

TRANSACTIONS

AND

RÉPORTS

OF THE

*Fruit Growers' Association*

AND

INTERNATIONAL SHOW SOCIETY

OF

NOVA SCOTIA,

1892.

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*Published by Order of the Government of Nova Scotia.*

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HALIFAX :

NOVA SCOTIA PRINTING COMPANY,

1892

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ANNAPOLI  
KINGS  
HANTS  
HALIFAX  
LUNENBUR  
DIGBY  
YARMOUTH  
SHRELBURN  
QUEBENS  
COLCHESTER  
PICTOU  
CUMBERLAND  
ANTIGONISH  
GUYSBORO'  
VICTORIA  
CAPE BRET  
INVERNESS  
RICHMOND

# FRUIT GROWERS' ASSOCIATION

AND

## INTERNATIONAL SHOW SOCIETY

OF

### NOVA SCOTIA.

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Patron.

HIS HONOR THE HON. M. B. DALY, LIEUTENANT-GOVERNOR.

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#### OFFICERS FOR 1892.

President.

J. W. BIGELOW, ESQ. .... Wolfville, N. S.

Senior Vice-President.

C. R. H. STARR, ESQ. .... Wolfville, N. S.

Vice-Presidents.

ANNAPOLIS COUNTY	REV. J. R. HART	Bridgetown.
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HANTS "	PROFESSOR HIND	Windsor.
HALIFAX "	PROFESSOR LAWSON	Halifax.
LUNENBURG "	JUDGE DESBRISAY	Bridgewater.
DIGBY "	B. H. RUGGLES, ESQ.	Westport.
YARMOUTH "	C. E. BROWN, ESQ.	Yarmouth.
SHELBURNE "	R. W. FREEMAN, ESQ.	Jordan River.
QUEENS "	JASON M. MACK, ESQ.	Liverpool.
COLCHESTER "	PROFESSOR SMITH	Truro.
PICTOU "	W. O. CREIGHTON, ESQ.	West River.
CUMBERLAND "	THOS. R. BLACK, ESQ.	Amherst.
ANTIGONISH "	C. C. GREGORY, ESQ.	Antigonish.
GUYSBORO' "	W. G. SCOTT, ESQ.	Guysboro'.
VICTORIA "	W. F. McCURDY, M.P.P.	Baddeck.
CAPE BRITON "	WILLIAM PURVIS, ESQ.	Sydney.
INVERNESS "	HON. D. McNEIL	Port Hood.
RICHMOND "	HON. ISIDORE LeBLANC, M. P. P.	Arichat.

Secretary.

S. C. PARKER.....Berwick, N. S.

Assistant-Secretary.

R. W. STARR.....Wolfville, N. S.

Treasurer.

GEORGE THOMPSON.....Wolfville, N. S.

Auditors.

J. W. CALDWELL, ESQ.

GEO. H. WALLACE, ESQ.

Executive Board.

THE PRESIDENT,  
SENIOR VICE-PRESIDENT,  
SECRETARY,  
TREASURER,  
DR. A. P. REID,

} ..... *Ex officio.*

J. E. STARR,  
A. McN. PATTERSON,

Fruit Committee.

R. W. STARR,  
ISAAC SHAW,  
REV. J. R. HART,

C. E. BROWN  
R. E. HARRIS,  
A. WHITMAN.

Small Fruit Committee.

G. C. MILLER,  
T. H. PARKER,

T. E. SMITH,  
P. H. SAUNDERS.

Publication Committee.

THE PRESIDENT,  
THE SECRETARY, } *Ex officio.*

W. H. BLANCHARD.  
R. W. STARR.

ROBERT G  
JOSEPH R  
GENERAL  
ADMIRAL  
HON. MAR  
HON. CHA  
EDWIN W.  
REV. R. B  
D. W. BEA  
ROBERT M  
RICHARD  
F. C. SUMI  
JOHN LOW  
THE HON.  
PROF. WIL  
PROF. JOH  
PROF. JAM  
PROF. D. P  
CHAS. GIBI  
PROF. H. V

J. W. BIGE  
HENRY B.  
CHAS. E. B  
EDWIN CHA  
R. W. STAR  
CHAS. R. H.  
W. C. SILV  
JAMES SCO  
GEORGE LA  
JOHN STAI  
THOS. A. BI  
THOS. A. RI  
A. K. MACK  
J. F. KENNY  
M. P. BLACK  
HON. P. C. I  
EDWARD BI  
JAMES FARQ  
T. H. PARKI

## 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. R. BURNET, D. D., Hamilton, Ont.....	" "
D. W. BEADLE, ESQ., St. Catherine's, 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, 1884.
THE HON. SIR CHARLES TUPPER, G. C. M. G., C. B., London, G. B.....	" 20, 1887.
PROF. WILLIAM SAUNDERS, F. R. S. C., F. L. S., F. C. S., Ottawa.....	" "
PROF. JOHN McCOUN, F. R. S. C., F. L. S., Ottawa.....	" "
PROF. JAMES FLETCHER, F. R. S. C., F. C. S., Ottawa.....	" "
PROF. D. P. PENHALLOW, F. R. S. C., Montreal.....	" "
CHAS. GIBB, ESQ., Montreal (deceased).....	" "
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., Wolfville.....	" "
CHAS. E. BROWN, ESQ., Yarmouth.....	Oct. 1, "
EDWIN CHASE, ESQ., Cornwallis.....	Nov. 1, "
R. W. STARR, ESQ., Wolfville.....	" "
CHAS. R. H. STARR, ESQ., Wolfville.....	Jan. 3, 1876.
W. C. SILVER, ESQ., Halifax.....	Dec. "
JAMES SCOTT, ESQ., ".....	" "
GEORGE LAWSON, PH. D., ".....	" "
JOHN STAIRS, ESQ., " (deceased).....	" "
THOS. A. BROWN, ESQ., " (deceased).....	" "
THOS. A. RITCHIE, ESQ., ".....	" "
A. K. MACKINLAY, ESQ., ".....	" "
J. F. KENNY, ESQ., ".....	" "
M. P. BLACK, ESQ., " (deceased).....	" "
HON. P. C. HILL, ".....	" "
EDWARD BINNEY, ESQ., " (deceased).....	" "
JAMES FARQUHAR, ESQ., ".....	" 1883.
T. H. PARKER, ESQ., Berwick.....	Jan. 1892.

## ANNUAL MEMBERS - 1892.

ARCHIBALD, W. C. ....	Wolfville.	JOHNSON, E. C. ....	Wolfville.
BISHOP, J. W. ....	"	JOHNSON, F. C. ....	"
CHAMBERS, WILLIAM O. ....	West River.	JOHNSON, Mrs. A. H. ....	"
GALWEIL, J. W. ....	Wolfville.	JOHNSON, Mrs. ....	"
CHIDMAN, Ross. ....	Canard.	JACKSON, J. T. ....	Town Plot.
CRAWLEY, E. SIDSEY. ....	Wolfville.	JOHNSON, C. Y. ....	Wolfville.
CHIDMAN, W. A. ....	Bridgetown.	McLATCHY, R. ....	Wolfville.
DODD, J. S. ....	Wolfville.	McLATCHY, E. ....	"
DONALDSON, JOHN. ....	Port Williams.	MORSE, J. S. ....	"
Donaldson, Lewis. ....	"	MASTERS, DOUGLAS. ....	"
DAVIDSON, J. B. ....	Wolfville.	PARRER, S. C. ....	Berwick.
DINCOCK, STEWART. ....	Windsor.	PINNO, W. W. ....	Waterville.
EDDERKIN, A. D. ....	Wolfville.	PATRIGNO, C. A. ....	Wolfville.
EATON, R. S. ....	Port Williams.	PATTERSON, A. McN. ....	Grand Pre.
EDDERKIN, C. F. ....	Wolfville.	PINNO, A. A. ....	Wolfville.
EATON, F. A. ....	Cornwallis.	Rt. Hon. Dr. A. P. ....	Dartmouth.
FITCH, C. S. ....	Wolfville.	RAND, GEO. V. ....	Wolfville.
GAFFIN, A. N. ....	Cornwallis.	SAWYER, Rev. A. W. ....	Wolfville.
HARRIS, R. E. ....	Port Williams.	SEAR, JOHN E. ....	Port Williams.
HARRIS, A. S. ....	"	SEAR, A. C. ....	"
HARRIS, JOHN. ....	Wolfville.	SEAR, J. R. ....	"
HIGGINS, PROF. D. F. ....	Wolfville.	THOMPSON, GEO. ....	Wolfville.
JAMES, P. ....	Kentville.	TUZO, THOS. ....	Port Williams.
		VAUGHAN, C. M. ....	Wolfville.
		WHITMAN, ALFRED. ....	Waterville.
		WOODWORTH, J. E. ....	Berwick.

