjected to a solution of sulphurous acid they recovered their natural

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color. We were without pears from Nova Scotia and Quebec, because I suppose there was a lack of faith in this matter of fruit preservation. Ontario sent pears in this solution of sulphurous acid and they were judged the best exhibit in the whole collection. When we arrived in England we were met with the rather discouraging task of separating, arranging and unpacking the fruit; from 900 to 1,000 packages were piled up in huge heaps, and there were thirty or forty packages from Nova Scotia. For the first two weeks Nova Scotia was the only province that made an exhibition, her fruit being unpacked and placed on the trophy was in good order and much admired. I do not recommend land plaster as a material in which to pack fruit, and certainly not if I have the handling of them, for it is very severe on the hands; then again the fruit has to be washed, which as you know impairs the bloom. The best specimen from Nova Scotia was a sample taken from two barrels of Nonpariels, and which were sent over in the ordinary way, and landed without a blemish; it was on that sample that I descanted most largely on Nova Scotia fruit in general. I gave them a chance to taste them, and I assure you they appreciated them very highly.

It was thought that I had better return and send over a collection of fruits for the autumn show, and we met at London, made a report and urged the Government to comply with that idea. When I returned to Ottawa and presented this report to the Minister of Agriculture I was instructed to go on and complete the work. That was rather unexpected, but having pressed the matter upon the attention of the Government I could not very well escape the duty thus thrown upon me. Well I went to work and by dint of hard labor succeeded in getting together that which can be called, without fear of contradiction, the finest collection of fruits and vegetables ever seen in the world.—(Applause.) There were difficulties on the subject of cold storage. Six weeks before the fruit was to be shipped I was obliged to decide on the size of the cold storage chamber. I did not wish to make them too large, so decided 10 feet wide, 10 feet long, and height between decks; this space would take 225 bushel boxes. I was in an uncertain state of mind concerning the space chosen until the steamer sailed, when it was found that only about one-third of the cold storage was occupied; but on the second trip we had the whole space filled and much more.

The English grape growers raise their fruit under glass; and for these grapes they pay from one shilling and sixpence to two shillings and sixpence per pound. We were obliged, with our grapes grown in the open air, to compete with those high character hot-house cultivated varieties of England. The judges did not like the characteristic flavor of our grapes because it is of a "foxy" or "musky" taste; and the reason why they admired the little green variety referred to by Mr. Starr, was that it did not possess that peculiarity. When we take into account the care and trouble that Englishmen exercise in the cultivation and preparation of their fruit for exhibition, we can scarcely feel surprised to find that some of our varieties are classed a little below the English samples; and the more so after our productions are exposed to the rough usage of express companies, and subjected to a sea voyage of 7 or 8 days. I think we should feel abundantly satisfied to have our "Cox's Orange Pippin" rated as equal to their own, or nearly so; and our "Ribston Pippin" as quite equal. While remembering that it takes a very strong argument to convince an Englishman that a foreign article is as good as that which England produces, I think we should feel proud of the praise which the English press has bestowed on this exhibit which we have so successfully inaugurated and completed. (Applause.)

PROFESSOR MACOUN.—Permit me to make a few remarks on this subject. Those old gentlemen who sat and studied the Canadian apples were typical Englishmen, and I did not blame them for thinking that anything grown outside of England could not equal their own productions, for both Mr. Starr and Prof. Saunders have shown you that even Canadians can be prejudiced in regard to their own fruit, by saying that the Canadian was better than the English. The fact that Englishmen will accept and eat your fruit is a very strong argument in its favor. Mr. Starr was very careful not to say a word about himself. Now I can tell you he was present all day, from nine in the morning, day in and day out, and week in and week out, faithfully pointing out to the people the various kinds of fruit on the trophy, and to him alone belongs the credit of bringing your fruit to the notice of the people. Many enquiries were made for evaporated apples, and I believe that a large trade could be established on that direction with England. English people as a rule do not know strangers until they are introduced, therefore, if you wish to be suc-

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MR. BLANCHARD.—I cannot allow this opportunity to pass without saying something. Last summer I had the privilege and pleasure of attending the Exhibition in London, where we made so creditable a display. The Canadian department was far ahead of any of the others, and I think that opinion is borne out by the visitors who attended day after day. I recognized many faces and they seemed to be attracted to the Canadian court; that court was not a sectional exhibition in itself, but exhibits were exposed from every part of the Dominion of Canada, intermingled and yet separate, and one could not feel that he was in any particular section of Canada. If I had no feeling of patriotism before I went there that feeling was fully presented to me then, and I felt proud to be a Canadian. (Applause.) The agricultural department appeared to be the centre of attraction, but the fruit section seemed to be the most attractive of all. Prof. Saunders is to be congratulated upon his success in obtaining preserving fluids, in which many of the exhibits were kept. The color which some of the specimens assumed was really more beautiful than the natural one, and elicited the curiosity and admiration of visitors. The association may congratulate itself in having such a representative as Mr. Starr to look after its interests on that occasion, and the whole Dominion of Canada is under an obligation to him for the work he so ably performed while there. Those who were not present can scarcely imagine the extent and beauty of the whole display; and I am confident that we never accomplished so much towards attracting the notice not only of England but of the whole world, to our capabilities and productions, as we did at the grand and glorious Exhibition. It occurred to me while Professor Saunders was addressing us on the subject of plaster in which the apples shipped from here were packed, that the mistake was made of packing them in calcined plaster instead of land plaster; land plaster contains natural moisture but calcined plaster is dry. I happened to be with Mr. Starr when some of the boxes arrived, and I endeavored to free some of the fruit from the infusorial earth in which it was placed. I can truly say that I would not desire a repetition of that duty. I must apologise to this association for taking up so much of the time. (Applause.)

PROFESSOR SAUNDERS.—Mr. Blanchard's remarks suggested a few points which I omitted in my previous remarks. From conversation

with many people I was struck with the prevailing opinion regarding Canadian climate. They would ask: "How is it that you can grow those grapes in the open air when we have to use glass?" Nothing has ever been done in the way of advertising the advantages of Canada to the extent that this Exhibition has done, for the reason that it entirely disabused the minds of those who looked upon our climate as extremely unfavorable. They will not believe pamphlets, but our exhibits were incontrovertible facts which could not be ignored or denied. The tide of emigration is tending towards Australia, and upon enquiry I found the reason to be that they did not wish to face the cold climate of this country. As soon as we succeed in removing this difficulty, a class of emigrants whom we most desire will be induced to come to Canada, and I am of opinion that this Exhibition has accomplished more in that direction than \$10,000 spent in the publication and distribution of pamphlets would do. It gives me great pleasure to bear testimony to the efficiency of the services of Mr. Starr in connection with the display. (Applause.)

We felt that it was a difficult matter to attempt to compete with Australia whose fruits had been freshly packed, while ours had been packed for months; but we set to work to do our best. We exhibited 15 varieties in competition with Australia, and the judges spent a long time in tasting, comparing beauty of size and quality, finally the superiority of ours in size and quality was recognized, and we were awarded the silver medal and a certificate of merit—a very gratifying result. (Applause.)

The SECRETARY.—With reference to the kind remarks which have been made concerning myself, I can only say that I endeavored to perform my duty, and if I have erred in any respect I hope it will be considered my misfortune rather than my fault.

EVAPORATION OF FRUIT ITS COSTS AND PROFITS.

The following paper was read by PROFESSOR SMITH, Provincial School of Agriculture:—

During the year that I have had the pleasure of residing in this beautiful Province, where such unusual intelligence is displayed in the cultivation of fruit, I could not help noticing one thing which appears to be the source of quite a loss in our fruit growing, that is the disposition made of wind-falls, specked or knotty fruit, and all

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second-class fruit. By second-class I mean good fruit, but unsaleable from injury or ill-shape, or likely to perish by decay before reaching market; this last includes considerable first-class fruit. As far as my observations go I have heard of but few fruit dryers or evaporators in the Province. Those who wish dried fruit depend on the sun, and while the great majority of such fruit is fed, the rest is allowed to rot on the ground. This means that every apple that can be sold for first-class fruit will be, whether it is or not. Indeed, if there is a doubt about the soundness of an apple, they take the benefit of the doubt and pack it. Now if they know that by packing only those above suspicion, they will get a better price for them, and can get what they are worth for all second-class apples, and relieve their conscience of a burden, they will do it. This, I hope may be accomplished by the drying of fruit.

Wherever evaporators have been introduced, such is the case. Again by evaporating fruit we are able to obtain an approach to its real value, which I hope to show is far above that obtained by feeding them.

Some seasons apples are very abundant, and only the finest can be sold. Here again evaporators come into use. There are four ways by which we may dispose of our second-rate and poor keeping apples. 1st.—Feeding stock. 2nd.—Drying them. 3rd.—Selling them to fruit drying establishments. 4th.—Canning them. In order to compare the relative value of these methods, let us look into the composition of apples. They consist of about 84% of H₂ O, 16% of dry matter. This dry matter consists of

Digestible Albumenoids	3%
“ Carb hydrates.	13%
“ Ash.4

Their value for food rests upon: 1st, their *nutritive* value which is from \$2.00 to \$2.50 per ton. 2nd, their *manurial* value. One ton contains 1¼ lbs. *nitrogen*, and 8 lbs. *ash*, having the following valuable constituents:

2 lb potash	\$.09
¼ lb phosphoric acid05
1¼ lb nitrogen21
Total	35

Their *medicinal* value may be of some value to those farmers who persist in pasturing their stock on dead and frozen herbage. In gen-

eral terms we may say they are worth from \$2.50 to \$3.00 per ton as food for stock, or from \$.07½ to \$.09 per bushel.

The next method of using their apples is the one I wish especially to call your attention ; the drying or evaporation of fruit. The object of this is to reduce the water, which constitutes nearly $\frac{7}{8}$ of their weight. There are two methods of doing this, the first of which is to peel, slice and dry in the sun. Here the fruit is black, loses much of its flavor, and becomes the breeding place for all kinds of larva or insects, making certainly a not very enticing dish for the consumer. The other method is by drying with hot air. In this case the slices retain their white color, their flavor, are all kept away from insects, and make a dish altogether to be desired. Within the last five years this has become a regular business with fruit growers, and is applied to nearly all kinds of fruit, with excellent results. Throughout the fruit region of western New York "fruit dryers" are either owned by every grower himself, or there are in nearly every neighborhood large establishments for this business, where the surrounding farmers sell their fruit. The advantages of this method of preserving fruit over canning, is its cheapness, absolute certainty of its keeping, can be shipped cheaper and easier, and the dried fruit is adapted to all kinds of cooking.

Requisites essential for fruit drying.—*Good fruit.* It is useless to dry poor fruit. A worthless fruit before drying only makes a worthless dried fruit. Only the *good varieties* of fruit should be dried. Knots, specks of rot and bruises, can all be removed before drying. Each variety should be kept separate ; especially sweet from sour, and white from dark or yellow fleshed apples.

An *evaporator* and one or more hands to run it. An *apple parer*, *corer* and *slicer*. The parer. There are many of these made which peel and core the apple in one turn of the handle, and a *slicer*, which by one more move slices the apple.

Evaporators.—Two kinds of evaporators can be used, manufactured or home made. Among the best manufactured are the Pneumatic Fruit dryer ; the American Evaporator ; the Victor Evaporator ; Grieger's Evaporator ; Clipper Evaporator ; all in various sizes, making from 4 bushels to 100 bushels per day, and costing from \$25 to \$450. I shall not however dwell upon these, they are good instruments, and will do what they are warranted to. I would warn you against the

so-called corer is a fraud.

Some make one, but thoroughly as good.

The following made drier, drying 20 bushels of which I am a York.

The essential current of hot so arranged to partly dried room should tight. Heat or a hollow is a stove-pipe numerous 2 fresh air. J piece, to pre space above divided into each space is and there is a for the damp cleats nailed mesh. Thus sieves. Each and the next passes up over Access to the of the building access to two, in too much a are peeled and removed, then box. The slicer This tier shows

so-called common sense evaporator, made by W. Orlando Smith, as it is a fraud.

Some may find it cheaper to buy a small evaporator than make one, but those who possess a little ingenuity and skill can make one fully as good if not better.

The following is a very simple and convenient plan of a home-made drier, on a small fruit farm, in Western New York, capable of drying 20 bushels per day, and costing about \$100, for a description of which I am indebted to Mr. C. D. Smith, M. S., of Western New York.