## FINANCIAL STATEMENT.

FRUIT GROWERS' ASSOCIATION of N. S. in account with C. R. H. STARR, Secretary-Treasurer.

## FINANCIAL STATEMENT.

FRUIT GROWERS' ASSOCIATION of N. S. in account with C. R. H. STARR, Secretary-Treasurer.

1891.	DR.	1891.	CR.
To Expense Meetings .....	\$ 10 00	By cash balance from 1890.....	\$ 35 65
Postage and Telegrams .....	8 75	Government Grant, 1891.....	300 00
Printing and Stationary.....	78 02	Members fees.....	84 00
Sun 'ry Expenses .....	6 73	Odd cents from revenue account .....	85
Salary Secretary-Treasurer .....	100 00		
Cash balance on hand .....	217 00		
	<u>\$420 50</u>		<u>\$420 50</u>
		Bal. Cash on hand .....	\$217 00
		Deposit Receipt as per Rev. account .....	868 00
			\$1085 00
		Securities as per account.....	73 17
		Total assets .....	<u>\$1158 17</u>

WOLFVILLE, December 31st, 1891.

Audited and found correct,

G. H. WALLACE, }  
J. W. CALDWELL, } *Auditors.*

(F. & O. E.)

C. R. H. STARR,

*Secretary-Treasurer.*

# CONSTITUTION.

(AMENDED JAN. 7, 1892.)

## SECTION I.—NAME.

This Society shall be known as the "FRUIT GROWERS' ASSOCIATION AND INTERNATIONAL SHOW SOCIETY OF NOVA SCOTIA."

## SECTION II.—OBJECTS.

The objects of the Association shall be to encourage and stimulate an adequate appreciation of the general adaptability of the climate and soils of the Province to the cultivation of fruits. To collect and disseminate reliable information on fruit and fruit culture, on picking, packing, and marketing fruit; on new varieties—native and foreign; on the diseases, insects, and other obstacles to success, and the remedies best calculated to overcome them. The Association will also exhibit fruit and horticultural products, either independently or in connection with Agricultural or Industrial Exhibitions, International, Horticultural, or Pomological Shows, as may be deemed advisable, and also send specimens of fruit to eminent Pomologists for identification and nomenclature.

## SECTION III.—PATRON.

The Lieutenant-Governor, for the time being, shall be invited to become the Patron of the Association.

## SECTION IV.—OFFICERS.

The officers of the Association shall be—a President, a Senior Vice-President and one Vice-President for each County of the Province, as far as shall be necessary and practicable, a Secretary, an Assistant Secretary, a Treasurer, two Auditors and two Executive officers.

## SECTION V.—MEETINGS.

The Association shall hold at least three regular meetings in each year. The Annual Meeting for the election and inauguration of officers, shall take place during the months of January or February.

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## SECTION VI.—MEMBERSHIP.

Any person may become a member of this Association for one year by paying to the Secretary the sum of one dollar, or, in the case of females, the sum of fifty cents, but such membership shall expire on the 31st day of December following, except as may be provided by by-laws.

## SECTION VII.—LIFE MEMBERSHIP.

Any person may become a Life Member by paying at any time the sum of five dollars into the Treasury of the Association.

## SECTION VIII.—HONORARY AND CORRESPONDING MEMBERS.

The Association may, at any regular meeting, confer the title of honorary or corresponding member on any person whom they may choose to elect, and the Secretary shall transmit a diploma or certificate of election, signed by the President, and countersigned by the Secretary. This shall entitle the recipient to all the privileges and immunities of membership, except voting on questions of finance and management.

## SECTION IX.—AMENDMENTS.

Any amendments to the foregoing Constitution shall only be made at an Annual Meeting, by a vote of two-thirds of the members present and voting, and notice of the proposed change having been given at a previous regular meeting.

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## BY-LAWS.

### 1.--PRESIDENT.

The President shall preside at all meetings of the Association and perform such duties as pertain to the office, and in his absence his official duties shall devolve upon (*1st*) the Senior Vice-President, or (*2nd*) the Vice-President for the County in which the meeting may be held.

### 2.—VICE-PRESIDENTS.

The duties of Vice-Presidents shall be to bring the objects and interests of the Association to the notice of the people in their several Counties, to urge the claims, and endeavour to increase the membership of the Association. They shall make an annual report upon the fruit crop in their respective Counties, and make such recommendations and suggestions as may seem best calculated to advance the objects of the Association. All Vice-Presidents shall be considered as Corresponding Members during their term of office.

### 3.—SECRETARY.

The duties of the Secretary shall be to attend all meetings and keep a record of the doings of the Association, employing a reporter when necessary; conduct the correspondence, and with the assistance of the Publication Committee, to prepare and publish, annually, the Transactions and Reports of the Association.

He shall receive all monies due, or receivable by the Association, and pay the same immediately to the Treasurer, taking a receipt therefor, and shall make drafts on the Treasurer for all bills payable by the Association, incurring no expenditure of a large or doubtful character, except with the sanction of the Executive Board.

The Assistant-Secretary will aid the Secretary in all duties pertaining to his office.

The Treasurer shall have charge of all funds of the Association, depositing them in a chartered Bank, and shall pay all bills on order of the Secretary.

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## 4.—AUDITORS.

There shall be elected two Auditors, who shall examine and report upon the books, accounts, and financial statement of the Secretary-Treasurer. They shall be entitled to demand all necessary books, papers, and vouchers, three days previous to the Annual Meeting.

## 5.—EXECUTIVE BOARD.

The President, Senior Vice-President, Secretary and Treasurer, together with three members, shall constitute an Executive Board, whose duties shall be to carefully guard the interests of the Association, to provide for its necessities as they may arise, to fill, when advisable, vacancies occurring between elections, to select the time and place, and make arrangements for meetings, exhibitions, &c., to determine the salary of its officers, and perform such other duties as are required by the Constitution and By-Laws.

## 6.—DISCONTINUANCE OF MEMBERS.

Any member who shall neglect for the space of two years, to pay his annual assessment, shall cease to retain his connection with the Association, and the Secretary shall have power to erase his name from the list of members. And any member may, at any time, withdraw from the Association by giving notice to the Secretary and paying all dues and demands against him.

## 7.—EXPULSION OF MEMBERS.

If any member shall do anything to dishonor the Association, or shall place on the tables for exhibition, or premium, specimens bearing his name, or mark, not of his own growth, with an intention to deceive, or shall be guilty of any breach of good faith towards the Association, he may be expelled therefrom, two-thirds of the members present voting for his expulsion.

## 8.—MEMBERS PRIVILEGES.

Each member, in full standing, shall be entitled to the privilege of voting, of eligibility to office, and a copy of all the publications of the Association.

## 9.—STANDING COMMITTEES.

Five members shall be appointed by the Executive as a Committee on fruits, they shall examine and report on newly introduced varieties, as to their quality and probable value for general cultivation; shall endeavour to correct synonyms and wrong names, and shall collect information and report annually, through their chairman, on the state and progress of fruit cultivation in the Province.

The Executive shall also name three members, with the President and the Secretary, to constitute a Publishing Committee, whose duty it will be to revise and prepare all documents and reports for publication. Such other Committees may, from time to time, be appointed by the Executive as they may deem desirable or necessary.

## 10.—ELECTION OF OFFICERS.

Officers shall be elected at each Annual Meeting, separately, by ballot, unless in the case of but one nomination, when he may be elected by acclamation, and hold office until his successor is elected.

## 11.—LIFE MEMBERSHIP FUND.

All monies coming into the Treasury of the Association in payment of Life Membership fees shall constitute a perpetual fund, to be known as the "Life Membership Fund." This fund shall be invested by the Secretary-Treasurer, under the advice and direction of the Executive Board, and all interest accruing therefrom shall constitute and become a part of the funds of the Association, devoted to the payment of ordinary expenses

## 12.—FISCAL YEAR.

The Fiscal year shall commence on the first day of January, and all annual assessments shall be deemed, and taken to be due at that time.

## 13.—ALTERATIONS.

The foregoing By-Laws may be altered, amended, or suspended by a majority vote.

## RULES

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# RULES OF THE N. S. F. G. ASSOCIATION.

(Copied from American Pomological Society.)

## SECTION I.—NAMING AND DESCRIBING NEW FRUITS.

*Rule 1.*—The originator or introducer (in the order named) has the prior right to bestow a name upon a new or unnamed fruit.

*Rule 2.*—The Society reserves the right, in case of long, inappropriate, or otherwise objectionable names, to shorten, modify, or wholly change the same, when they shall occur in its discussions or reports; and also to recommend such changes for general adoption.

*Rule 3.*—The names of fruits should, preferably, express, as far as practicable by a single word, the characteristics of the variety, the name of the originator, or the place of its origin. Under no ordinary circumstances should more than a single word be employed.

*Rule 4.*—Should the question of priority arise between different names for the same variety of fruit, other circumstances being equal, the name first publicly bestowed will be given precedence.