The essentials of an evaporator or dry house are to maintain a current of heated air, steadily passing over the prepared fruit, and so arranged that the steam from the fresh fruit shall not dampen that partly dried. 2% convenience of manipulation. The building or room should be 6 x 10 feet, with concrete or brick floor and made air tight. Heat can be secured by having for a firebox or heater, a stove or a hollow iron cylinder. Passing from the outside near the bottom is a stove-pipe, which runs under the stove, and opens by having numerous 2 x 4 inch holes cut in it, for the purpose of bringing in fresh air. Just over the stove should be hung a 2 x 4 sheet iron piece, to prevent apples just over it being heated too much. The space above this is arranged to hold the sliced apples to dry. It is divided into five spaces, by vertical partitions, running across wire so each space is 2 x 6 feet. These partitions are about 40 inches high, and there is a common space above with an outlet like a chimney for the damp hot air, thus creating a draught. Each partition has cleats nailed on horizontal, 5 inches apart, to hold sieves of $4\frac{1}{2}$ inch mesh. Thus there are eight sieves in one tier, and 5 tiers, making 40 sieves. Each alternate sieve is pushed back against the further side, and the next is drawn forward against the door, hence the hot air passes up over one sieve and is turned back over the next and so on. Access to the sieves is obtained through the small doors on one side of the building or room. These doors are so made that each gives access to two, and only two sieves at a time, as large doors would let in too much air. The method of operating is simply this: the apples are peeled and cored and sliced, after having all specks of rot, etc. removed, then bleached by fumes of sulphur for an hour in a long box. The slices are then put on the sieves, directly over the stoves. This tier should be heated to about 150°, or at least hot enough to

dry fast, but not cook, As these become dry they are removed to other tiers, where the drying is finished more slowly, at a temperature of about 100° F., as too high heat, when nearly dry, blackens them. One boy will peel and core 20 bushels per day, another will trim and bleach them, and a third will dry them. They should be packed in 25 and 50 pound boxes.

This is a general plan of how an evaporator may be made. Of course this may be varied to suit the requirements. There are many other plans. If any one wishes to go into the business he will find full directions from the circulars of the manufacturers. Wherever these drying establishments are put up, about 15 to 20 cents per bushel may be had for the apples. There is however a good reason for the fruit growers drying their own apples. We should always try, as far as possible, to sell finished articles, rather than raw material. But the farmer can just as well have the profit from this work as the dryer. One bushel of fall apples make 5 lbs. dried fruit; of winter apples, 6 lbs. dried fruit. The market price of this is about 12 cents per pound; sun dried apples one-half this. They have been as high as 30 cents this fall, but at 12 cents it means from 60 to 72 cents per bushel. The cost of evaporating is about 16 cents per bushel, leaving certainly a wide margin for profit. This makes the value of these apples for drying about 9 or 10 times what they are worth for feeding. Does it pay them to throw away all this? I believe thousands of dollars might be saved in this manner, by a more general use of evaporators. It may be said we sell our apples for cider. It takes at least 8 bushels for a barrel of cider, which would make the cider worth about \$5.00 per barrel; besides the apples adapted for cider making are not adapted to drying as a rule. I urge this strongly to the attention of all our fruit growers, and ask you not to pass it by without investigating it, as it is another source of profit to us. Certainly the business is not so profitable that we can afford to neglect any means of increasing it. In some sections of New York State, whole young orchards have been taken up root and branch, because the owner said they did not pay. I should regret very much to see such a state of things here. But it is only by attending to these details that we can avoid it.

Now in closing let me quote to you another sentence from Mr. Smith's letter, to which I have before referred, he says: "You

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DR. REID.—
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should emphasize the great waste of apples that must occur every year, unless evaporators are set up, and thus show how satisfactorily this waste is utilized by them." "Surely, if many are produced, I do not see but evaporators are a necessity. Certainly a very economical adjunct, and if there is any profit in fruit raising without them, they will increase that profit by a very large per-cent. There is however the element of risk, as in any business."

DR. REID.—I think the Gravenstein will be a good fruit for evaporation. A large quantity of fruit, not serviceable for evaporation or of any value for feeding, could be profitably utilized in the manufacture of cider. I believe the system of producing this cider in France is a good one, viz., by diffusion; a large quantity of the juice of a plant is obtained without a great abundance of the crude material, by means of a pressure. There a man, a boy and a machine turn out 3,000 gallons of cider per day. I was much astonished the other day while reading a New York paper, to learn of the immense quantities of apples raised in England, where they rate their products as so many gallons per acre.

Then there is what is called "apple butter" by Americans, and it sells at the rate only of a few cents per pound, and being so much cheaper than butter is frequently used as a substitute. Another source of profit would be apple jelly, which is simply evaporated cider; there are establishments engaged in its manufacture. I am at a loss to know why "cider apple sauce" is not better known than it appears to be; and if it were manufactured and placed upon the market it would meet with large and profitable sales. I do not think it is generally known that in following out the suggestions of Professor Smith we would be throwing away the best part of the apple. Both the core and the seed as well as the skin, each contain the elements of some of the best known jellies that we possess. In order to obtain the pectine it must be dissolved out by submitting the skin and cores to a boiling process for two hours; in this way the jelly can be secured of any degree of thickness. One of the finest specimen for this purpose is the Bishop Pippin. There is no doubt but that the process of evaporation is followed by an immense waste of valuable material, and I think we must utilize different means in order to make provision for unsuccessful seasons in our fruit crop.

ce from Mr.
ays: "You

PROFESSOR SAUNDERS.—Both the Professor and the Doctor have referred to the evaporating process with the assumption that the skins and cores are thrown away, but if they were to visit some of the institutions engaged in this work they would find that such is not the case. They usually take the cores and skins and subject them to the boiling process and prepare the jelly; the remainder of the apple, so called the worthless part, is then converted into cider. That is the way large factories carry on the utilization of waste products. Where there is little demand for cider the apples are frequently dried and shipped to France, where I presume they are manufactured into wine. I would say to the ladies if they would infuse the skin of the apple with the sauce they will secure a higher flavor and prettier color than that which is usually noticed. It is perfectly astonishing to know how much jelly can be taken from the skin and core. On one occasion when speaking of this matter I was asked, "What about the worms?" I answered them that I did not care to investigate that part of the subject, but would leave it without any further comment.

The SECRETARY.—Under the direction of a firm in London I procured, after I came home, two casks of cider, which it is proposed to send across the Atlantic, as an experiment to determine whether it can be so shipped and arrive on the other side without fermentation. Should this experiment prove a success the prospects for an extensive trade are exceedingly bright. The hint just thrown out concerning the utilization of refuse material by the French in wine making, should not be lost sight of, for it suggests another market for a certain portion of our fruits.

DISEASES AND INSECTS INJURIOUS TO FRUITS, AND HOW TO COPE WITH THEM.

BY JAMES FLETCHER, F. L. S., F. R. S. C.,

Entomologist to the Department of Agriculture, Ottawa.

Mr. President, Ladies and Gentlemen:

Remembering well the pleasant meeting of your Society which I had the honour of attending last year, it was with very great pleasure that I learnt you had been good enough to request the Minister of Agriculture, that I might again address you upon the best means of protecting your fruit crops from the attacks of injurious insects. This

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for two reasons, not only should I thus have the pleasure of meeting you all again; but it showed me that you—probably the most earnest body of fruit-growers in the Dominion—fully appreciated the value of the studies to which I have devoted myself—injurious insects and the best means of coping with them. Since I addressed you last year I have had the pleasure and advantage of corresponding regularly with several of your members, and their letters as well as conversations with some of you at this meeting, have been my guides in choosing the few points upon which I propose to address you to-day. The subject allotted to me upon your programme is, I find, Diseases and Insects Injurious to Fruits. Speaking at this late stage of the meeting I am at a slight disadvantage, particularly is this the case with regard to the first part of my subject, The Diseases of Fruits; for during the past two days the greater part of my remarks have been forestalled, and there remains little to be said concerning the more important diseases. There are two however, which so far have foiled all our efforts to comprehend them. The first of these, the “collar rot,” I am under the impression will be found to originate from the attack of some insect pest. I am led to this conclusion because the injury is confined to so small an area in an otherwise healthy tree—namely, that part just above the surface of the ground, and moreover, it is found that by grafting healthy young shoots below the injury, and then inserting their upper ends above the diseased space so as to form a bridge across it—that the life of the tree can be saved. I would specially suggest to fruit growers to examine their trees for traces of the work of the Woolly Aphis or Round-headed Apple tree Borer. The other troublesome disease is the remarkable malady which attacks your Gravenstein apple trees in this neighborhood, and which I have never seen nor heard tell of in any other locality. From what I could learn of the manifestations of this disease, it occurred to me that it might be caused by bacteria, the same as the Pear blight is now believed to be; and on my return from your Kentville meeting last year I sent some specimens of diseased Gravenstein boughs to Prof. T. J. Burrill, of the University of Illinois, who has made a special study of parasitic fungi and bacteria, and who indeed was one of the first to discover that bacteria were not only an accompaniment of disease in plants, but were in some instances the direct cause. Prof. Burrill has written to me several times on this subject, and I will read

you a few short extracts from some of his letters. On receipt of the specimens Prof. Burrill writes to me on 21st Jan'y., 1886, as follows: "The specimens of affected limbs of apple trees came to hand yesterday, and I have examined them as carefully as possible for the time, without, however, finding anything to which the disease (if such) can be attributed. I have no knowledge of any such malady. It seems to have no connection with 'fire-blight,' so called, of the pear and apple. Still, if the trouble comes from anything foreign to the tree itself, I should think it quite probably is bacteria, simply because there does not seem to be anything else. So far as I can make out, the difficulty is in or near the Cambium layer which is first distorted in growth, then killed. I believe what is called Canker in apple trees has never been satisfactorily worked out. In some respects this seems similar, but still distinct. We have in Illinois a disease of mulberry trees which also appears something like this on the Gravenstein apple. The mulberry trouble certainly is due to bacteria. You say there are indications of contagion; this again suggests these organisms. It is too late now for any one to argue that disease may be communicated through any degenerated elements of the diseased body itself. The contagion is from living things and independent growth—parasites. I will further endeavour to find out what the specimens teach, and will communicate to you the results if any. Please accept my thanks for the opportunity."

Now, gentlemen, you see from the above letter that there are some features of great scientific interest as well as of economic importance to all of you as fruit growers. That Prof. Burrill, one of our most eminent biological investigators in North America, should not have heard of the disease before, indicates the importance, from a scientific point of view, of having this matter worked out, and its economic interest is too apparent to all of you from the virulence with which it attacks your Gravenstein apple trees—a variety which, taking it all round, is, I suppose, one of the best grown.

Later in the season Prof. Burrill writes again:—

"There seemed to be bacteria in the affected parts, though this was only found by cultures, never by direct examinations. By the latter nothing could be found which could in any way be considered the cause of the peculiar malformation of the tissues. If you can secure and forward to me some fresh specimens of the disease I shall

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be thankful, as the matter seems to be entirely new and is likely to prove of considerable interest."

Through the kindness of Mr. Robert Starr I was enabled to forward to Prof. Burrill a good supply of material, and in October I received the following report:—

"I am obliged to say that I am unable so far to find any parasite in the diseased Gravenstein apple limbs kindly furnished by you. The indications decidedly point to the operation of some external agent of the malady; but if there is anything present in these specimens examinations have failed to reveal it. I should like to have specimens cut just after growth has commenced in the spring. The matter is too much of a challenge to one's skill to remain unpursued, aside from the practical possibilities involved."

I shall again next spring, if you will assist me, send Prof. Burrill what he asks for, and I am confident we shall get satisfactory results. They may not be attained in one year but I know that he will do his best to assist you, and as soon as the Government Experimental Stations are in running order this will be submitted to the botanist there also for examination, and we may hope in time to conquer this injurious malady. I am indebted to Mr. A. H. Johnson of Wolfville, for the specimens I have here to-day, illustrating well this attack. They show the disease in all its stages, from a spot on the bark, then a slight depression, then a flattening of the branch as if it had been squeezed in a vice while growing, and then the appearance of the second year, when the branch breaks off at the deceased spot.

The "Black Spot" of the apple has been already treated of very fully during this meeting, so I will omit that portion of my address. I will merely impress upon you what I said yesterday; namely, that if we wish to master a disease among our crops, or to keep down an injurious insect, the very first thing we must do is to try and find out something of its nature before we apply remedies, or we shall probably use the wrong ones altogether; or if we do hit on the right one, we shall either use them at the wrong time or in improper quantities. Now what is the nature of this disease? It is clearly a fungus which develops upon the skin of the apple and prevents the symmetrical and free growth of the fruit. But there are two large classes of fungi parasitic upon living vegetation, differing materially in their mode of growth, and it is necessary to find, first of all, to which of these classes

our enemy belongs. In the first of these classes we find such fungi as the "smut" in wheat and Indian corn. These fungi permeate the whole substance of the plants attacked, although they only show themselves at the time of their fructification, in the destroyed grains of the wheat and in the enlarged swellings of the stem of the Indian corn. Now it is apparent that the remedies to be tested for these are those which will either destroy the spores (or seeds) of the fungus before it enters into the tissues of the plants, or those which will give the attacked plants sufficient vigour to throw off their effects. On the other hand, in the second-class of parasitic fungi, we find those which develop on the surface of the attacked plants. To this class belong the "rust" which appears on the straw of wheat and other grasses, and also the "Black Spot" of the apple, or, as it is scientifically known, the *Fusicladium dentriticum*. The remedies which suggest themselves for these fungi are external applications to destroy the spores before they germinate, or the young plants as soon as possible afterwards. Now the chief difficulty here lies in getting a chemical which will kill the fungus without also injuring the vegetation we are experimenting to protect. In a remarkably concise and able report lately published, and of which, through the courtesy of the author, Mr. Frazer S. Crawford, of Adelaide, South Australia, I am able to show you a copy. A most intelligible account of this fungous disease is given, and also a report upon some important and successful experiments carried on by Mr. J. P. Storck, in the Fiji Islands, to keep down a similar disease which attacks the leaves of the coffee plant. This plan is, briefly, to suspend throughout the plantation, vessels containing a mixture of carbolic acid and water, the strength not to exceed 25 per cent. of the acid. The vapour given off from this mixture destroys the spores of the fungus but does not injure the coffee plants. This plan is most decidedly worth trying, and any one can get a copy of this able report by sending to any bookseller in the Australian colonies, the small sum of one shilling, or probably, including all the postage, about 50cts. of our money.

In some imperfect experiments I tried during the past summer, I found that touching fungus spots with a paint brush, charged with coal oil, killed the *Fusicladium*, but it was only a chance experiment, and no exact notes were taken. I shall be glad to hear from any of you, whether you have observed any diminution of the "Black Spot," where apple trees have been sprayed with kerosene emulsion for the

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"oyster-shell bark louse," or for the "apple aphid." I would also suggest as an experiment, to be tried during the winter, spraying the trees in badly affected districts, as the "Black Spot" is probably propagated from plants which pass the winter upon the young twigs of the apple trees. The burning of all rubbish and fallen leaves would also certainly be a wise step, and would increase the probabilities of success. I must now devote the rest of the time at my disposal to the second part of my subject, viz:—Insects injurious to fruits.

I am much pleased to learn that injurious insects have not been more than usually abundant during the past year, and that no new ones have made their appearance. Those which you have always with you, however, I have no doubt you all consider quite destructive enough. From considerable correspondence with several of your members, I find a decided preference for the old remedies, with many of your "first class" pests. There is no doubt that when you know a certain remedy is successful, and that it meets the required end, it is a good general rule to follow it; but in economic entomology, so many careful observers are working in the field that I believe it would repay more of you, at any rate, to try some of the newly discovered remedies. This need not be done over your whole orchards, but a trial might be made over a small area.

As no particular insect calls for discussion to-day, from having been specially troublesome during the past year, I shall direct your attention to some of the broad general principles upon which remedies are applied for the prevention of attack, or for the destruction of injurious insects.


As I have mentioned before, there are upwards of 200 different species of insects which attack the apple. Now of this number there is probably not one which could not be successfully combated; but the trouble is that in many instances the remedies employed, and the labor necessary to apply them, would make the experiment too costly. The practical aspect of the case must never be lost sight of by the economic entomologist, or he will soon lose the confidence of those he is striving to assist, and all his labor will be in vain.

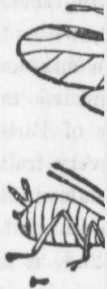
Mr. Crawford, in the report already referred to, puts this very well. He says "the points to be considered are: 1, efficiency; 2, economy; 3, simplicity. Considering that the great majority of the chemicals employed are positively more or less injurious to vege-

tation, it is important that, while they are effective enough to kill the pest, they should not be used in excess, as thereby not only is unnecessary cost incurred, but the danger of injury to the tree or plant is increased. Again, the simpler the means adopted, the less risk of failure through improper preparation or application. To attain these results requires an immense number of very carefully conducted experiments to be made, as well as some knowledge of the action of different poisons on insects and vegetable life."

"All insecticides may be classed under three heads. 1.—Those that act mechanically, by stopping up the spiracles on the body, through which the insects breathe. To this class belong soaps, lime-wash, oils, silicate of soda, etc. 2.—Corrosive poisons, that destroy the tissue, such as caustic lime, caustic soda, caustic potash, carbolic acid, etc. 3.—Poisons that destroy life through being absorbed into the body, such as kerosene, pyrethrum, (insect powder,) hellebore, tobacco, quassia, Paris green, sulphur, etc. Kerosene emulsion partakes of the character of class one; the more so as the proportion of soap it is made to contain is increased."

These facts must be borne in mind by the fruit grower, when seeking for remedies, for any injuries he may detect amongst his crops, also in the choice of the particular class of remedy which he should test, he must observe the insects, and examine the way in which they are injuring the plants—for all insects are not formed, as to their mouth-parts alike. Insects may be divided into two groups, by the form their mouth-parts assume. In the first group we find those which are possessed of jaws by means of which they consume the substance of their food; while in the second they are provided instead, with a hollow tube, by means of which they suck up their nourishment, in the shape of liquid juices.

Now it is apparent that for insects of the first group, such as the Colorado Potato Beetle,  Fig. 1, which consumes the whole substance of its food, all that is necessary is to apply to the foliage some poisonous material, which will not injure the plant, but which, being consumed with the leaves, will destroy the insects devouring them. Such poisonous materials we have in the various arsenical compounds which I shall mention later.



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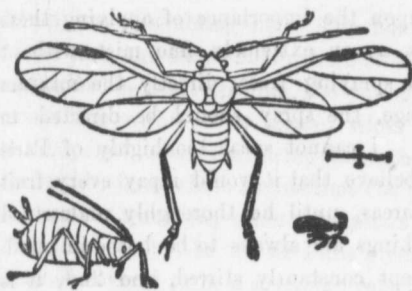


FIG. 2.

the juices upon which they live, from the interior of the leaf. Fig. 2 represents *Aphis mali*, the plant-louse of the apple, which belongs to this group, much enlarged. With such insects it is necessary to make use of remedies which act by mere contact with their bodies, and do not require to be eaten at all. For this purpose coal oil (petroleum) and carbolic acid, as well as the vegetable insecticides known as hellebore, and the Persian and Dalmatian insect powders, are most useful. These remedies, too, as they will destroy all insects, are of much wider application than the poisons mentioned above.

Let us apply these remarks to your own case. I find that the insect most complained of is the canker-worm; and also that the majority prefer the old-fashioned method of branding your trees with printers ink. I confess that this surprises me very much indeed, for this is certainly one of the most easily destroyed of our first-class pests, and I do not hesitate to say that the best and most economical way to destroy it is to spray the trees with a weak mixture, containing some arsenical compound; such as Paris green or London purple. I am aware that there are certain difficulties in the way of attaining success in these experiments; but what is there which is worth having which does not require a certain amount of effort. In this case, however, the difficulties are very slight, and easily overcome. All that is necessary is a little caution and practice, in learning the proper time and method of applying the poison. It is not sufficient to have the mixture of the right strength only; but discretion must be used in the manner of applying it. One of your members has complained to me that he used a Paris green mixture of the strength I had advised, and that he lost about half the foliage of his trees. I found, however, upon enquiry, that he had thoroughly drenched his trees. Now, last

year, I laid particular stress upon the importance of applying these corrosive arsenical compounds, as an extremely fine mist, without drenching the foliage. When spraying trees, directly the mixture begins to drip from the foliage, the spray should be directed to some other part of the tree. I cannot speak too highly of Paris green as an insecticide, and I believe that it would repay every fruit grower to practice over small areas, until he thoroughly understood the way to apply it. Two things are always to be borne in mind. 1st.—The mixture must be kept constantly stirred, and 2nd, it is wiser to make a small experiment first, because the Paris green is not always of the same strength, and also because the foliage of some varieties is much more susceptible of injury than that of others. There is no doubt that all of these corrosive poisons are more or less injurious to the foliage however applied, and for this reason it is of great advantage to the fruit grower, if, by studying the habits of his insect enemies, he can ascertain the period when they hatch from the egg. At this time they are very tender, and an extremely weak solution will then answer all purposes.

I have used extensively during the past season the formula I recommended in your last report, and do not deem it expedient to change it.

“Paris green is used dry with various diluents. Flour and plaster of Paris seem to be most satisfactory, and may be used in the proportion of 1 part of poison to 50 of the diluent, for a dry application; and $\frac{1}{2}$ pound to a barrel (40 gallons) of water; (or in a smaller quantity, $\frac{1}{2}$ oz. to 1 bucket of water,) for a wash or spraying solution.”

Paris green is, I believe the best of the arsenical compounds available. It contains, when pure, about 60% of arsenious acid. London purple is much less reliable in its effects, because, being a waste product the per centage of arsenic varies, so it cannot be used with confidence. I repeat, I believe the most economical and successful treatment of the canker worm is to spray the trees with a weak mixture of Paris green, soon after the young caterpillars hatch from the eggs. The life of most insects consists of four periods, during which they present very different appearances. The life history, for instance, of the canker worm, is as follows:—In the autumn the wingless female comes from the chrysalis, and crawls up the nearest tree, where she is visited by the male, an insect furnished with ample wings and

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in no way resembling her. The female lays her eggs on the bark of the tree, and they remain there all the winter. In the spring, just as the leaf buds are opening, the young caterpillars hatch, and devour everything within their reach; when full grown they drop to the ground, and after burrowing beneath the surface, turn to brown chrysalids, from which in due time the perfect moths emerge. Besides the canker worm any other caterpillars which destroy foliage may be kept in check by the use of Paris green, and more than that, it has been discovered to be a sovereign remedy against the codling moth of the apple and the plum curculio. It is not quite understood how it works upon these two insects; but it has been proved in many instances that where trees were sprayed, their crops were saved, while upon trees not so treated, although growing close to the others, there was no fruit. Extensive and exact experiments have been carried on in this line by Prof. Forbes, of the University of Illinois, with remarkable results, namely, the saving of about 75 per cent. of the crops of apples on the trees treated.

These arsenical poisons are only available for those insects which consume the substance of their food plant. The other large class which suck out the juices of plants have to be treated in a different manner. As you are all probably aware insects do not breath through their mouths and noses like the higher animals, but by means of small orifices in their sides called spiracles. If these small openings are stopped up the insects are suffocated, and this is their vulnerable point. There are several substances which may be used for the purpose, but the most useful are Pyrethrum powder and kerosene. The first of these, Pyrethrum powder, also called Persian Insect Powder, is made from the pulverised flowers of a species of Pyrethrum, a pretty composite plant growing in Eastern Europe and Asia Minor. It owes its insecticidal properties to a volatile principle which has a most poisonous effect upon all insects; but which, strange to say, is harmless to the higher animals. Another useful series of remedies is made from kerosene or coal oil, which, however, unlike Pyrethrum, must come into actual contact with the body of the insect to be destroyed. These remedies are particularly useful for the various scale insects, and have been extensively used for the oyster-shell bark-louse of the apple.

These emulsions are made by mixing kerosene either with milk or soap suds. I repeat what I said last year with reference to the mode of making them:—

An emulsion resembling butter can be produced in a few minutes by churning, with a force-pump, 2 parts of kerosene and 1 part of sour milk in a pail. The liquids should be about blood heat. This emulsion may then be mixed with 12 times its amount of water. It must be thoroughly mixed, and then may be applied with a force-pump, spray-nozzle, or even with a strong garden syringe.

Soap Emulsion.—An emulsion may also be made with soap. The most satisfactory formula, as given by Prof. Riley, is as follows:—

Kerosene.....	2 gallons.
Rain Water	1 do.
Common soap, or whale-oil soap.....	$\frac{1}{2}$ pound.

“Heat the solution of soap and add it boiling hot to the kerosene. Churn the mixture by means of a force-pump and spray-nozzle for five or ten minutes. The emulsion, if perfect, forms a cream, which thickens on cooling, and should adhere, without oiliness, to the surface of glass. Dilute before using 1 part of the emulsion with 9 parts of cold water. The above formula gives three gallons of emulsion, and makes when diluted, 30 gallons of wash. The kerosene and soap mixture, especially when the latter is warmed, forms, upon very moderate agitation, an apparent union; but the mixture is not stable, and separates on standing or when cooled or diluted by the addition of water. A proper emulsion of kerosene is obtained only upon violent agitation. It is formed not gradually, but suddenly. The temperature should not be much above blood heat.” Prof. Riley lays great stress upon the fact that all who use kerosene as an insecticide, must bear in mind that it is only a safe remedy when properly emulsified, and he maintains that all failures have resulted from carelessness in making the emulsions.

A smaller quantity can easily be made by putting 1 pint of kerosene into a quart bottle and then adding $\frac{1}{2}$ pint of boiling rain-water, in which $\frac{1}{2}$ oz. of soap has been dissolved; this will leave just room enough in the bottle to allow its contents to be vigorously shaken. In a short time the emulsion will be obtained.

In conclusion I wish to assure you all that it will at all times be a very great pleasure to me to hear from you concerning injurious insects, and I shall always be happy to do anything in my power to assist you. I would remind you too that it is very easy to send specimens for examination. All small packets will come to me, as the

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Government Entomologist, FREE by post, and you need never defer sending specimens for want of a proper box, any small wooden or tin box will do. Baking powder and mustard tins are very convenient, and if none of these are available even a lobster tin can be made use of with a piece of card or thin wood tied over the top. Above all things when you observe an insect attacking your crops, send off at once, or before you get the remedy it may be too late to do any good, for that year at any good. Ladies and gentlemen, I thank you for your patience, and I shall be happy to answer to the best of my ability, any questions you may be pleased to put to me.