*Rule 5.*—To entitle a new fruit to the award or commendation of the Society, it must possess (at least for the locality for which it is recommended) some valuable or desirable quality or combination of qualities, in a higher degree than any previously known variety of its class and season.

*Rule 6.*—A variety of fruit, having been once exhibited, examined and reported upon, as a new fruit, by a committee of the Society, will not, thereafter, be recognized as such, so far as subsequent reports are concerned.

## SECTION II.—COMPETITIVE EXHIBITS OF FRUITS.

*Rule 1.*—A plate of fruit must contain six specimens, no more, no less, except in the case of single varieties, not included in collections.

*Rule 2.*—To insure examination by the proper committees, all fruits must be correctly and distinctly labelled, and placed upon the tables during the first day of the exhibition.

*Rule 3.*—The duplication of varieties in a collection will not be permitted.

*Rule 4.*—In all cases of fruits intended to be examined and reported on by committees, the name of the exhibitor, together with a complete list of the varieties exhibited by him, must be delivered to the Secretary of the Society on, or before, the first day of the exhibition.

*Rule 5.*—The exhibitor will receive from the Secretary, an entry card, which must be placed with the exhibit, when arranged for exhibition, for the guidance of committees.

*Rule 6.*—All articles placed upon the tables for exhibition must remain in charge of the Society till the close of the exhibition, to be removed sooner only upon express permission of the person or persons in charge.

*Rule 7.*—Fruits or other articles intended for testing, or to be given away to visitors, spectators, or others, will be assigned a separate hall, room, or tent, in which they may be dispensed at the pleasure of the exhibitor, who will not, however, be permitted to sell and deliver articles therein, nor to call attention to them in a boisterous or disorderly manner.

### SECTION III.—COMMITTEE ON NOMENCLATURE.

*Rule 1.*—It shall be the duty of the President, at the first session of the Society, on the first day of an exhibition of fruits, to appoint a committee of five expert pomologists, whose duty it shall be to supervise the nomenclature of the fruits on exhibition, and in case of error to correct the same.

*Rule 2.*—In making the necessary corrections they shall, for the convenience of examining and awarding committees, do the same at as early a period as practicable, and in making such corrections they shall use cards readily distinguishable from those used as labels by exhibitors, appending a mark of doubtfulness in case of uncertainty.

### SECTION IV.—EXAMINING AND AWARDING COMMITTEES.

*Rule 1.*—In estimating the comparative values of collections of fruits, committees are instructed to base such estimates strictly upon

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the varieties in such collections which shall have been correctly named by the exhibitor, prior to action thereon by the committee on nomenclature.

*Rule 2.*—In instituting such comparative values, committees are instructed to consider:—1st, the values of the varieties for the purposes to which they may be adapted; 2nd, the color, size, and evenness of the specimens; 3rd, their freedom from the marks of insects and other blemishes; 4th, the apparent carefulness in handling, and the taste displayed in the arrangement of the exhibit.

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## SPRING MEETING.

Held at Berwick on April 20th, 1891.

THE President took the chair at 2 o'clock, and in the absence of the Secretary, the Assistant Secretary filled that position.

The Committee to devise a scheme for the formation of an Apple Shipper's Association, and a large number of gentlemen being present who were interested in that scheme, about two hours of the Afternoon Session were given to the discussion of that project, and a great deal of information was elicited and many original ideas were advanced. The matter being disposed of, the business of the Association was then introduced.

The first paper on the programme was the Report of Committee on "Apple Scab," which was presented to the meeting and spoken to by R. W. STARR, who gave some good ideas on the subject.

L. D. ROBINSON said the black spot hurts both the apple and the tree, stunting its growth.

Mr. WHITMAN thought the black spot was caused by the season. In some seasons he had a good crop, again a total failure.

A letter was here read from J. W. King of Truro in reference to the Forest Tent Caterpillars, suggesting Legislative enactments. Spoken to by several persons, but no action was taken.

Mr. WHITMAN wished to know if it was beneficial to scrape apple trees.

R. W. STARR thought scraping of the loose bark was good, but not to go too deep, and wash with an alkaline solution, it would kill all insects and perhaps benefit the tree.

J. W. BIGELOW had read that when a man took care enough of a tree to scrape it, he would also give it a load of manure.

T. H. PARKER thought too much scraping was bad for the tree.

Meeting adjourned till 7 P. M.

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Evening session opened at 7.30. PRESIDENT in the Chair.

T. H. PARKER had found a difficulty in holding meetings in Berwick, owing to the fact that parties from the east left by the train and caused confusion.

The PRESIDENT said he would be willing at all times to give the time necessary to a full discussion of all topics.

R. W. STARR was here called on to speak on the new varieties of apples, and entertained the Association at some length.

The CHAIRMAN thought we must enlarge the number of our varieties, as what had been called the best kinds were in many instances failing in productiveness.

T. H. PARKER thought the Northern Spy a fine apple, but there was a heavy loss in culls, and it required careful handling and good care, was slow in bearing, but quite prolific.

The PRESIDENT had thought we were the only country that grew long keepers, but he had seen in Pennsylvania an apple that would keep till June, and a fine fruit.

R. W. STARR had the true Newton Pippin as grown on the Hudson. He had procured scions of the true variety, which had been distributed among the members of the Association. He had found them not at all suitable to our climate, and not worthy of propagation here.

J. T. JACKSON was undecided what varieties to plant. The Ribston was the poorest bearer he had; wished to graft them and did not know what to graft.

The PRESIDENT was also undecided, had four varieties and wished to plant more; thought we should try for a long keeper, was in favour of the Golden Russett.

T. H. PARKER did not find the Ribston profitable; had begun to graft them out, and found that when he began to prune severely they began to bear; believed that trees bearing two varieties were more apt to bear heavily.

The proper time to set trees was here introduced.

L. D. ROBINSON had bad luck in setting in the fall.

T. H. PARKER advised spring setting every time.

S. B. CHUTE had good success in fall planting.

G. C. MILLER was interested in and had noted the results of spring and fall planting. His land was under-drained, and he found it possible to plant in the fall. Thought the Blenheim Pippin adapted to a variety of soils; knew of them in light soils doing well and showing fine fruit. Thought the Gravenstein a more profitable apple than the Ribstons in his soil. Knew a man who planted a tree the day he was fifty years old, and he lived to sell 100 barrels from it and pocket \$200, speaking well for the fruitfulness of our orchards, and the longevity of our people.

R. W. STARR advised the people to steer clear of the so-called Russian varieties, their only good quality was hardness, and we did not need that here.

H. SHAW summed up his experience as follows: Use red varieties for sandy soils, and russets on heavy soils. Do not use raw stable manure around young trees, but use wood ashes freely. Get a good healthy seedling, and you will get a good tree. Spys must be heavily pruned and thoroughly manured to bear well.

The PRESIDENT understood the fruit fibre and wood fibre were distinct, and the fruit fibre was within ten feet of the tree.

G. C. MILLER thought the fertilization of a tree an important point, and one of which we should acquire all possible knowledge. It was not generally understood what elements plants required. He depended on artificial fertilizers entirely, and had good success. When a tree grew to wood, he understood it had too much ammonia. When he saw a tree declining and looking unhealthy, he knew it was lacking in some essential element, and endeavoured to supply that element.

MR. MILLER spoke at some length, giving his experience with fruit, standard and small.

After some desultory discussion on various topics, the meeting closed in good order. The session was well attended, and much interest manifested, the discussions being extended and profitable.

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## JANUARY MEETING.

HELD AT WITTER'S HALL, WOLFFVILLE, JANUARY 6TH AND 7TH, 1892.

President J. W. BIGELOW in the Chair. A large number of representative fruit growers were present, the weather being exceptionally fine. Among those present were the following gentlemen: J. W. Bigelow (president), C. R. H. Starr (secretary), Dr. A. P. Reid, George Thompson, J. E. Starr, A. A. Pineo, F. C. Johnson, Levi Eaton, Capt. Tuzo, A. McN. Patterson, Peter Innis, W. C. Archibald, R. S. Eaton, R. E. Harris, A. S. Harris, Geo. C. Johnson, A. C. Starr, C. Y. Johnson, A. D. Elderkin, A. H. Whitman, Edwin Chase, Brennan Jacques, A. N. Griffin, J. T. Jackson, J. W. Hamilton, Enoch Griffin, E. C. Johnson, C. W. Fitch, John Donaldson, Geo. V. Rand, T. E. Smith, F. A. Eaton, C. F. Elderkin, Wm. Chipman, of Bridgetown, W. H. Hardwick, and about 50 others.

The PRESIDENT announced that the hour had arrived appointed for the meeting, and he would now call upon the SECRETARY to read the minutes of the last meeting.

MR. C. R. H. STARR read the minutes of the preceding meeting, and on motion the same were approved.