* PROFESSOR SAUNDERS.—A gentleman remarked to me one day that he had used Paris green to keep the curculio from his plum trees and the result was fatal to the trees. On enquiry I ascertained that he had put one quarter of a pound of Paris green into a barrel of water, and he neglected to stir it before using; the result was it went to the bottom, and when he got down towards the bottom of the barrel his remedy was entirely too strong and the trees were killed. I think the practice of bandaging trees with cotton wool should also be adhered to, because the insect gets its legs entangled in the fibres of the cotton and the females gets disgusted and drop off to the ground. Paris green is a good remedy, and failures from its use are the result either of impurity of the Paris green itself or the improper application of it.

The committee chosen to draft a resolution of condolence upon the death of the late Hon. Marshall P. Wilder, presented the following report:—

“Resolved, That this Association desires to place on record the high appreciation of the life-long labors of the Honorable Marshall P. Wilder, of Boston, in the interests of fruit culture in America. The venerable President of the American Pomological Society during his long career of usefulness has not confined his efforts to promoting fruit culture in the United States, but also took a deep interest in the progress of fruit growing in all parts of the Dominion of Canada; and, while sympathising sincerely with our horticultural friends across the border in the great loss they have sustained in the death of this distinguished pomologist, we feel that Canada also has lost a sincere and earnest friend, who was always ready to render to every one seeking information all the assistance in his power. His earnest efforts to increase the happiness of all by promoting a love of fruits and flowers in every part of this continent will never be

forgotten, but will live perpetually in the grateful memory of all lovers of horticulture, not only in Nova Scotia but in all the provinces of the Dominion."

Passed.

FROST PROOF WAREHOUSE.

On motion of **MR. FISHER** the question of a frost proof warehouse was now taken up.

R. W. STARR—This is a matter of paramount importance, and is an absolute necessity if we wish to ship our fruit with any degree of safety. The difficulty appears to be in getting a site for the erection of such a building as is required.

MR. FISHER.—The time has come when we should take immediate action in this matter. The subject of our investigation is a commercial necessity, and it appears to me that we are entitled to assistance from both the Dominion and Local Governments; I believe if our claims are presented in a determined spirit we will receive the long asked for aid.

MR. DEWOLF.—This is not a new subject, as it was brought to the attention of the Government long ago; nevertheless, if sufficient weight is brought to bear I believe this desire of every fruit grower in this province will be an accomplished fact. When people have the assurance that fruit can be sent to Halifax without danger from frost, it will certainly increase the traffic to that city. The citizens of Halifax will do their part, and I shall endeavor to have the matter brought up before the Chamber of Commerce on my return.

MR. HENSLEY.—This subject is one of vital importance. You all know that dealers and growers have very few places suitable for the storage of apples, and in consequence they are often obliged to sacrifice their fruit. The existence of this proposed warehouse would obviate the difficulty by enabling owners of the fruit to ship gradually, at suitable times, and receive better prices. There is some talk of forming a company, and with a grant from the Local and Dominion Governments, it will certainly be built. I agree with **Mr. DeWolf** that it should be urged with the utmost determination.

REV. MR. HEMMON.—Is it not now the best way to ship via Annapolis, or at least can we not ship as cheaply from there as from Halifax?

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There is a frost proof warehouse already built at Annapolis, and furthermore, Kingsport is spoken of as a deep water terminus. If we ask the Government to build at Halifax they will not build at Kingsport.

VICE-PRESIDENT BLANCHARD.—We have travelled all over the ground before, and if that gentleman would take the trouble to read over the report of the proceedings of this Society he would have been convinced that Annapolis does not and cannot meet the requirements of the apple trade, nor would one at Kingsport be at all satisfactory. It has long since been decided that a warehouse at Halifax is an absolute necessity.

MR. HENSLEY.—Every person knows that a vessel must have a full cargo before she goes to sea. Apples will not stand the weight of more than five tiers high, and at Annapolis no other cargo could be found, while at Halifax the steamer could complete her cargo with grain; it is necessary to have other freight besides apples.

MR. B. STARRATT.—We have had an exceptionally large crop this year, and the result was that two steamers sailed from Annapolis with fruit; but there have been seasons when no shipments went from Annapolis. I think that Mr. Hensley has touched the point exactly, and I believe we can ship cheaper from Halifax than from Annapolis; the same objection holds good as regards Kingsport. With a frost-proof warehouse at Halifax we could take advantage of a few mild days and send our fruit there in advance of the time of the sailing of the steamer, thus having them on hand when required for shipment. That procedure can not be followed at present. All things being equal I am in favor of shipping by way of Annapolis.

PROFESSOR HIGGINS.—Even the newspapers agree with us that a warehouse is needed at Halifax; and it appears strange to me that we have not found any person enterprising enough to build one as a private speculation.

MR. WHITMAN.—We all know that the steamers of the Anchor and Furness Lines are first-class, while we have no guarantee what the steamers at Annapolis will be.

The following resolutions were then passed unanimously :—

Resolved, That we instruct the Executive of this Association to approach the Dominion Government and ask for the building of a suitable frost proof warehouse at Halifax.

Resolved, That we appoint a committee to wait upon the Local Government and ascertain if it is possible to obtain any assistance in the building of a frost-proof warehouse at Halifax.

Moved by VICE-PRESIDENT BLANCHARD seconded by MR. JOHNSON.—That this Association takes a deep interest in the consolidation of the railroads west of Halifax, and that every effort should be used to induce the Dominion Government to make these roads a part of the Intercolonial system; and that the people of the western counties should not rest until this object of such paramount importance to them is attained.

MR. BLANCHARD.—I know that Mr. Innis has done everything in his power to forward fruit when it was required for shipment; but irrespective of all this, I believe that it is of great importance that these roads should be conducted in the same manner as the I. C. R. We would then get better rates, for we cannot expect that the W. A. R. can afford to carry freight as cheaply as the Government.

DR. CHIPMAN.—I am firmly convinced that the Government should take over these Western Counties railroads.

The SECRETARY.—The frost-proof warehouse will immediately follow after the railroads are consolidated; the Government will not build a warehouse for the W. & A. R.

MR. BISHOP.—After a warehouse is built at Halifax a large sum will be saved in connection with the question of truckage.

Resolution passed unanimously.

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ANNUAL DINNER.

AFTER the usual annual dinner, which was enjoyed by the members of the association and their guests, at the College Hall, the PRESIDENT stated that he had the honor of being appointed a Vice-President of the American Pomological Society, and was requested to send to that society specimens of all new varieties of fruit. He also urged that the association should make arrangements to meet with that society at Boston.

VICE-PRESIDENT BLANCHARD was then called upon to move the following resolution:—

Resolved, That this association expresses great gratification in having the pleasure of the presence with us on this occasion of Professors Saunders, Macoun, and Fletcher, who were no doubt caused much trouble and expense, in travelling from Ottawa at this inclement season of the year; and that the thanks of the association be tendered to them, as well as to Professor Smith and Professor Penhallow and Dr. Chipman, for the able and instructive addresses and papers which they have given us, and that they be requested to allow their papers to be published in our annual report."

THE SECRETARY.—It affords me great pleasure to second this resolution, and I wish I were able to express my feelings and appreciation of the presence of these gentlemen. We have derived great benefit from their visit, and we look forward with equal pleasure to their visiting us again.

Resolution passed and thanks tendered accordingly.

Moved by MR. BLANCHARD, seconded by MR. PARKER, "That the thanks of this association be conveyed to the Hon. the Minister of Agriculture, and the Hon. the Minister of the Interior, for the permission to attend this meeting given to Professors William Saunders, John Macoun, and James Fletcher, whose presence and addresses have afforded a large degree of pleasure and instruction to the association.

Passed.

PROFESSOR SAUNDERS.—It affords me very much pleasure to be with you on this occasion. When your Secretary invited me to be

present at this meeting of your association, I was afraid that it would be impossible for me to be present; but I am glad that it was found practicable to lay other engagements aside, so that my associates and myself might be permitted the pleasure of being with you. Referring to the Fruit Growers' Association in Ontario, of which for many years past, and until recently, I have acted as President, I may say that it is the largest association of its kind on the Continent of America, the membership varies in number from 1500 to 2500, and I will endeavor to explain to you some of the measures adopted, with the view of maintaining that membership. The Province of Ontario is divided into 13 electoral districts for agricultural purposes, and the act under which our society is incorporated provides that one director of our association shall be elected from each of these districts. The directors are expected to take special interest in keeping up and increasing the membership, and it is not an uncommon occurrence to have from 50 to 100 names or more, sent from one district, as the result of the resident director's work. You have, I understand, amongst your officers, twelve or thirteen Vice-Presidents; if you could induce each of those gentlemen to canvas their own district for members, you would I think, soon have a membership which would more fully represent the great fruit-growing interests of your province.

Another feature, which in Ontario we have found to be very useful, has been the yearly dissemination among the members of some new or untested variety of fruit tree, plant or shrub, which is sent to members on condition that they report to the Secretary, from time to time, as to the hardiness, productiveness, quality, etc., of such fruit, so that reliable conclusions may be reached as to its adaptability for general cultivation. In this manner promising new fruits are brought into general notice very promptly, their general usefulness ascertained, and at the same time the members made to feel that they are engaged in the useful work of adding to the general sum of our knowledge on fruit topics, and also deriving from their membership a direct and practical benefit. I would commend this feature of the work to the consideration of your board.

It may not be amiss on this occasion to refer briefly to the methods by which the new varieties of fruit, with which we are now so bountifully supplied, are produced. I referred briefly yesterday to the experimental farms of the Dominion of Canada, and how it is

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proposed that they should aid the fruit interests of the several provinces, and I may say in this connection that it is intended to make the testing and distribution of new varieties of fruit a special feature of that work. Those of us who can carry our recollections back 30 or 40 years will remember that we knew nothing then of most of the fruits which are now so popular. It is about 35 years ago since the first cultivated strawberries were introduced into Canada; the Hovey strawberry taking the lead. This berry is said to have been a cross between one of our native sorts and a wild variety from the coast of Chili. Cultivated sorts from Europe were introduced about the same time. Not long after this the Wilson, or Wilson's Albany, as it was then called, made its appearance, and soon distanced all competitors, manifesting a degree of vigor and productiveness which has scarcely yet been excelled by the best varieties of more recent introduction. The ideas then generally held with regard to the future of strawberry culture, seem singular now in the light of subsequent experience. It was boldly asserted that it would never pay to use cultivated ground for strawberry beds, while wild strawberries could be had for the gathering, and that the few enthusiasts who were endeavoring to grow this fruit for the markets would soon tire of an undertaking in which they were likely to lose both time and money. It would be difficult now to estimate the annual value of the strawberry crop, which adds so much comfort and health to the community during the early part of the heated term, when acid fruits are so very refreshing.

Grape culture at this early time was in much the same condition, whereas now there are more than a hundred good varieties from which to select, and more than twice that number in cultivation. These numerous varieties have been produced either by selection or cross-fertilization. To obtain new sorts by selection, a quantity of the seed of some desirable sort is sown, and when the young seedlings fruit the best of them are set aside for further trial, and if on being further tested any of them are thought worthy of extended cultivation, they are propagated and offered for sale. To produce varieties by cross-fertilization, pollen of one sort is applied to the pistil of another sort, the flowers operated on properly protected at the first by paper bags, and after the fruit has set by bags of coarse muslin. When ripe the seed is sown, and in about four years will produce plants suffi-

ently strong to bear fruit. At the Central Experimental Farm both these methods will be followed, and in a few years there will, no doubt, be produced a large number of new sorts, some of which it is hoped will be important additions to our present list of desirable fruits.

PROFESSOR FLETCHER.—We have heard something of the great discomfort resulting to the three gentlemen who have come to attend this meeting; I may say that it was nothing but pleasure to me. I wish to say that I am willing to help you in every way possible, if you will but acquaint me with your difficulties. You heard me this afternoon, and I will conclude by thanking you for the honor you have conferred upon me.

PROFESSOR MACOUN.—Before I commence my speech I must explain why I am here. The gentleman sitting on my left said to me on board the "Vancouver," could you come to our meeting if you were invited? I replied that I would ask the permission of my superior. I am here, and I honestly confess that I hope you will ask me again. (Applause.) It is the first time I have had the opportunity of meeting a company of gentlemen almost exclusively Nova Scotians, and for the life of me I cannot see any distinction between a Canadian from the Atlantic and one from the Pacific; we all have the same desire that characterizes the whole Anglo-Saxon race, viz: progress, progress, progress. At the exhibition I walked with Englishmen, and talked this matter over with them. As I looked into the Indian department and saw workmen toiling there in the manufacture of pottery, for which they received the sum of three or four farthings a day, I could not avoid making the comparison between Americans and themselves. Could we work that way? No, the civilization of the east is not congenial to our taste. The Australians made grand exhibits of their mineral productions, but they did not show anything of their own handiwork. Then we come to that grand trophy, of which you have heard so much to-day, towering far up to the roof, showing the products of this grand country, and the fruits of Nova Scotia, Quebec, Ontario and the far Pacific. I had there photographs of B. C. trees, in frames made from their own wood. When Her Majesty the Queen visited and inspected that lovely trophy, I could see her face beam with delight. (Applause.) Then we presented a specimen of our fur bearing animals, and I heard the people say that

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the country which could produce all these things must be a wonderful place indeed. The Australian colonies represent England in her conservative ideas, and show a want of American progress. I pointed out our vast machinery, and showed that we in the west were bound to go ahead. Their attention was directed to a comparison with the Australian department, and a gentleman came up to me and stated that the depression in England was going to last, for the reason that we did not require their assistance any longer. The Australians went home with a determination to form a confederation of their own, and become, as we are, protective. I tell you that New South Wales is a poor country, that is, they are extremely rich, but they have no work for the people to do; a terrible thing indeed to contemplate.