The SECRETARY also read his report for the past year, which was as follows:—

### SECRETARY'S REPORT.

*Mr. President and Members:*

On this the 38th Annual Meeting of the F. G. A., it becomes my duty for the ninth time to present the Secretary's Annual Report. Twenty-eight years have wrought many changes in fruit growing throughout this country, as also in the personnel of this honourable association. Of the ten members whose names appear in the Act of incorporation passed by the Provincial Legislature in May, 1864, (about fourteen months after the organization of the Association), six have passed to the great majority. This association's first president, Robert Grant Haliburton, is living somewhere in Europe, and the recording secretary of the same time is ranching in the Canadian

North-West. The remaining two, Herbert P. S. Burnham, the venerable post master of Windsor, and Herbert Harris, the well-known florist and nurseryman of Halifax, have ceased of late years to be active members of the association. Since Mr. Haliburton, six gentlemen have filled the presidential chair. Of these, two, Dr. C. C. Hamilton, and Award Longley, died at their post. R. W. Starr, Rev. J. R. Hart, Dr. Chipman, and the present incumbent have been worthy successors. Since its organization, six men have filled the position of secretary of this Association, and the records show none to have been more efficient or painstaking than Mr. G. V. Rand, who filled the post from 1864.

The chief object of this Association has ever been to promote the best interests of fruit growers by every possible means. Specimens of our fruit have been exhibited both at home and abroad, whenever and wherever it seemed to our advantage. Through its exertions our people, not only our own members, but men who have never by word or deed aided in carrying on this work, who have never so much as paid a paltry dollar towards its maintenance, have been kept abreast of the times, and in touch with men whose lives are devoted to discovering the secrets of nature, the causes and treatment of diseases, the remedies for insect enemies, the best kinds of fruit to grow, and the treatment of the crop under different circumstances, from the time of blossoming until it is on the market. All information, wherever obtained, has been most freely disseminated, and whether you admit it or not, the fact remains, that to the efforts of the Fruit Growers' Association of Nova Scotia is due our enviable position in the fruit markets of the world to-day. That there is still much to be accomplished before we reach the position open to us, no one can be more fully aware. As my friend, the assistant-secretary, will doubtless presently show you, "The Fruit Growers needs" are many. We certainly want a better winter apple than anything we now have,—an apple of large size and bright colour, with all the good qualities of the Gravenstein in growth of tree and fruit. The solution of this problem should be vigorously undertaken by this Society, which was never in so good a position to undertake or carry on successful work as at present.

During the past summer while driving with a German gentleman who had known the Gravenstein in the fatherland, he pronounced his

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old favourite superior as grown here to the same variety grown at home. Upon being asked "Have you in Germany a long keeper as good in quality as the Gravenstein?" he replied "Borsdœfer is equal or superior; it will keep during the winter, and should prove a valuable acquisition to your fruit growers."

Mr. S. D. Willard, a prominent fruit grower of Central New York, who made us a brief visit during August, strongly recommended us to try McIntosh Red, believing it would prove of great value as a substitute for Baldwin. Regarding these varieties I wrote Mr. Craig, Horticulturist at the Central Experimental Farm, who replied as follows:—

CENTRAL EXPERIMENTAL FARM,  
DEPARTMENT OF AGRICULTURE,

*Ottawa, Sept. 1st, 1891.*

DEAR MR. STARR,—I have your favor of Aug. 21st, and absence from the Farm has prevented an earlier answer. The Borsdœfer is a famous German apple, representing a family rather than a variety. In our imported collections at Abbotsford and here, we have two or three of them, none differing materially from the other, and all small winter apples of high quality. Their small size as you suggest, is the real draw back, as the tree is fairly hardy—hardier than Gravenstein—and fairly productive. To get a good winter apple of the quality of Gravenstein, is indeed a difficult task. You will not find it in MacIntosh Red, although a very desirable fruit. Have you Scott's Winter Red Boetigheimer, and Magog Red Streak. I hope to be able to recommend a select list of Russian apples and cherries this fall; the latter, I think, will be very useful in your district. Did you have any striking results from spraying for apple scab. I hope to attend meeting of Am. Pom. Society at Washington this month.

Very truly yours,

J. CRAIG.

We had fully expected Mr. Craig would have been with us to-day, and much regret that neither Prof. Saunders nor any of his staff were able to leave Ottawa at this time.

The last annual meeting, which took place here on March 26th and two following days, was largely attended, and interesting discussions maintained throughout the several sessions, and then adjourned to April 3rd to hear report of the Financial Committee, and papers on the programme that had, for lack of time, not been read.

The Committee on Fungicides appointed at this meeting, after carefully compiling such information as was available, issued a circular,

as intended, embodying what they considered most applicable to the immediate wants of the Association, and a copy was mailed to each member. Their information was chiefly obtained from a report by Prof. Goff to the Dept. of Agriculture at Washington. Unfortunately in the reprint of Prof. Goff's report at Washington, gallons were substituted for quarts in the quantity of water required (the solution recommended was probably too much diluted to prove effectual). Upon this circular reaching the Central Experimental Farm, Mr. Craig immediately called attention to the error, and in due course the following letter came to hand :

CENTRAL EXPERIMENTAL FARM,  
DEPARTMENT OF AGRICULTURE,

Ottawa, April 17th, 1891.

To C. R. H. STARR, Esq.,

*Sery.-Treas. Fruit Growers' Assoc. of Nova Scotia, Wolfville, N. S.*

DEAR MR. STARR,— I telegraphed you immediately on receipt of your circular in regard to the treatment of apple scab. If you turn to page 10 of Prof. Goff's bulletin, the one from which you quote, you will notice that he recommends a solution composed of "one ounce of carbonate of copper dissolved in one quart of aqua-ammonia, (strength 22° Baumé) diluted with 100 quarts of water." This you see is at the rate of one ounce to 25 gallons of water, which I consider too weak, when you dilute this nearly four times, I am afraid the general verdict would be that "there is not much in it." I believe Prof. Robertson when he was at your meeting, drew attention to some work I did in this line last season. The results were fairly conclusive and encouraging. Fifteen large trees were operated on with each mixture, and the product in each case amounted to several bushels of apples. Very promising results were obtained from the application of 3 ozs. of copper carbonate diluted with 22 gals. of water. I shall try this on a much larger scale this year, and shall be in a position next fall to speak more positively in regard to its efficiency.

I have now in the hands of the printer a circular covering the latest known in regard to the "apple scab" and remedies, and shall be glad to send copies to members of your Association should they care to obtain them. This circular will contain such directions as will enable any fruit grower to manufacture his own copper carbonate at a cost not exceeding 20 cents per pound. Hoping that I may be of some service to you in this matter,

I am yours truly,

JOHN CRAIG,

*Horticulturist.*

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The April meeting took place at Berwick, and like most previous meetings held by the Association in that town, was well attended. The Association took no part as a body in the Provincial Exhibition at Halifax, and but few of the members were exhibitors. Owing, I presume chiefly, to the rather extraordinary construction of the prize list.

At the request of Prof. Lawson, the Secretary for Agriculture, your Society prepared a collection of about 80 sorts of apples, including most of our best commercial varieties, which was sent by the Nova Scotia government for exhibition at Scottish Horticultural Society's show at Edinburgh, and I am proud to learn they have received the highest award and encomium.

My London correspondent points out a startling fact, that Nova Scotia apple shippers are being seriously handicapped by the use of inferior and undersized barrels, which contain about 30 lbs. less fruit than those used by the Ontario shippers. To the retailer in London who sells apples by the pound, this is a serious matter. So much so, it is reported some of the larger buyers threaten to boycott N. S. apples until our shippers send in the same size barrels as do our neighbours.

The question of small barrels has in times past occupied a large share of attention from the Association, and through their agitation a bill was presented to the Provincial Legislature by our late president, Avarad Longley, to regulate the size of apple and potato barrels, and became law; which law now stands on the Statute book,—and reads thus:—“The length of stave or barrel shall be 29 inches, and the head between the chimes 17 inches, with a diameter in the centre inside the barrel of 19 inches, thus corresponding as nearly as possible in shape and size to the Canadian or American flat hooped flour barrel.” This Act further provides that the makers of apple or potato barrels shall have their names on each barrel, under penalty of twenty-five cents. And also any person putting up apples or potatoes for sale in barrels of smaller dimensions than these described, shall forfeit to the purchaser as damages an amount in proportion to any diminution of size or loss sustained thereby, to be recovered as an ordinary debt, and be liable to a fine of one dollar.

Even after the passage of this law barrel makers were slow to comply with its requirements, as the cooper who made the smallest barrel found the readiest sale for his goods. The same feeling in favor of a barrel holding a few less apples still prevails to a certain

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degree, and our barrel makers have shaved the mark as closely as circumstances would permit; while on the other hand the Ontario barrel has increased in its dimensions. By careful measurement we find an average apple barrel scant 29 inches length of stave, 26 inches between the heads, 19 inches bilge, and  $16\frac{1}{2}$  inches diameter at the chime, instead of 17 inches head as required. While the Ontario barrel measures  $29\frac{1}{2}$  inches stave, 27 inches between the heads, 20 inches bilge, and  $16\frac{3}{4}$  inches clear in the end. Here is a matter, Mr. President, for serious consideration and prompt action by the Association, as the worst results may be realized.