It has fallen to my lot to travel through Canada from ocean to ocean, and I am able to tell you to-night that there is not a tract in all this vast country what I cannot accurately describe. It is a grand thing to stand here in this hall to-night, feeling that we are the representatives of the coming greatness of this beautiful country, (applause,) and I often wish that I were twenty years younger. Englishmen complain of the cold and snow of Canada, but I showed them that frost was the very thing we required to assist in the tillage of our soil. There you will see three heavy horses in tandem, ploughing, with a man leading the forward horse, and another man holding the plough; and on questioning them I found they broke up less than an acre a day. (A voice, I saw five horses.) I placed it at three, as I thought that was enough. (Laughter.) After it was ploughed they spent a great deal of time in getting it ready for the seed.

I visited some of the grand orchards of England, and I asked, "Is that the way you care for your orchards?" They were poor miserable trees, covered with lichen. The land was rented, and no man will plant trees on another man's land. There are glorious prospects for this province of Nova Scotia. The cultivation of a number of fancy varieties of apples will not prove a success; but you should rather aim at those kinds which command the best prices, and should you find that wheat and barley will not pay, then all you have to do is to stick to what will, viz: fruit. I have been told by engineers that there are more minerals in Nova Scotia than any other section in America.

Away west of Winnipeg we have a country which in the near future will produce all the wheat that England can consume. I sug-

gested to England that she should put an end to her policy of letting in all other sections of the world to the detriment of her own people, and that we should have free trade among our own Anglo-Saxon race, to the exclusion of all foreigners. Five years after the adoption of such a policy, the Americans would be tapping at our doors for reciprocal trade. I have attended meetings in Ontario, and I can say that you have brought out as much, if not more, valuable information in your discussions as any society in the Upper Provinces. I feel that the three days which I have spent with you have been more profitable than any three days during the past ten years, and I sincerely hope you will honor me with another invitation at some future day. (Applause.)

THE HON. ATTORNEY GENERAL.—I am delighted to learn that the meeting of this association, held during the last two days in this town, has been one of more than ordinary interest. The eminent men who have combined their efforts to make this occasion an interesting gathering have given the association the benefits of their experience in the progress and development of the industry of fruit growing, and I have not the slightest doubt but that their suggestions will prove advantageous. The large and profitable crops of last year might well induce fruit-growers to instruct themselves in the profession to which they belong, and create in them a lively interest in this important industry. I wish it were possible for the men of 20 or 30 years ago to be present, to see the immense progress that has been made in this matter. I can remember when a few zealous people met and considered the question of fruit growing in this valley; then a small matter indeed, for the cultivation of different varieties was never thought of in the province of Nova Scotia. Since that time a great interest has sprung up, new orchards have been planted, old ones developed and improved, and, now we have the production multiplied five or ten fold, and fruit culture one of the most profitable and legitimate enterprises of the province. This must be a proud and satisfactory result to those who were the originators of this society, under whose auspices we have gathered around this festive board to-night. I feel, sir, that it is a matter of very great pleasure and profit for me to be present on this occasion, and hear the valuable observations made by those who come from abroad. Men who meet with the greatest success in life are those who make a speciality of one

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particular calling, and we look to the specialist in the matter of fruit growing, for I believe it to be important that these gentlemen should come in among us on matters pertaining to that calling. I entirely concur with the remarks of Professor Macoun. I have read a book written by that gentleman, and it affords me pleasure to meet him and hear him speak. Whatever the properties or qualification of this valley may be one thing is certain; that it is admirably adapted to the production of fruit; for we not only raise fruit in great abundance, but we have an unlimited market in Europe and Great Britain. We have tested our ability to compete, and proved that we can hold our own. We can, as I have stated on a former occasion similar to the present, place the Golden Russet and the Nonpareil on the British market at a time when other countries could not produce them, thus proving that there is a permanent source of wealth in this valley. As the point of experimental farms has been touched upon to-night, I hope the important question of railways will be mentioned, as it is a practical question connected with the transportation of fruit. I am delighted to know that model farms are to be established in the maritime provinces, and I think that the Annapolis Valley should be chosen as the location of one. At all events I am much pleased that one is to be placed somewhere in Nova Scotia.

I thank you very much for your kindness in inviting me to take part in the proceedings of this evening; and I must apologise for the Hon. Provincial Secretary, he having a previous engagement, was not able to be present. On his behalf, and on the behalf of my colleagues, I might say that we in common with yourselves, have a sincere and profound interest in the work of this important organization, as we have in all matters pertaining to the development and well-being of this country. (Applause.)

PROFESSOR SMITH.—I do not assume to be a professor but a farmer, and I would not think of addressing you were it not for the fact that you are farmers, and I know that farmers are sympathetic. We have heard a great deal about our Dominion and experimental stations, and the good to result therefrom; now it seems to me that the Local Government have struck the nail on the head by establishing an agricultural school, thus educating us to take advantage of the work of the Dominion Government. To get the benefit of experiments each farmer must apply them to his own farm. It seems to

me that farmers do not interest themselves in agricultural education to that extent which the subject justifies; think of it, we have only one agricultural college in Canada, at Guelph, and that turns out from 9 to 11 graduates only every year. If farmers' sons are educated then not only will the school of agriculture grow and prosper, but the country will reap the benefits.

COL. W. M. BLAIR.—Concerning the subject of experimental farms I may say very little has been done up to the present time; it has simply been announced what the intention of the Government is, and I hope that I may be enabled to report to you on some future occasion what has actually been accomplished. When listening to the discussion of this Association yesterday and to-day, I was impressed with the thought that the speakers, with their minds stored with valuable knowledge and capable of imparting very useful information, were yet scarcely on the threshold of knowledge; being like a man standing on the sea-shore gazing out over the ocean, while he could see a certain distance, yet there was vast ocean beyond of which he knew nothing. We have heard of the experiment of sending a commission to England, and we have listened to the report of their efforts to bring the products of Canada to the notice of the world; but we are not yet in a position to report on the workings of experimental farms because they are simply in their infancy. Many of you are aware that the Government has purchased a farm near Ottawa, and placed the same under the control and direction of Professor Saunders. Buildings have to be erected, and there is a house about being completed, for the testing of seed. Farmers from all portions of the Dominion will be invited to send their seeds there in order that their germinating qualities may be definitely ascertained; they can be sent there free of charge, and after examination will be returned to you with a statement of their value. Seedsmen will see that it is greatly to their advantage to have their seeds tested at this central station before exposing them for sale. It is contemplated to establish one of these experimental stations in each of the provinces. When the central station has become an established institution it is intended to cause the various kinds of grain to be sown side by side, these grains to be selected from all parts of the world. The result of such experiment will be made known and samples of these grains will be sent to different farmers throughout the Dominion, thus giving them the

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advantage of the work going on at head quarters. It is also the intention of the Government to experiment with cattle, with a view to ascertaining the best breeds for beef and butter. Everything cannot be brought to perfection in one year as it must necessarily take time to get results. The Local Government have done wisely in their day and generation in establishing an agricultural school at Truro, but it cannot be a success unless it has a tract of land in connection with it; real practical work, and not theory, is what is required. (Applause.)

PROFESSOR HIGGINS.—I always attend the meeting of this Association for the purpose of learning, and therefore do not pretend to be able to speak as a teacher on the subject of fruit production. Twenty-five or thirty years ago such a meeting as this would have been an impossibility; for at that time the general opinion prevailed that agriculture and fruit growing did not require any special training, and that any one could become a successful farmer. We have passed the period in the world's history when these matters were so considered, and ample proof has shown itself, that to be a successful agriculturist or horticulturist a special training is as necessary to fit a man for his work as the lawyer, physician or theologian require for their respective callings. These meetings of the Association are very good training schools. The business of agriculture requires as much, if not more, power of observation and the drawing of inferences, than any other, and these faculties are created and developed by special training. In short, if the young men of this country wish to be successful farmers they need all the education that it is possible to obtain. In cities men are continually coming into contact with each other, thereby exercising an influence of mutual improvement upon each other; but the farmer is obliged in many cases to do his work in solitude, thus giving him an opportunity to think for himself; and with a college education farmers would be more largely represented in the ranks of those who have the control of the affairs of the nation. They should all come to Wolfville and attend Acadia College. (Applause.)

MR. J. W. BIGELOW.—I wish to thank this Society for what little information I have obtained on the subject of fruit. The crowning effort of the Association was made at the Colonial Exhibition, and glorious and satisfactory results realized from the efforts of the gentlemen sent to superintend the Canadian department. Apple growing

in this valley is one of the best speculations on earth. Nine tenths of Florida is owned by speculators who do not see their property once a year, and a speculator in England can invest his money in this valley without being present personally, and in forty-five years his profits will be enormous. I will give you a few figures:—

Cost of an Orchard of 1,000 Apple Trees, and Revenue therefrom, in Kings County, N. S.:

25 Acres of Land, at \$30 per acre.....	\$ 750
1,000 Apple Trees at 20 cents	200
Setting out 1,000 Trees at 10 cents each.....	100
Fertilizing " " " "	100
Fencing and sundries.....	100
8 years Interest on \$1,250, at 5 per cent.....	500
Cultivation 8 years, \$100 per year	800
Manuring, Mulching, Replacing dead Trees and all other expenses... ..	450

Total cost till 8 years old..... \$3,000

Income.

Yield the ninth year and previous, say 500 bbls. at \$1 per bbl., clear of all expenses.....	\$ 500
Yield the 10th to 15th year, average \$1,000 bbls., at \$1 per bbl. clear..	5,000
Yield the 15th to the 45th year, 2,000 bbls., at \$1 clear.....	60,000

Total income in 45 years.....\$65,000

An orchard of 1,000 trees gives from the tenth to the fifteenth year an income of \$1,000 a year, and for thirty years thereafter gives \$2,000 a year income, being the yearly income of an investment of \$40,000 at 5 per cent. This is based on the low average yield of two barrels a tree, and \$1 per barrel net value. At half this yield the orchard is worth after 15 years \$20,000 as a permanent investment, and is produced at a cost of \$3,000, as shown above. To further show the enormous profits of the business we will double the cost of the orchard, say \$6,000, and decrease the yield one-half, say 1,000 bbls. a year, giving \$1,000 per year income for thirty years, and then you have an investment worth \$20,000, at a cost of \$6,000. This statement is made from the actual experience of many farmers in this county for the thirty years past, and my own experience for 15 years past. I arrived in this country 15 years ago and all I knew about an apple was to eat it, but I was induced to purchase a few hundred trees, and my experience has far over-reached the figures contained in the statement just read to you. (Applause.)

DR. CHIPMAN.—I notice that the presence of ladies makes our meeting more pleasant than usual, and I would suggest to the gentle-

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men who have come down from Canada that they should follow Professor Smith's example and bring their wives with them.

Moved by Dr. Chipman, seconded by Mr. Fisher, that the thanks of the Association be tendered to the press and railway authorities for the assistance rendered by them to this Association.

MR. PINEO in response said that it always afforded the press great pleasure to be present and report the doings of the Society. While it is a matter of surprise that farmers do not ally themselves with this worthy Society it must be a great satisfaction to its members to know that its work is spreading and its usefulness becoming more and more appreciated all over the country. I cannot sit down without expressing my gratitude at having the pleasure of listening to the gentlemen who have addressed us.

PRESIDENT HART here called upon Mr. DeWolf for a few remarks on the subject of shipping fruits.

MR. DEWOLF.—At this late hour it is impossible to say much on this subject. It is purely a matter of business, and if the fruit is forthcoming the steamers will provide all the cold storage required, and the extra cost to the shipper would be trifling, if the shipments were sufficiently large.

ATTY.-GEN'L. LONGLEY.—The Provincial Government in sending an exhibit of apples and other fruit to the great display in London last year were unable to send a fit and proper person to take charge of the exhibit, but that want was fortunately supplied by the Dominion Government in the selection of Mr. Starr; and on behalf of the Local Government I wish to acknowledge their obligations to him for his unceasing efforts at the Exhibition.

The SECRETARY.—I must not omit to state that the success of the Exhibition was due not only to Dominion and Provincial Governments, but also to Professor Saunders. From first to last he was the right man in the right place. Persons have asked me if I wanted to go back to England to live and my answer to them was, Nova Scotia forever for the working man, and England for the rich. There is no better place in Canada than this Annapolis Valley, and we should do everything in our power to induce our young men to stay at home. I have great confidence in the future of this country.

The Association then adjourned its annual session by the singing of the National Anthem.

APPENDIX.

REPORT ON CANADIAN FRUITS EXHIBITED AT THE COLONIAL AND INDIAN EXHIBITION, 20TH OCTOBER, 1886.

A special meeting of the members of the Fruit Committee of the Royal Horticultural Society was held this day in the Colonial and Indian Exhibition—F. F. Rivers, Esq., in the chair—to inspect the collection of hardy fruits exhibited by the Canadian Commission.