From cable reports, it seems evident that some apples sent to London recently have not been keeping as well as should be expected of Baldwin and like keeping varieties. I fear the keeping qualities of many apples were seriously impaired by the unusually early frost which occurred on one or two nights before much of our winter fruit had been gathered in. The question of just how to best treat, or handle apples which have been exposed to one or more frosts, is one requiring the careful consideration of this Association.

The propriety of making an exhibit of Nova Scotia fruits at World's Columbian Exposition at Chicago in 1893, should be fully discussed at this meeting.

Whether the use of barnyard manures in the orchards tend to promote the growth of fungus diseases, and other questions of equal importance will require attention, and there is every indication that the 28th annual meeting will not fall behind those of previous years in general interest to fruit growers.

The loss by the stenographer of a large portion of his notes of the discussion at the annual meeting in 1890, and the failure of the reporter engaged for the last annual meeting to put in an appearance at the time appointed, has very materially affected the reports of the last two years, and caused much extra labor and delay in preparing the reports for the printer.

After nine years service as secretary-treasurer of this Association, Mr. President, I beg to be allowed to retire, as increasing cares and duties make it impossible for me to devote the time and labor to this work that I have hitherto given; and without which the affairs of the Association cannot flourish. I have to thank you Mr. President, as well as your predecessors and the members generally, for the uniform

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kindness and hearty co-operation during these years, and shall always look back with pleasure upon the cordial relations existing between us as members of the Association, and trust the time we have given to the good work has not been spent for naught.

MR. C. R. H. STARR said: What strikes me as a matter which requires immediate attention, is the fact that the Ontario people are making larger apple barrels and sending them into the market. Now, as we do not appear to be able to call the Ontario people into account, I do not know but that we shall have to fall into line, and by some means secure a larger barrel,—one that will compare favourably with theirs. If that is a fact that they are sending into the European market a larger barrel, then we have to do likewise. Some action should be taken,—we have got to go to work and make some other law and regulate the size of our apple barrel; I had hoped that we had secured the proper sized barrel and that the matter was settled, but it seems where they manufacture the flour barrel, which is a larger barrel, they manufacture the apple barrel which is about the same size,—and they have done mischief by crowding in larger barrels, and I do not know any remedy that we have except to follow suit. As we have to market our apples in the same market with theirs, and in competition, we should give this matter attention.

GEORGE THOMPSON.—The Dominion Act states that the apple barrels should be the same size as flour barrels.

C. H. R. STARR.—This you see is very indefinite, because they made the flour barrel formerly of smaller size and they now use a larger barrel. They make a larger barrel for their flour now than ever before, and if the apple barrel is to be the size of the flour barrel you see where it takes it.

MR. THOMPSON.—The Dominion Law gives the exact measurement the flour barrel shall be and states that the apple barrel shall be of the same size.

The PRESIDENT.—That is our law, and that overrides any Provincial or Local Act, and we will be bound by that. The question then appears, whether we are to follow the Canadians, or stand on our own legal rights in having our own size.

C. R. H. STARR.—The Act I quoted was taken from the N. S. Revised Stat., 5th series. I just have this recollection with regard to

the Dominion Law. A few years ago Mr. Barss sent us a clipping from an Ontario paper, stating that a certain bill was being introduced into the House of Commons that barrels should be made of a certain dimension, and to be made of hard-wood, and knowing this to seriously affect us here, I think the Association held an impromptu meeting, and we sent a protest to Ottawa against having such a law passed to prevent our using spruce, and the result seems to be that the thing has been wiped out from the bill, and that the matter was left to the Governor-in-Council to make such regulations as might seem necessary.

GEORGE THOMPSON.—If you refer to the Revised Statutes of Canada it will settle the matter.

C. R. H. STARR read an extract from a letter received from Nothard & Lowe, stating that Ontario apples were outstripping Nova Scotia apples in price, owing to the larger barrel, in many cases selling for 16 s. when the Nova Scotia stock only would sell for 11s., and that sellers and consumers were finding much fault with our small barrels.

A. A. PINEO—Then Mr. President, in order to compete with Ontario, the relative value of 11s. to 16s. would make our barrels much larger,—in fact would make our barrels almost 50 per cent. larger. If we take these premises as correct, it shows us that the Ontario barrel is heavier.

J. E. STARR.—We can make a law which will correspond with their law in reference to the size of the barrels. If they are going to talk about how much a barrel of apples from Ontario will weigh, our own would only be three-quarters in weight. I do not think that weight is a guide at all in the matter. Everybody knows the difference between the weight of a barrel of Gravenstein and a barrel of Belle-fleur. It is no use to talk about weight, we should sell by proper dimensions. If our barrel is smaller in inches than the Ontario barrel, it strikes me we will be forced to adopt their size of barrel.

A. McN. PATTERSON.—I suppose Mr. Starr would like to deal with the Ontario people in flour, and take their flour in the same way—and whether there is the right amount in the barrel or not.

C. R. H. STARR.—I think the question of weight would not be considered in the light Mr. Starr puts it—that is, Gravensteins would not come in comparison with Baldwins. If our apples are lighter in weight than Ontario, then we are laboring under that much advantage.

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It is evident that our barrel is smaller in size than the Ontario barrel, and that is what they are complaining about.

A. WHITMAN.—I think there is something wanting in that law. I think that the intention was that there should be 27 inches between the heads instead of 27 inches between the croes, and there does not seem to be any law with regard to the head. I remember buying a number of barrels with a two inch plank in the bottom. There is no law for the thickness of the heads. I have found the thickness in barrels of one and one quarter inches. I know the barrels I speak of did not hold more than two bushels. I cannot see why that Dominion Act does not apply to the whole Dominion.

GEORGE THOMPSON read Section 18 of the Dominion Acts of 1886, Chapter 104—"All apples packed in Canada for sale by the barrel shall be packed in good and strong barrels of seasoned wood as nearly cylindrical as may be; the staves of such barrels shall be 27 inches in length from croe to croe, with heads from 16 and one-half to 17 inches in diameter; and such barrels shall be sufficiently hooped, with a lining hoop within the chimes, the whole well secured by nails."

C. R. H. STARR.—My interpretation from croe to croe is from the cut in one end to the cut in the other—the cut made in the stave. We are not talking about the thickness of the head.

J. B. DAVIDSON.—Where do you measure from?

C. R. H. STARR.—I measure from croe to croe.

J. B. DAVIDSON.—If the barrel head was three inches thick?

C. R. H. STARR.—I would measure from croe to croe. But that might be another matter. If I was an inspector of barrels I might find that needed looking after.

R. W. STARR.—I might ask Mr. Davidson how he would measure a cask?

J. B. DAVIDSON.—I would measure from the bottom.

DR. A. P. REID.—From croe to croe is from centre to centre of cut. Apple barrel heads are very nearly one inch thick, or so arranged that nearly two-thirds will be on the inside of the croe,—it is very seldom we have a thin head. To my mind there seems to be no question at all before the meeting, excepting putting our fruit before the people in the market. We know there are ten barrels of apples from Canada

and the United States sold for everyone sold from Nova Scotia. We simply have to make a barrel that is not inferior in size to their barrels. As to wood, ours will do very well. The larger the barrel the more probability of injury to the fruit, and the half barrel would be better still. And the better plan would be in sending our fruit to the European markets, to send them as we would pack eggs or any other article which is very easily injured. A gentleman showed me a very neat thing indeed which he had devised; it was of pasteboard and would not cost very much, and which would enable the apples to be carried in the pasteboard something similar to an egg,—and if I mistake not, the great advantage of the Australian apples is the extra care in which they are put upon the market, and that is just what we want to do, is to exercise a little more skill in exporting them. We must put our fruit on the market in as good a condition as possible,—and when we place our products upon the market in their best possible form, we will be paid in proportion.

T. E. SMITH said there was a difference in the bevel and also in the length, and if these two differences were rectified, we could easily have a barrel which would be the right thing.

R. S. EATON.—Have we a law which the coopers can use as a guide to give the exact dimensions of the Canadian barrel?

The PRESIDENT said "No." Only the law that was read by Mr. Thompson. The only way to do is to start upon a barrel of the Canadian size, and see what price can be obtained. If our coopers are making their barrels under law that settles it.

GEORGE V. RAND.—What objection is there to the lining hoop?

The PRESIDENT.—Some use a lining hoop, and I think more especially on the outside.