These comprised extensive collections of apples, pears, grapes, etc., from the Provinces of Ontario, British Columbia, Quebec, Nova Scotia, New Brunswick, etc.

Apples constituted the most prominent and important feature, and proved of much interest to the committee, many of the examples shown being of large size, and extremely handsome in appearance, the high coloration of many being specially remarkable and noteworthy, greatly excelling in this respect the same varieties grown in this country.

The following varieties of apples were specially noted, as possessing fine appearance, viz :—

Beauty of Kent.	Fallowater.
Blenheim Orange.	Flushing Spitzenburg.
Ben Davis.	Foundling, excellent quality ;
Boston Russett.	handsome.
Blue Pearmain, good.	Guile Noire, dark.
Bourassa Russet, (Scarlet Rus	Gravenstein, good.
set.)	Gloria Mundi, very large.
Baldwin, large ; good.	Hamilton's Beauty.
Cayuga, red streak.	Hawker Pippin.
Colvert.	Hyslop Crab, very beautiful.
Canada Red.	Johnathon, small, bright, good,
Clyde Beauty, large.	late.
Emperor Alexander, extremely	Johnston Red, small.
handsome.	King of Tompkins County, very
Fillbasket.	large and beautiful.

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(4.) Seedling
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King of the Pippins.	Seek No Further.
Mann, late green.	Swazie Pomme Gris.
Maiden's Blush, very handsome.	Trenton, very handsome and good.
Mammoth Pippin.	Twenty Ounce.
Northern Spy.	Vandevere, peculiarly spotted.
Ribston Pippin.	Wealthy, fine quality, good color.
Republican.	Wagner.
Snow or Fameuse, excellent.	Wellington.
St. Lawrence.	Yellow Bellefleur, fine quality.

Cox's Orange Pippin was remarked as being greatly inferior to those of English growth, both in appearance and quality.

The collection of pears did not present such an attractive appearance. Some very fine examples were, however, shown in the following varieties:—

Beurré Clairgeau.	Marie Louise.
Beurré Hardy.	Moul Verva.
Beurré d'Anjou.	Onondaga.
Duchesse d'Angoulême.	Vicar of Wakefield.
Flemish Beauty.	White Doyenné, extremely rich.
Louise Bonne of Jersey.	

Grapes made a conspicuous display, but of these, as a dessert fruit, no opinion could be expressed, the peculiar foxy taste and gelatinous flesh belonging to the grapes of America requiring some experience to discriminate. Some of Roger's new seedlings were remarked as both large and handsome.

The following new seedling fruits submitted to the committee were considered worthy:—

(1.) Apple.—Trenton, seedling from Golden Russet, raised by P. C. Dempsey, Ontario; fruit, medium size, round, bright red, flesh tender, sweet and extremely pleasant, somewhat resembles the Snow Apple.

(2.) Apple.—Seedling from Mr. C. B. Fitzgerald, London, Ontario, fruit medium size, highly colored, fine tender flesh.

(3.) Apple.—Seedling from Mr. W. Scott, Lambeth, Ontario; greatly resembles "Duchesse of Oldenburgh."

(4.) Seedling Pear, (Dempsey,) raised by Mr. Dempsey, Trenton, Ontario, from Williams' Bon Chrétien and Duchesse d'Angoulême.

fruit large, resembling Duchesse d'Angoulême, flesh melting, sweet and pleasant.

(5.) Seedling Grape, Emerald, from Prof. W. Saunders, London, Ontario, was considered the best of the Canadian sorts exhibited.

The following resolution was unanimously passed by the committee:

Having inspected the extensive and attractive exhibition of hardy fruits, comprising apples, pears, grapes, etc., from the several fruit growing provinces of the Dominion of Canada, the Committee desire to express the great gratification they derived from the opportunity of seeing the fine growth and high color of the majority of the specimens. Many varieties were tested and found excellent, more especially the tender fleshed apples.

In comparing some well known varieties that have long been in cultivation in Great Britain, the Canadian apples are found to differ in that rich flavor which is peculiar to some of the British apples.

The committee are aware that some of samples of fruit were gathered before maturity, in order to be presented at this Exhibition.

A. T. BARRON,

Secretary to the Fruit Committee of the Royal Horticultural Society.

NOTE.—The following extracts are culled from the REPORT OF THE APPLE AND PEAR CONGRESS, held by the ROYAL CALEDONIAN HORTICULTURAL SOCIETY at EDINBURGH, November, 1885. They embrace the descriptions given of some of our best known varieties of apples, which, while showing the very flattering opinions formed by the Society, do not always coincide with our own estimate of same sorts, and might prove misleading if taken as a literal guide in the selection of kinds for an orchard in Nova Scotia.—
SECRETARY.

NOVA SCOTIA.

Exhibitor.

THE GOVERNMENT OF NOVA SCOTIA, *per* Professor GEORGE LAWSON,
Secretary for Agriculture, Halifax, Nova Scotia.

Number of Varieties Exhibited 118 Apples.

Altitude, average 80 feet; aspect, open; site, sheltered by hills to the north; soil, a good loam; subsoil, new red sandstone (*Triassic*).

Observations.—A superb collection of Apples grown in Nova Scotia, containing numerous samples of large, handsomely shaped, and beautifully coloured fruit, clear in the skin, of the finest quality, and very accurately named. Among the most notable

specimens are g
Cabashea, Fall
Pippin, Hoary
Chebucto Beaut
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specimens are grand examples of the following:—Blenheim Pippin, Cabashea, Fallawater, Gloria Mundi, Gravenstein, Cox's Orange Pippin, Hoary Morning, Baldwin, Fameuse, Mammoth Russet, Chebucto Beauty, Northern Spy, King of Tompkins County, Peck's Pleasant, Mother Apple, Cayuga, Bigelow, Golden Russett, Jewett's Fine Red, Herefordshire Pearmain, Golden Pippin, Holly, Hubbardston, King of the Pippins, Golden Nonpareil, Washington Strawberry, Wagner, Ben Davis, Pewaukee, Seek-no-Farther, Ribston Pippin, Autumn Pearmain, Vandevere, Belleflower, Snow Apple, Broadwell, Emperor Alexander, Dutch Codlin, Blue Pearmain, Canada Reinette, Mic-Mac Codlin, Fall Pippin, Willoughby, Franklin's Golden Pippin, Gladys, Cooper's Russett, Dutch Pearmain, Chipman, Talman Sweet, St. Lawrence, Willow Twig, Rymer, Esopus Spitzenburg, Calkin's Pippin, Hog Island Sweet, Fox Pippin, Maiden's Blush, Mann, Roxbury Russett, Nonpareil, Harris, Flat Pippin, Margaret's Pippin, Harvey, Newark King, Rhode Island Greening, Golden Ball, Pomme Gris, Minister, Queen Charlotte, Morton's Red, Ohio Nonpareil, Hunt's Russet, and Gilliflower.—74.

Exhibitor's Remarks.—The collection of Apples sent to the Congress has been selected as fairly representative of the produce of Nova Scotia. It embraces good specimens of all our market Apples that can be obtained at the present time, as well as a number of other varieties which are likely to be of interest at the Congress. The fruit has all been grown on the Free stock as Standard trees, and generally in Orchards. Apples on the Paradise or other dwarfing stocks are not grown to any extent; and Pears, as Bushes on the Quince stock, have not, with a few exceptions, proved either profitable or a success in Nova Scotia.

THE APPLES OF NOVA SCOTIA.

The following description of the Apples from Nova Scotia has been drawn up from the samples exhibited at the Congress, after careful examination and comparison. The Apples were collected in the fruit-growing districts of the Province, and prepared and forwarded to the Congress, under the instructions of the Provincial Government, by Professor George Lawson, Secretary for Agriculture, assisted by Mr. C. R. H. Starr, Secretary and Treasurer of the Fruit Growers' Association of Nova Scotia. The collection of 118 varieties

had been selected with excellent discrimination. It contained many splendid specimens of famed American Apples, and some remarkably fine fruit of a few popular British varieties. All were carefully labelled and packed, and arrived at Edinburgh in first-rate condition, where they formed one of the most striking and interesting features of the Congress amongst a remarkably fine display of British Apples and Pears.

The distinguishing characteristics of Nova Scotian Apples were their brilliant and beautiful colours, smooth outline, handsome shape, and, generally, large size; and the high quality of the Dessert varieties, which was specially noticeable in such favourite British Apples as Ribston Pippin, Cox's Orange Pippin, Golden Pippin, Blenheim Pippin, King of the Pippins, and Nonpareil.

The Culinary varieties of British origin were, on the other hand, generally inferior to home-grown fruit. They were often smaller in size, and deficient in flavour. Even the best of the Culinary varieties raised in America, although many of them are large and handsome Apples, are generally too sweet, watery, and insipid in flavour to rank as first rate Culinary or preserve-making fruit. Among the numerous fine-looking Culinary Apples in this collection, none approached the rich brisk flavour and piquant acidity of such varieties as Wellington, Ecklinville, Alfriston, Hawthornden, Blenheim Pippin, Golden Noble, Warner's King, Stirling Castle, Lord Suffield, Keswick Codlin, and many others grown in Britain.

No particulars were furnished of the methods of cultivation, the habit and constitution of the trees, or of the productiveness of the different varieties.

Baldwin.—Fruit above medium size, or large; smooth, conical, and handsomely shaped. Skin light orange, with bright crimson cheek next the sun, streaked and spotted all over crimson with grey dots, and patches of russet near the stalk. Eye closed, set in a shallow, plaited basin. Stalk half an inch long, deeply inserted in a round, smooth, narrow cavity. Flesh yellowish white, crisp, juicy, and melting, with a pleasant aromatic flavour.

One of the best flavoured and handsomest of the dessert Apples in the collection, and much superior to what it is usually seen when grown in Britain.

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Bellflower.—Fruit large, smooth, conical shaped. Skin yellow, flushed with red in the sun, and sparsely dotted with red specks all over. Eye small, closed, set in a moderately deep plaited basin, with five prominent knobs round the margin. Stalk three-quarters of an inch long, deeply inserted in an irregular cavity, with a fleshy protuberance on one side. Flesh yellow, tender, and juicy, with a sweet, brisk, pleasant flavour.

A large and handsome mid-season Apple, suitable for either culinary or dessert use.

Ben Davis.—Fruit, medium sized, smooth pearmain shaped. Skin golden yellow, flushed, streaked and dotted with bright crimson, deepest next the sun. Eye very small, closed, set in a slight plaited depression. Stalk one inch long, slender, curved, and inserted in a deep narrow cavity. Flesh yellowish, sweet, crisp and melting, and of a pleasing slightly aromatic flavour.

A very beautiful and excellent dessert Apple in use from January to June.

Black's Red.—A medium sized and prettily shaped fruit. Skin yellow, covered with bright crimson, streaked with grey dots. Eye closed, set in a shallow plaited basin. Stalk half an inch long, inserted in a shallow cavity, lined with russet. Flesh yellow, firm, crisp, sweet and melting, with a pleasing aroma.

A beautiful dessert or culinary Apple, in use in January.

Blenheim Pippin.—Fruit large, smooth and very handsome. Skin bright orange, strewed with grey dots, streaked with red and russet in the shade, and entirely covered with bright crimson in the sun. Eye open, and set in an even, round and rather large basin. Stalk short, and set in a deep russet cavity. Flesh yellow, crisp, juicy, with a rich, brisk aroma, and finely flavored. One of the finest varieties in the collection, and superior as a dessert fruit to the same variety grown in the open air in Britain. It is sweeter and more melting in the flesh, with a rich pleasant aroma, and of first-class dessert quality Season ; December to February.

Blue Pearmain.—Fruit medium sized, high pearmain shaped, and of a very handsome appearance. Skin orange yellow, nearly covered with streaks, splashes, and dots of crimson and russet, with deep red next the sun. Eye small, closed, with long reflexed segments, set in

a small round plaited basin. Stalk short, deeply set in a round cavity, lined with russet. Flesh yellowish white, firm, juicy, and with a delicate perfume.

A handsome dessert Apple of the finest quality, and likely to prove a useful late variety in this country.

Bottle Greening.—Fruit rather small, smooth and highly colored, with brilliant red next to the sun. Eye closed, set in a shallow plaited basin. Stalk short, deeply inserted in a narrow russet cavity. Flesh greenish-yellow, firm, sweet, and of moderate quality.

A late dessert variety.

Broadwell.—Fruit large, ribbed and promising looking. Skin greenish yellow, thinly strewed with grey and brown dots. Eye very large, open, and set in a moderately deep plaited basin. Stalk very short, and deeply set in a smooth russet cavity. Flesh greenish white. Firm, juicy and of a sub-acid flavour.

A large and useful mid-season culinary apple.

Cabashea.—Fruit very large and smooth, and regularly formed. Skin yellow, deep red in the sun, flushed and streaked with red all over. Eye large, closed, set in a shallow ribbed basin. Stalk short, thick, inserted in an uneven cavity, lined with russet. Flesh yellow, crisp, melting, very juicy, slightly perfumed, and of excellent flavour.

A large and very handsome mid-season dessert apple of first-rate quality.

Calkins' Pippin.—Fruit smooth, round, and medium size. Skin greenish yellow. Eye closed, set in a small plaited basin. Stalk an inch long, deeply inserted in a narrow cavity. Flesh white, juicy, soft, and of good flavour.

A useful Apple, suitable either for culinary or dessert use.

Canada Reinette.—(*Reinette du Canada.*)—Fruit rather above medium size. Skin yellow, flushed with dark red next the sun, and strewed with patches of russet. Eye closed, set in a shallow uneven basin. Stalk short, deeply inserted in a round narrow cavity, lined with russet. Flesh yellowish-white, firm, juicy, with a sweet aromatic flavour.

A fine sample of this well known apple and quite as good as the best of it grown in this country.

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Cayuga.—Fruit large, slightly five ribbed, conical shaped. Skin yellow, flushed and streaked with red next the sun. Eye open, set in an uneven plaited basin. Stalk short, deeply inserted in a round smooth cavity. Flesh yellowish white, sweet, juicy and melting, with a fine aroma.

A large and beautiful mid-season dessert Apple of first-rate quality.

Chebucto Beauty.—Fruit very large, even and handsomely shaped. Skin yellow, with crimson streaks and dots on the sunny side. Eye closed, set in a shallow plaited basin. Stalk half an inch long, inserted in a round, shallow cavity. Flesh white, crisp, melting and very juicy, with a fine refreshing flavour.

One of the finest Apples in the collection. In use early in winter, and suitable either for dessert or culinary purposes.

Colvert.—Fruit medium size, and flat conical shape. Skin greenish yellow, slightly flushed and streaked with red next the sun. Eye closed, set in a narrow, puckered basin. Stalk short, deeply inserted in a narrow cavity. Flesh whitish, firm, moderately juicy, slightly acid, and of moderate flavour.

Coopers' Russet.—Fruit small, round, and evenly shaped. Skin yellow and green, nearly covered with thick russet. Eye closed, set in a round shallow basin. Stalk half an inch long, deeply inserted in a round, narrow cavity. Flesh greenish yellow, firm, crisp and of a very sugary flavor. Dessert.

A nice late dessert or culinary apple, but rather too small for the latter purpose.

Cox's Orange Pippin.—Fruit small, smooth, round, and very evenly shaped. Skin orange yellow, beautifully marked and dotted with bright crimson. Eye small, with longish closed segments set in a shallow basin. Stalk three-quarters of an inch long, slender, set in a deep, russet lined cavity. Flesh yellowish white, crisp, very juicy and melting, with a very rich aromatic flavour.

The best dessert Apple, of the highest quality in the collection. The specimens are not so large as the finest grown in G. B., but they are richer in juice, and the flavor and quality equal to the very best of British fruit.

Drap d'Or.—Fruit high, irregular shaped, and of medium size. Skin golden yellow, flushed with red in the sun. Eye large, half

open, set in a shallow, uneven basin. Stalk short, deeply inserted in a narrow cavity. Flesh yellowish, sub-acid, juicy, soft, melting and of moderate flavour. Culinary.

Not the British Drap d'Or Apple.

Dutch Codlin.—Fruit very large, conical, strongly ribbed, with five very prominent knobs around the eye. Skin greenish yellow. Eye closed, large, set in a rough plaited basin. Stalk one inch long, stout, inserted in a deep irregular cavity. Flesh white, firm, juicy, and of a brisk sub-acid flavour.

A first-rate mid-season culinary Apple. The specimens are very similar to the best of the same variety grown in this country.

Emperor Alexander.—Fruit very large, smooth, regular and handsomely shaped. Skin pale yellow, nearly covered with bright crimson. Eye large, half-closed, set in an uneven basin. Stalk an inch long, set in a wide deep cavity. Flesh white, crisp, juicy, and very melting, with a fine, pleasant, sweetish, sub-acid flavour.

A splendid autumn Apple, making a handsome dessert dish, but more suitable for culinary purposes. The specimens exhibited are finer than those usually grown in this country.

Esopus Spitzenburg.—Fruit large, regular, and handsomely shaped. Skin yellow, almost entirely covered with bright crimson, thinly strewn with golden yellow dots. Eye closed, set in a small plaited basin. Stalk an inch long, slender, inserted in a deep, round cavity. Flesh yellow, crisp, juicy, with a rich perfumed flavour.

A very beautiful and fine mid-season dessert Apple.

Fallwater.—Fruit very large, roundish, conical shaped. Skin, greenish yellow, with deep red next the sun, and dotted with small yellow spots. Eye closed, set in a wide basin. Stalk short, deeply inserted in an uneven cavity, lined with russet. Flesh yellowish white, crisp, juicy, sugary, and of a pleasantly aromatic sub-acid flavour.

A very large and handsome late Apple, first-rate for culinary purposes, and suitable also for dessert.

Fall Jenetting.—Fruit small, ovate, and evenly shaped. Skin yellow, with bright red next the sun. Eye small, closed, set in a slight depression. Stalk half an inch long, inserted in a smooth round cavity. Flesh white, soft, juicy, with a nicely perfumed flavour.

A very pretty early dessert Apple.

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Fall Pippin.—Fruit medium size, round, and regular shaped. Skin yellow, tinged with red next the sun. Eye closed, set in a shallow uneven basin. Stalk an inch long, stout, deeply inserted in a narrow funnel-shaped cavity. Flesh white, crisp, firm, and of a brisk sub-acid flavour.

A good culinary Apple, in use from October to January.

Fameuse.—Fruit small or medium size, roundish, and prettily shaped. Skin milky white, with bright crimson next the sun, streaked and spotted with the same all over, and covered with a beautiful delicate "bloom." Eye closed, set in a small, round, plaited basin. Stalk three-quarters of an inch long, deeply inserted in a smooth, round russet cavity. Flesh white, tender, juicy, and of a nice delicately perfumed flavour.

The most beautiful Apple in the collection, and worthy of cultivation for its rich appearance, as well as being a dessert Apple of fair quality.

Gilliflower, Black.—Fruit tall, Codlin shaped, and handsome. Skin yellowish green, streaked and dotted with crimson. Eye very small, set on the top of the fruit, in a slight plaited basin. Stalk short, inserted in a round shallow cavity. Flesh greenish yellow, firm, crisp, sub-acid, and pleasantly flavoured.

A useful culinary Apple. A distinct variety from the British Gilliflower.

Gladys.—Fruit small, smooth, neat, and prettily shaped. Skin yellow. Eye small, closed, with long segments, set in an irregular basin. Stalk short, inserted in a very irregular cavity, and attached to a knob at the side. Flesh white, crisp, juicy, and melting, with a rich, sugary, aromatic flavour.

A rather nice little dessert Apple, somewhat like Kerry Pippin; in use in November.

Gloria Mundi.—Fruit very large and handsome, with rather prominent ribs. Skin yellow, thinly sprinkled with silvery dots. Eye small, set in a wide irregular basin. Stalk very short, deeply inserted in a wide cavity. Flesh white, soft, juicy, and of a sweetish mildly acid flavour.

An excellent culinary Apple, and one of the largest in the collection.

The samples are about as fine as the best British fruit, but not better.

Golden Ball.—Fruit medium sized, round, and evenly shaped. Skin yellow. Eye closed, set in a small basin, nearly level with the top of the fruit. Stalk long, moderately stout, curved, and inserted in a wide, deep cavity. Flesh white, tinged with yellow, tender, juicy, melting, and of a nice, pleasing flavour.

A very pretty dessert Apple, in use in Décembre.

Golden Pippin, English.—Fruit small, round, and beautifully smooth and even. Skin golden yellow, freckled with russet around the eye, and a few crimson dots. Eye half open, set in a slight depression. Stalks half an inch long, slender, and inserted in a shallow, depression. Flesh yellow, firm, crisp, very juicy, and of first-rate flavour.

A fine sample of the old golden Pippin, equal in quality, and if anything, superior in flavour to the best home grown fruit.

Golden Pippin, Cluster.—Fruit small, round, flat on the top, and nicely shaped. Skin yellow, freckled with russet dots and patches. Eye open, segments long, set in a broad, shallow basin. Stalk three-quarters of an inch long, inserted in a deep, round, smooth cavity. Flesh yellow, crisp, juicy, sweet, and of good flavour.

A mid-season dessert Apple, of better size and quality than when grown in Britain.

Golden Pippin, Franklin's.—Fruit nearly medium size, and very handsomely shaped. Skin golden yellow, with a few specks and dots of russet. Eye half open, set in a shallow plaited basin. Stalk three-quarters of an inch long, slender, obliquely inserted in a smooth cavity. Flesh yellowish, white, crisp, tender, juicy, slightly aromatic, and of excellent flavour.

A first-rate dessert Apple; the sample exhibited being quite equal to the best British fruit.

Golden Pippin, Grimes'.—A handsome medium sized fruit. Skin golden yellow, covered with brownish red next the sun. Eye closed, set in a deep, round plaited basin. Stalk three-quarters of an inch long, deeply inserted in a smooth, round, russet lined cavity. Flesh yellow, crisp, juicy and melting, with a fine aroma, and a pleasing flavour.

A very fine dessert Apple, having the appearance of a good sample of King of the Pippins and of better quality.

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Golden Russet, American.—Fruit medium size, roundish, and nicely shaped. Skin orange yellow, covered with rough, flaky russet, flushed with orange red next the sun. Eye closed, set in a shallow irregular basin. Stalk short, inserted in a round shallow cavity. Flesh yellow, firm, juicy and melting, with a rich aromatic flavour.

A fine late dessert Apple.

Golden Russet, English.—Fruit medium sized, and handsomely pearmain shaped. Skin yellow, covered with dark, scaly russet, numerously sprinkled with yellow dots. Eye closed, set in a small irregular shaped basin. Stalk an inch long, slender, curved, and deeply inserted in a funnel shaped cavity. Flesh yellowish white, crisp, juicy, sugary, with a refreshing aromatic flavour.

A first-rate dessert Apple, more juicy and melting than the British grown fruit of this variety.

Gravenstein.—Fruit large, oblong, slightly ribbed, and very handsomely shaped. Skin pale yellow, with beautiful, rose colored cheek next the sun, striped and spotted all over with rosy red. Eye closed, set in a deep rugged basin. Stalk an inch long, inserted in a deep, narrow cavity. Flesh yellowish white, crisp, very juicy, with a rich aromatic flavour.

A very fine sample of this well-known and useful autumn Apple, larger than is usually grown in Britain, and fully equal in quality.

Harvey, (Fall.)—Fruit medium sized, smooth and regular shaped. Skin a beautiful bright golden yellow, with paler yellow dots. Eye small, closed, set in shallow plaited basin. Stalk three-quarters of an inch long, slender, inserted in a deep, narrow, round cavity. Flesh pale yellow, crisp, tender, and juicy.

A beautiful yellow dessert Apple, of excellent flavor, in use in December. Not the Harvey Apple, or Dr. Harvey of Britain.

Hawthornden.—Fruit below medium size, clear, round, and flattened. Skin yellow, flushed with red next the sun. Eye closed, set in a shallow plaited basin. Stalk short, stout, inserted in a smooth, round, rather deep cavity. Flesh white, crisp, juicy, and sugary, with a pleasant sub-acid flavour.

Rather a poor sample of this favorite Scottish apple, deficient on both size and quality to fair samples grown in Britain.

Herefordshire Pearmain.—Fruit medium sized, handsome, pearmain shaped. Skin yellow with a red cheek next the sun, streaked with russet red all over. Eye half open, set in a smooth, shallow basin. Stalk half an inch long, inserted in a round, smooth cavity. Flesh greenish yellow, crisp, juicy, sweet and melting, with a fine aroma and refreshing flavour.

A good sample of this fine old English Apple, and equal to the best home grown fruit.

Hoary Morning.—Fruit medium, roundish, flattened, smooth, and very handsome. Skin pale yellow, beautifully streaked and dotted with bright, lively crimson, and thickly covered with a delicate silvery "bloom." Eye small, closed, set almost level with the top of the fruit. Stalk short, thick, and deeply inserted in a smooth, round cavity. Flesh yellowish white, crisp, juicy, with a brisk and pleasant aromatic flavour.

A pretty and handsome Apple, suitable for either culinary or dessert use. The sample is not so large as the best home fruit, but the quality is superior.

Hubbardston.—Fruit large, roundish, ovate, smooth, and regularly shaped. Skin yellowish, nearly covered with russet markings, with bright red next the sun. Eye open, set in a deep ribbed basin. Stalk half an inch long, stout, set in a deep, round cavity. Flesh white, crisp, tender, very juicy, with a sweet pleasant flavour.

A fine autumn Apple, useful either for dessert or culinary purposes.

Hunts' Russet.—Fruit small, round, evenly pearmain shaped. Skin orange, covered with brown russet, with dark crimson cheek next the sun. Eye half open, set in round shallow basin. Stalk short, inserted in a round funnel shaped cavity. Flesh yellowish white, tender, juicy and melting, with a nicely perfumed flavour.

A nice, small late dessert Apple.