R. W. STARR.—The Canadian and American barrels are mostly used with a hard-wood head, which is less than half an inch in thickness. Our soft-wood heads are generally five eighths of an inch in thickness, and the croes are cut to leave no more on the outside than the hard-wood heads. Our staves being thicker takes still more off the barrel, which makes them less than the Canadian barrels.

A. WHITMAN.—There should certainly be a change in the law to specify the exact distance between the heads. It was the intention of the law to have the distance between the heads and not between the

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cross. He said the Ontario barrel was made with 19 inch bilge, and 17 inch ends, and that it conformed to the letter of the law, but he said one-half the barrels which were made in the Valley were only eighteen and one-half inches in the bilge.

GEORGE THOMPSON.—The Revised Statutes of Canada states that the heads shall be from sixteen and one-half to seventeen inches in diameter, but it says nothing at all about the diameter on the bilge. They are not supposed to make them perfectly round.

R. W. STARR.—After giving the instructions as to the size of the barrel, they should have given the number of cubic inches that the barrel should contain. The question with regard to the shape of the barrel is one of great importance to the shipping people. If we were shipping by sailing vessels, it would not matter how much bilge you put on your barrel, but in steamers tiered singly across the ship with a large bilge and a small head they would ride badly, because the weight of the whole tier will come on the centre of the barrels instead of on the heads. If your barrels contained the requisite number of cubic inches or requisite number of gallons, you will have no difficulty, but until that is the case you will.

A. McN. PATTERSON.—Mr. Chairman, I will tell you of a little thing which happened to me this fall in regard to barrels:—A gentleman in Sackville, N. B., wrote me to have some first class apples put up for him and to let him know the cost, and I did so, saying that they would cost him such a figure there. He replied, that there were now Ontario apples selling at Sackville for such a figure, and each barrel contained a peck more apples than ours.

It was duly moved and seconded that the report of the Secretary be adopted and published in the report.

The PRESIDENT then delivered his address, which was as follows :

#### PRESIDENTS' ANNUAL ADDRESS.

*To the Members of the Nova Scotia Fruit Growers' Association :*

Another annual revolution of our earth-producing seed time and harvest, buds, blossoms and ripened fruit has brought us to the date of the 28th annual meeting of this Association, and while it becomes my privilege to review its progress during the past year, I feel my address must be short, if I report only what has been done instead of what might have been done. Yet I feel pleasure to be able to hand over

to my successor in office, the charge of this Association, much improved financially, and numerically, during the past year.

As no important occasion offered for making exhibits of our fruit during the past year we deem it advisable to husband our small resources with a view of making a creditable exhibition at the World's Fair at Chicago; and I must here urge upon our Association the necessity of making immediate arrangements for presenting on that occasion all our fruits in their most attractive form, and hope, that at this meeting, a special committee will be appointed to secure an exhibit, and if we can in May 1893, exhibit to the world at Chicago, many of our best varieties of apples grown in 1892, we will do much to establish the reputation we now enjoy, of producing the best flavoured, long-keeping apple in the world.

Although this society as such has not made any exhibits this year, our esteemed Vice-President for Halifax, Dr. Lawson, assisted by other members of the Association, furnished the Nova Scotia Government, a valuable assortment of apples for exhibition at the Chrysanthemum show at Edinburgh, Scotland, which was awarded a special gold medal, and commanded universal admiration as shewn by extract from the London *Gardener Chronicle*, as follows:

The government of Nova Scotia, through Dr. George Lawson, secretary for agriculture to the colony, sent a collection of about eighty varieties of apples, all fine samples of their kind; large, full and richly colored. It composed most of the fine varieties for the production of which the colony is famed, notable amongst them being splendid samples of blenheim pippin, ribston pippin, gravenstein, king of the pippins, golden pippins, Ohio nonpareil, seek-no-further, grime's golden, cabashes, king of Tompkins county, Ben Davis, fallwater, baldwin, vandevere, and many others which have appeared in former collections exhibited from Nova Scotia. Among those not previously seen at Edinburgh, red jewel bears a considerable resemblance to a large and well-grown Cox's orange pippin; Eaton spy, an improved northern spy; Haas, a very handsome, roundish, bright red apple; and codlin, a large, round, green, red-cheeked, useful looking fruit. Wellington was also in the collection for the first time, but, although full-sized and clean grown, it was less briskly flavored than home-grown samples, a drawback peculiar to most, if not all *culinary* apples grown in America. Dr. Lawson also sent a whole barrel of

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splendid gravenstein apples, to show the method of packing for exportation, which was a point of much interest to the growers of fruit; but with the general crowd the beautiful, rich, juicy apples proved more attractive than the method of packing, and it was impossible to keep the barrel intact to the end of the show. The collection received a well merited award of a special gold medal.

'A fine collection of American apples, consisting of forty-four dishes, were exhibited, sent by the director of the government pomological department, United States of America, as a fair sample of the apple produce in several of the states, of which Peck's pleasant, Ben Davis, a highly colored and excellent fruit, varying very much in the ones of the fruit in the different examples grown from three states; Baldwin, Roxbury, Russet, Northern spy, Pomme grisi and others were fairly good examples, and were commented upon as not equal to the pick of the Canadian apples of the same sorts sent here (Edinburgh) for sale in the markets.'

We believe the funds of our Association can be more profitably expended than by exhibiting at home, where the superior quality of our fruit is fully known, but we should certainly not miss any opportunity of exhibiting our superior fruits to best advantage at any foreign exhibition.

The necessity for taking some united and effective action for reducing the exorbitant freight rates now charged for our fruit to London will be presented at this meeting for your consideration, and should command the attention of our fruit growers generally. The fact that a private party chartered a suitable steamer to load at Kingsport for London this year at 2/6 per bbl., while the regular subsidised line charged one dollar per bbl. proves conclusively that we must find some means of saving the enormous amount of money now lost to us in paying exorbitant rates of freight, and we cannot expect to compete successfully with the fruit growers of New York and New England, while they get their fruit landed in England for about half the freight we pay, and transported in about half the time ours are in transit,—as illustrated by the fact that apples are now being shipped from New York to Liverpool at about 2/ p. bbl., and arriving in 6 or 7 days.

In reviewing the past year from a fruit grower's stand point, one would conclude that the unexpected is most likely to happen. The

season commenced with favourable weather in May, and June produced a most abundant show of blossoms, caterpillars and cankerworms, which combination assisted by cold winds and rain storms the last week in June, and a tornado of unusual violence the first of September, and unusual frosts early in November, left us with the smallest crop of apples that has been harvested for five years. The quality is much better than last year and may be considered as a good average,—very little black spot has appeared which would lead us to the conclusion that it is occasioned by climatic more than other causes, and where the insect pests have been vigorously attacked, very little damage has been sustained by them. Young orchard trees have had a vigorous healthy growth.

Owing chiefly to an abundant crop of superior quality the world over, prices have ruled low, and up to this date may be put down at not much over one half the prices obtained last year, and as our gravensteins were excluded from what seems to be the natural market for them, the United States, by a duty of 63 cents p. bbl. they this year sold for from \$1.50 to \$2 p. bbl. against \$3.50 and \$4 last year. Our export of gravensteins to the United States last year was over 40,000 bbls. while this year not 1000 bbls. has been shipped. We may expect good prices for hard apples during the winter months, and judging from present appearance the apple grower's profit will be in future in growing best varieties of long keeping apples, for the English market. Although it cannot be considered a successful year for the fruit grower of N. S., yet the fruit products of this valley have been by far the most profitable farm products, and if any farmer who has an orchard worth calling such, will carefully calculate from what different sources his income from the farm has been obtained, I am satisfied he will find his fruit, even this year, has paid him better than any other crop.

A noticeable feature of our trade with Great Britain is that sales of our fruit are confined almost exclusively to London, while Liverpool, Glasgow, and many other ports afford a good market for Canadian and American apples. This year to date, over 600,000 bbls. of Canadian and American apples in Liverpool have found a ready and profitable market, while not 1000 bbls. of Nova Scotia apples have been offered in that market. While it is of the greatest importance to us to hold the market of the great city of London, is it

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not also to our advantage to secure other markets. Our report of this year's crop of apples to Great Britain to the end of the year 1891, was 45,260, and estimating hard apples still on hand at 40,000 bbls. will make our shipment for the year's crop about 85,000 bbls. against 92,000 bbls. in 1891, and 102,000 in 1889, and 121,000 in 1887.

It is gratifying to know that very little complaint has been made so far this year about fraudulent or careless packing. This I attribute to two causes. First, greater carefulness on the part of fruit growers. Second, a better quality of fruit than we have had for several years. As it is only reasonable to expect that when fruit grows wormy and spotted, some of it will find its way into the barrels intended for shipment.

I had the pleasure of visiting the Horticultural show at Boston, and took flying visits to the shows, markets and orchards of the States of Massachusetts, New York and Pennsylvania in September, and was surprised to find an abundant crop of superior autumn fruit almost entirely free from worms, black spot or other defects. Several fruit growers in New York assured me that it was the first crop they had grown in 10 years that was fit for market as No. 1., and during all that time they had been fighting insect pests unsuccessfully, and this year insects had not injured the fruit, so we learn that with all our efforts, Nature is the great destroyer as well as producer of insect pests.

You will be asked to consider and decide upon some additions to the Constitution respecting the objects of this Association, with a view to making it more useful and efficient, and in addition to making the usual earnest appeal to fruit growers to join our ranks. I shall also urge the present members and old veterans of the Association to make such changes as will enable it to become so important a factor, in advancing the interest of the fruit industry of this country, that all fruit growers will through self-interest be compelled to join.

In conclusion I have much pleasure in congratulating the members of this Association and fruit growers of Nova Scotia on having enjoyed a moderately successful year, and with health, happiness and prosperity while living in a land so highly favoured socially, religiously and politically with a healthy climate and fertile soil, we need not envy the fruit growers of any locality on earth, and should be happy in the thought that this Nova Scotia of ours is so desirable a country.

J. E. STARR thanked the worthy President on behalf of the Association for his address and the suggestions thrown out, and said that he had much gratification in moving that the address of the President on this occasion be received and ordered to be printed with the report of the Association for the past year.

DR. A. P. REID seconded the motion.

The said motion upon being put passed unanimously.

The PRESIDENT, I thank you very much for the mark of your esteem. There are a great many statistical points I should like to have more fully and correct before the matter goes to press. There was one particular report I would like to have had, namely, the actual product of the different counties, and I was in hopes to have got it from the authorities. I received this answer from the compiler of the census in Ottawa, "Cannot yet give you quantity of apples in Nova Scotia, land in orchards has increased 50 per cent last ten years."

MR. W. C. ARCHIBALD then read the following paper :

#### THE PROSPECTS FOR PLUM AND PEACH GROWING IN NOVA SCOTIA.

Through the kindness of the Secretary, I have received copies of the annual reports back as far as '82. In looking them over, I observe the plum question has been but briefly referred to during these years. I believe there has been no discussion on this question since '86.

I feel wholly inadequate to the task of treating so far-reaching and so important a subject as has been assigned to me in the programme, viz., "The prospects for Plum and Peach growing in Nova Scotia." The subject of plum culture being one that requires more skill, closer observance of nature and habits, the character and constitution of its growth, its distinguishing characteristic of early fruitage, the character of the people who are its consumers, the whereabouts of its markets, and its commercial value when fruited.

It will be of general interest, I assume, to preface this paper with a brief outline of its history. The earliest records make mention of the plum, about 3000 years ago, as being indigenous to the valleys of the Caucasus and even to the summits of the mountains. Nor. Lat. 45° which is identical with our own. The Romans cultivated this fruit extensively ; and it was much prized on account of its exceeding

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lusciousness. They introduced it among the nations whom they conquered. The Romans, Gauls, Germans and Saxons brought the plum tree under cultivation in their various latitudes, multiplying and classifying its varieties into the *plum*, *peach*, *cherry*, *apricot*, and are known to-day as the European varieties.

Referring to this continent, we have the Canada plum, Chicasaw, and Americana indigenous. The plum which commands our attention, is the Canadian plum, which is found growing from Hudson's Bay to Texas, over a large part of the Atlantic slope. It is a small red plum slightly elongated with a large pit, and having to-day no commercial value. It is, however, used as a stock for the propagation of the plum. But is a slow grower. The Myrobolin plum is a native of India, is a rapid grower and makes a larger tree. By way of information on this point I may be permitted to say, that Mr. Sharp of Woodstock, New Brunswick, uses the Canada plum for stocks in the propagation of the plum, on account of its special hardiness. This produces a tree somewhat dwarfish in character. The nurserymen of New York State now use the Myrobolin almost entirely, as it is a rapid grower and makes a larger tree. The growing of the plum in the Maritime Provinces, has been for the past twenty years a series of perplexities and defeats! And yet the question is fraught with *living issues* and remains *full of lively interest*. This has arisen chiefly because the diseases and foes of the insect world were previously unknown. They came and did their deadly work while growers stood bewildered and put forth but feeble efforts to check their ravages. For want of knowledge of their origin they were unable to formulate preventives, and their efforts have mainly been expended in curatives. From a limited experience and observation, I gather that the entire family of *plum trees* requires special treatment and cultivation to bring back its former vigor and healthfulness. There are two active forces at work—one a vegetable instinct, to live, grow, and propagate its species, the *other* largely external, to attack and destroy it. I would respectfully ask this audience on which side have our efforts been? Have we placed ourselves on the helping side with forces timely and adequate to meet its enemies?

I would here sharply draw the lines between agriculture as a system and the methods required in Horticulture. In agriculture we fertilize for grain or grass one year in three or five with but little

stirring of the soil. In horticulture we fertilize every year with frequent cultivations. In setting plum trees I would prefer planting them in an orchard by themselves, both on account of the distinct character of the tree and its imperative demands for culture. I would run the cultivator or spring tooth harrow every week, and that immediately after rainfalls. This will break up the crust and disturb the capillary tubes, which act as moisture escape-valves and renders the easy penetration of the air to the roots. The earth thus disturbed becomes a mulch for the roots holding the moisture when and where most needed. It also prevents the growth of weeds, thus saving a large amount of moisture to the roots of the trees. I would here repeat, the presence of the fresh air in the soil, among the roots of plum trees, is essential for their vigor and longevity. Between the trees in the row there may be planted say, one row of potatoes or other vegetables requiring frequent cultivation, or a row of strawberries. This would give a space of  $3\frac{1}{2}$  feet from the rows up and down which the cultivator can be run weekly. I would not sow buckwheat or clover in this orchard unless it could be done after the middle of July and plowed in the autumn. My experience in the plum orchard has been that in sowing buckwheat in the spring the rapidly forming roots of the grain in their vigorous growth rob the trees of the substances required in *their* growth as well as taking up the moisture within their reach. By careful observation during the past year I noted a marked difference between trees cultivated weekly and those standing in the ground sown in buckwheat, greatly in favor of the former. I would *here* remark that our direct purpose and aim *is* to grow fruit, not side crops. Neglecting frequent cultivation, means weakness of trees and growth of black knot, increase of curculio and rot of the fruit. In preparing the ground for a plum orchard, select if possible a deep dry sandy loam, and where a pan exists, subsoil, set the trees deep. The basis of fertility may be well laid with barnyard manure and renewed about every fifth or seventh year with manure well rotted. The plum tree demands high fertilization. During the intermediate years I would use every spring *soluble* fertilizers as *soluble* as they can be had, such as finely ground, pure bone meal for the phosphorous and lime it contains, also muriate of potash or sulphate of potash for its potash, which is the chief constituent in the inorganic part of trees; and a small percentage of nitrate of soda or sulphate of ammonia as a healthy stimulant for

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growth. These may be applied separately or as a compound. I think it very desirable to regulate and secure the growth of the tree during the first six weeks of summer. An application of *this* concentrated and soluble fertilizer in early spring in suitable quantities will *do this* before the mid-summer rest, by which time the fertilizer will have expended itself, permitting the entire remainder of the season to well ripen the new wood and set *well matured* fruit buds. A few days ago I made a trip through Cornwallis and Aylesford to observe carefully the small plum orchards, together with the soil and methods there in use. I found very considerable interest attended with good success. It was evident a deep sandy loam is the best soil and the frequent cultivations, giving the best results. At Berwick, Mr. L. D. Robinson, principal of the public school, set last spring 200 plum trees. 75 of these were set in old strawberry rows with one quart of bone meal mixed with the soil in setting each tree. These trees had no cultivation until the crop of strawberries was picked, average growth one finger-length. 50 of these trees were set in gooseberry rows with the same amount of fertilizer cultivated three times during the season; average growth about fifteen inches. The remaining 75 trees were set together with new strawberry plants in rows and cultivated ten times; average growth about two and a half feet. In the first case the old mat of strawberry plants absorbed the moisture, and for want of cultivation made but a finger length of growth. This and other instances which I could cite but confirms my views. In planting a plum orchard the first points for careful consideration, are, hardness of tree, then productiveness and quality. Short trunks, low tops, thick planting, alternating varieties in the rows with a view towards perfect fertilization of the blossoms, and a frequent harrowing of the soil should be carefully followed. Under the above treatment I think the average life of a plum orchard can be safely placed at at least twenty years. The above treatment with an orchard will, I believe, decide the prospects for plum and peach growing in Nova Scotia. It is easily demonstrated that a plum orchard set four years has already paid the cost of trees, rent of land, expenses of culture, etc., and leaves a promising orchard for many coming years. I may refer to Messrs. G. C. Miller, of Middleton, who has some 600 trees; John Killam, of North Kingston, 300; Henry Shaw, of Berwick, 300; Rev. Mr. Parry, of New Glasgow, 600; as well as others including my own. All of which testify to the large profits derived to-day from plum

growing. The Vice-President of the Fruit Association of Western N. Y., Mr. S. D. Willard, a large grower and owning a 25 acre plum orchard, visited our valley last summer. He says, "I had no idea of the possibilities before you as a great fruit region. You would be surprised at the difference in growth between your soil in N. S. and ours. The same variety of plums with you will generally have four times the growth upon a young tree as it will with us. This doubtless is the result of the difference in soils. Ours is rather a cold clay that makes growth *slow* and *hard*, and it is quite probable it may mature earlier with you." I marketed my plums for the last three years in Halifax, gross prices last season being \$1.25 per basket of 11 lbs.