Hurlbut.—Fruit small, roundish, and evenly shaped. Skin golden yellow, covered with crimson streaks, and splashes next the sun. Eye closed, set in a very shallow plaited basin. Stalk one inch long, inserted in a round, narrow cavity. Flesh yellowish white, firm, juicy, melting, and slightly perfumed and of good flavour.

A good late dessert Apple, but too small to be generally useful.

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A first-rate
bright colour,
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Hutchings.—Fruit large, showy, roundish and flattened. Skin greenish yellow, with a deep flush of crimson next the sun. Eye closed, set in a shallow, uneven basin. Stalk short, deeply inserted in a large irregular cavity, lined with russet. Flesh white, crisp, moderately juicy, tender and melting, with a pleasant, slightly acid flavour.

A good mid-season culinary Apple.

Iron.—Fruit medium sized, roundish and prettily shaped. Skin bright yellow, thinly strewn with grey dots, and with brilliant red next the sun. Eye half open, set in a very slight depression. Stalk long, deeply inserted in a round, russet cavity. Flesh yellowish white, firm, crisp, juicy, sugary and melting, with a nice aromatic flavour.

A fine late dessert Apple, keeping sound and good till May.

Keswick Codlin.—Fruit above medium size, ribbed, angular, conical. Skin yellow, with a slight tinge of red next the sun. Eye closed, set in a rather deep puckered basin. Stalk short, and deeply inserted in an irregular cavity. Flesh yellowish white, tender, very juicy, with a pleasantly acid flavour.

A fine sample of this popular British Apple, equal to the average of the home grown in size, but rather wanting in flavour.

King of the Pippins.—Fruit medium sized and handsome shape. Skin orange yellow, flushed, streaked and dotted with bright crimson. Eye half open, set in a shallow plaited basin. Stalk three-quarters of an inch long, inserted in a deep, round, smooth, russet cavity. Flesh yellow, crisp, juicy, tender, with a pleasing aroma, and first-rate flavor.

A very fine sample of this favourite dessert Apple, equal in size to the best home grown fruit, and superior in quality and flavour.

King of Tompkins County.—Fruit very large and handsomely shaped. Skin deep yellow, covered with bright red next the sun, with red and russet dots and patches all over. Eye closed, set in an even shallow basin. Stalk short, stout, inserted in an even round cavity. Flesh yellowish white, crisp, juicy, melting, briskly perfumed, and of excellent flavour.

A first-rate mid-season dessert or culinary Apple; its large size, bright colour, and handsome shape giving it a highly attractive appearance.

Maiden's Blush.—Fruit above medium size, round, flattened, and regularly shaped. Skin yellow, with a dark crimson cheek next the sun. Eye closed, set in a round, shallow, slightly plaited basin. Stalk half an inch long, deeply inserted in a smooth, round, funnel-shaped cavity. Flesh yellowish white, tender, very juicy, melting, with a brisk, pleasant, and slightly aromatic flavour.

An excellent Apple, suitable either for dessert or culinary use.

Mammoth Russett.—Fruit large, handsome, pearmain-shaped. Skin orange yellow, covered with patches of russet and greenish grey spots, and flushed with red next the sun. Eye closed, with long segments, and set in a narrow plaited basin. Stalk three-quarters of an inch long, set in a small, round cavity. Flesh yellow, tinged with green, firm, crisp, very juicy and melting, with a pleasant aromatic flavour.

A very fine winter Apple, and useful for either culinary or dessert purposes.

Mann.—Fruit medium sized, round, smooth, and nicely shaped. Skin greenish yellow, thinly strewed with brown dots, and flushed with red next the sun. Eye half-open, set in a wide, shallow, plaited basin. Stalk half an inch long, deeply inserted in a round, narrow cavity. Flesh greenish white, tender, juicy, and melting, with a fine sub-acid flavour.

An excellent mid-season culinary or dessert Apple.

Margaret's Pippin.—Fruit medium sized, smooth, and handsomely shaped. Skin bright golden yellow, thinly dotted with small red spots, and flushed with red next the sun. Eye closed, set in a slight depression. Stalk an inch long, inserted in a smooth, open, shallow cavity. Flesh yellowish white, crisp, juicy, sweet, and of good flavour.

A nice dessert Apple, ripe in January, and of a very attractive appearance.

Morton's Red.—Fruit medium sized, roundish ovate, even and finely shaped. Skin bright crimson, with a few patches of russet near the stalk. Eye closed, set in a small, plaited basin. Stalk long, slender, and deeply inserted in a round, russety cavity. Flesh white tinged with red, crisp, juicy, sugary, and of a pleasing aromatic flavour.

A very good mid-season dessert Apple.

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Munson Sweet.—Fruit under medium size, angular, and rather prominently ribbed. Skin yellow. Eye closed, set in an uneven, plaited basin. Stalk short, inserted in a deep, irregular cavity. Flesh white, juicy, melting, with a sweetish acid flavour.

A second-rate dessert Apple, and too small to be useful for culinary purposes.

Newton Pippin, Green.—Fruit under medium size, roundish, flattened and rather uneven. Straw greenish yellow, slightly flushed with red in the sun. Eye closed, set in an uneven rather depressed basin. Stalk short, thick, set in a round shallow cavity. Flesh crisp, juicy and melting, with a sweet aromatic flavour.

A nice dessert Apple, in use in January.

Newton Pippin, Yellow.—Fruit rather small and common looking. Skin greenish yellow, strewed with small red dots, and flushed with red next the sun. Eye small, closed, set in a shallow plaited basin. Stalk short, deeply inserted in a narrow russet lined cavity. Flesh yellowish white, crisp, juicy, sugary, and melting, with a rich aromatic flavour.

A fine dessert Apple, keeping longer than the Green Newton Pippin, but very similar in flavor and quality. Neither of the varieties are, however, equal to the Newton Pippin imported from the United States.

Nonpareil.—Fruit nearly medium sized, round and evenly shaped. Skin greenish yellow, almost covered with brown russet markings, and slightly flushed with red next the sun. Eye half open, set in a slight depression. Stalk half an inch long inserted in a deep angular cavity. Flesh yellowish green, firm, crisp and juicy, with a richly aromatic and very pleasing flavour.

A first-rate mid-season dessert Apple, the sample very superior to the same variety grown in this country.

Northern Spy.—Fruit above medium size, ovate or conical. Skin yellow, covered with bright crimson next the sun, and streaked and splashed all over with the same. Eye open and set in a rather deep ribbed basin. Stalk three quarters of an inch long, inserted in a deep round cavity. Flesh yellowish white, crisp, tender, very juicy and melting, with a fine, delicate aroma and very refreshing flavour.

A first-rate late dessert Apple, and of very handsome appearance.

Peck's Pleasant.—Fruit very large, round, and evenly shaped. Skin yellow, with numerous silvery grey specks. Eye large, closed, set in a round, wide, plaited basin. Stalk short, inserted in a shallow cavity, with a swelling at one side. Flesh yellowish white, crisp, tender, sugary, very juicy and melting, with a rich perfume and pleasant aromatic flavour.

One of the handsomest of Apples, having some resemblance in size and shape to a first-class Blenheim Pippin, and like it, first-rate for both dessert and culinary purposes.

In use from January to March.

Pewaukee.—Fruit large, round, regular and very handsomely shaped. Skin yellow, covered with streaks and splashes of red, with numerous grey dots and bright crimson cheek next the sun. Eye closed, set in a round plaited basin. Stalk an inch long, deeply inserted in a round, smooth cavity. Flesh yellowish white, fine, crisp, very juicy, vinous and richly aromatic in flavour.

A very fine dessert Apple of highest quality. In use in December

Pomme Gris.—Fruit small, round and much flattened. Skin yellow, entirely covered with brown russet streaked with grey scales. Eye closed, set in a round plaited basin. Stalk short, inserted in a round, narrow cavity. Flesh yellowish white, firm, crisp, juicy, and of a nice refreshing flavour.

A small but nice late dessert Apple.

Rhode Island Greening.—Fruit medium size, round, and slightly ribbed. Skin green, streaked with grey and russet dots. Eye closed, set in an irregular basin. Stalk half an inch long, thick, swollen at the base, and inserted in a deep, smooth cavity. Flesh white, tinged with green, crisp, tender, juicy and melting, and of a fine, brisk, aromatic flavour.

An excellent late Apple, suitable for either dessert or culinary use, and a better sample than the same variety grown in Britain.

Ribston Pippin.—Fruit above medium, smooth and handsome. Skin orange streaked and splashed with bright crimson and small patches of russet. Eye closed, set in a shallow angular basin. Stalk short, inserted in a deep round cavity. Flesh yellow, crisp, tender,

juicy, sugary flavour.

A well known fine as the

Roxbury shaped. Skin and flushed basin. Stalk in a round, tender, sugary

A fine late same variety

St. Lawrence formed. Skin bright lively plaited basin.

Flesh snow white very pleasing

A beautiful

Seck-no-fu shaped. Skin bright crimson. Eye closed, set a quarter long russet. Flesh rich vinous and

A first-rate resemblance to its finest perfume

Stark.—Fruit green, streaked with crimson next the sun short, inserted yellow, firm, flavour.

An excellent purposes.

juicy, sugary and melting, with a brisk aroma, and of the richest flavour.

A well known and favourite dessert Apple, the sample being as fine as the best of British grown fruit.

Roxbury Russet.—Fruit large, roundish, flattened, even and regular shaped. Skin greenish yellow, entirely covered with brown russet, and flushed with red next the sun. Eye closed, set in a round plaited basin. Stalk three quarters of an inch long, slender, deeply inserted in a round, narrow cavity. Flesh yellowish white, crisp, juicy, tender, sugary, with a fine, brisk aroma and pleasant flavour.

A fine late dessert Apple, the sample being superior to any of the same variety grown in Britain.

St. Lawrence.—Fruit medium size, round, flattish, and regularly formed. Skin cream coloured, beautifully streaked and dotted with bright lively crimson. Eye closed with long segments, set in a shallow plaited basin. Stalk short, slender, inserted in a round, deep cavity. Flesh snow white, tender, juicy and melting, with a rich aroma and very pleasing flavour.

A beautiful dessert Apple, first-rate quality. Use in November.

Seek-no-further, Westfield.—Fruit medium sized, regular pearmain shaped. Skin orange yellow, flushed with russety crimson, with bright crimson cheek next the sun, and numerous grey dots all over. Eye closed, set in a round, irregular plaited basin. Stalk an inch and a quarter long, slender, deeply inserted in an even cavity, lined with russet. Flesh yellowish white, crisp, tender, juicy, melting, with a rich vinous aromatic flavour.

A first-rate mid-season dessert Apple. The sample bears a great resemblance to the King of the Pippins, as grown in this country in its finest perfection.

Stark.—Fruit large, handsomely pearmain-shaped. Skin pale green, streaked and dotted with crimson and russet, with deep crimson next the sun. Eye closed, set in a shallow, uneven basin. Stalk short, inserted in a deep, narrow, round cavity. Flesh greenish yellow, firm, crisp, juicy, sugary, melting, and of a fine aromatic flavour.

An excellent late Apple, suitable for either dessert or culinary purposes.

Tulman Sweet.—Fruit medium sized, round, smooth, and nicely shaped. Skin bright yellow. Eye small, closed, set in a plaited depression. Stalk short, inserted in a side knob in a shallow cavity. Flesh white tinged with yellow, crisp, tender, juicy, sugary, melting, and of a refreshing vinous flavour.

A nice dessert or culinary Apple, ripe in January, and of good quality.

Vandevere.—Fruit large, roundish, ovate, even, smooth, and handsomely shaped. Skin yellow, almost covered with bright crimson, streaked and splashed with darker crimson, and dotted with small specks of golden russet. Eye small, closed, set in a shallow plaited basin. Stalk an inch long, inserted in a deep, round, russety cavity. Flesh yellow, firm, crisp, juicy, melting, with a brisk aroma and a rich refreshing flavour.

A very beautiful late dessert Apple, of the finest flavour and quality.

Wagner.—Fruit large, round, smooth and handsome. Skin pale yellow, covered with bright crimson, streaked and mottled with deeper crimson on the side next the sun. Eye closed, set in a small, plaited basin. Stalk an inch long, deeply inserted in a smooth, narrow cavity. Flesh yellowish white, crisp, tender, juicy, sugary, and melting, with a rich, brisk aroma and first-rate flavour.

A large and handsome mid-season dessert Apple, of the finest quality.

Washington Strawberry.—Fruit above medium size, slightly conical, and handsomely shaped. Skin pale yellow, streaked, splashed, and dotted with crimson. Eye closed, set in a small, plaited basin. Stalk short, slender, deeply inserted in a narrow, round cavity. Flesh white, much tinged with pale red, crisp, tender, juicy, sugary, melting, slightly acid, with a brisk aroma and a very pleasing flavour.

A very fine Apple, ripe in November, and suitable for dessert or culinary use.

Willoughby.—Fruit medium sized, slightly ribbed, smooth, and nicely shaped. Skin yellow, almost entirely covered with dark crimson. Eye half-open, set in a slight basin. Stalk three-quarters of an inch long, inserted in a round, even, russety cavity. Flesh white, crisp, tender, juicy, melting, with a rich pleasant flavour.

An excellent mid-season dessert Apple, of good quality.

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APPENDIX :

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