I make three pickings from the same trees, *only* sound, full grown, and ripe fruit each picking. A *careful classification* as to color, size and quality for the markets, applies with *equal* or greater force than to apples. I received this season for a few baskets of choice Magnum Bonums \$7.50 per bushel gross price. I speak with confidence, and am well assured that a higher classification is possible. With neater and better sized packages we have not nearly reached the crown of the market. The home market is capable of wide expansion. The small, deformed, and otherwise low grade fruit we preserved at home in the proportion of one bushel of plums of 60 lbs. to 45 lbs. of granulated sugar. These preserves I have sold, realizing a net equivalent of \$10 per bushel, not counting cost of labor. We must have a canning factory within easy reach. The most profitable fruit to can in Nova Scotia to-day is the plum as attested by our canning factories. Plums canned in tins or preserved in jars can be shipped to the West Indies or across the equator. With latest facilities such as now obtains in steamships sailing between large commercial centres we will ship plums in cold storage to Great Britain. Positioned as we are, on the wharf of America, our markets are the open world. This is already a lengthy paper. The minor difficulties in plum orchards as black knot, curculio and rot of the fruit are likely to be considered in a later question.

Thanking you, Mr. President and Gentlemen, for your patient hearing, my only apology in presenting this, is a love for the plum family.

T. E. SMITH moved, and R. W. STARR seconded, that the paper be received and published in the reports. Passed unanimously.

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C. R. H. STARR then read a letter from Mr. Willard in reply to an invitation to attend our meeting this winter under date of Nov. 21st. "Your esteemed favour of the 14th inst., to hand. Nothing I assure you would afford me more pleasure than to meet your Association as proposed in January next, but it is no use for me to indulge in the idea, as I find part of December and January as a whole taxing my time to the utmost, as between Farmer's Institutes, Agricultural Societies, of which I am one of the executive board, and our own State Horticultural Society, I am very sorry, as I can easily understand you will have a very enjoyable affair, and my remembrance of last summer only makes me more eager to say Yes."

I might say, Mr. President, that Mr. Willard's views on plum culture were very interesting indeed, and I think that Mr. R. W. Starr would be able to give the Association Mr. Willard's views much better than I could with reference to the method of cultivation and pruning of plum trees, the pruning particularly was a novel feature to us, and it will doubtless prove an advantage to us.

R. W. STARR.—Mr. President, I was very much interested in Mr. Willard's discussion of the cultivation of the plum, and also of the peach. His system of planting was not exactly like that of Mr. Archibald's, although it was in the same line. His method of planting the plum was 10 feet apart in the row with the rows far enough apart to enable him to get a fair cart-way, he gave it as 15 feet, 10 feet one way and 15 feet another. You might put a little closer and still allow plenty of room for cultivation and cartage, and for using teams in plowing. In regard to pruning he said that his views had undergone a change since he first began the culture, that instead of pruning outwards and upwards he pruned the tops and kept the trees low and close. He said he had not yet been able to grow a plum tree too thick. And it was the same with the peach. Their rule was to cut half of last year's growth in wood in the peach, if it was very mature they cut more than one half. In plums one-third of the wood was cut. He said he was surprised to come down here and see trees loaded to excess in sandy and gravelly soils. He said they could not make a success on such soils. Why is that I enquired? Well, I do not know but that it is your excessive moisture down here, I think that must be the reason. We have no lack of moisture. We want drainage. As soon as you go into the valley of the Mississippi you

find an excessive dryness. Mr. Johnson, of Illinois, uses strong arguments that the reason they cannot grow fruit in that country is that the land and atmosphere is too dry. We want to get rid of some of our moisture, and the probabilities are much better on the sandy soils than on the clays.

JOHN E. STARR. — We ought to express our gratification and admiration for the well read and beautiful paper with regard to plum culture. When we look back to the days of our boyhood those of us who are getting well on in the yellow leaf recollect some localities filled with rich and luscious plums as fine as you can imagine or think of, but by degrees the pests destroyed them until at last plum culture was almost extinct, and if you go over the country you can hardly find a plum tree. This state of affairs can be of no profit or satisfaction to anybody. Here and there you find a spot where some enterprising gentleman has succeeded in overcoming some of the difficulties and growing quite a fair crop of plums. Now our friend, Mr Archibald, has pictured quite a glowing industry in plum growing and curing. Can we picture some glowing products from our valley upon the market of the world. Experience proves that the market for plums must be near. You cannot transport them by telegraph or telephone, they have to go in boxes on railroads and steamers. To reach a market in China would not be of much use to us ; the market must be near. I would not dim the enthusiasm. I may say that to a limited degree it may be made very profitable, but it can certainly be only to a limited degree unless markets now shut out are available to us. Markets would be the grand thing. Well then supposing we could by skill, industry, judgment and learning, and from those hints from such gentlemen who are enthusiastic, and hints which are so valuable in the different branches of this industry, suppose we succeed in growing more plums, it is worth our while to try. I met a man who lived away up in the country where Mr. Willard comes from. He sold me some plum trees which were brought down and they assured me that they would withstand the ravages of the black-knot and I set them in my ground where pears grew abundantly, but before the first summer was over the plum trees were worthless, and as far as I am concerned I will let someone else grow plums. I know some parts of Horton where plums have been cultivated with a measure of success. Down in Town Plot Mr. Tobin was successful, and looking around

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and talking of the culture, and asking him why his plums grew and mine would not, he replied, "I wish they were all gravensteins." I looked at him in astonishment. Those were the days when our gravensteins had a better market, and I hope the time will come again. And we hope that we may have markets for the plum when our friend has succeeded in encouraging the planting of plum orchards so they may be a success. We are very much indebted to the gentleman for his very able paper.

C. R. STARR.—I heartily endorse the sentiments of the last gentleman. My experience with plum growing is very much like the last speakers. There was a time I had a large number of trees, but not now. Those of you who met Mr. Willard know that he is thoroughly practical, and you cannot be in his company that you do not get something of benefit. We were driving over the country one day with you Mr. President, he made this remark with reference to our apple culture, "Are you not making a mistake in planting apple trees almost exclusively. We are taking out our apple trees and substituting plums, peaches and pears, and that class of fruit, an acre of land with us in some sections is worth more without an orchard than one on it," and he advised us strongly to mix our fruits more and go into this sort of culture. I remarked to Mr. Willard that perhaps he had not taken into consideration the difference between our situation, he could grow plums, he had large local markets. I said our markets were across the water and we must grow fruits which we can export, and the more apple orchards they rooted out the better it would be for us. I said that they might grow plums, but we would have to grow such stuff as we could market abroad.

With reference to his plum culture I questioned him particularly with reference to black knot, and how they managed to keep them out. He said they cut it vigorously whenever they see it, and they have not been troubled nearly as much as we have, and if a tree shows any indication of disease they do not stop but root it out root and branch and supply another one.

Do not depend upon buying your trees from nurserymen, but you must keep your own nursery and supply it year by year as you require it. If there are any defective trees do not stop to prune them but root them out and put a healthy one in its place, and the sooner the better, this was the method he adopted in keeping up his orchard.

Then with reference to the pruning of trees the object is to get a solid head, cut off one half of each years growth and the fruit will hang on the outside as the rhind on an orange. He made the limbs grow thick and bushy, and Mr. Archibald's idea could perhaps be accomplished satisfactorily, but with this system of pruning, which has been used advantageously in New York, it is quite possible Mr. Archibald's views would be all right.

MR. ARCHIBALD.—In pruning five rows together my thought is this, not to use the space between the rows as cartways, but the fertilizing to be thrown in from each side from each cartway. I did not see Mr. Willard when he was here but I had a list of questions which I was not able to answer myself, and so I wrote to Mr. Wiliard, and some days ago he sent me a 15 page letter, I think, for which of course I am grateful to him. In the spray the whole trees can be economically sprayed 28 feet across, and on the other side thrown back. I am planting 1100 (described on diagram) on that plan in the spring, and I am putting 500 in my apple orchard as in the plan above. I intend one word with reference to Mr. Starr as to the markets. We have had 50 years experience in apple growing. It is really a wonder that it brings one cent per barrel. I was offered oranges in Jamaica at one shilling per barrel, but there will be markets for us, and I take my stand upon that point.

A. MCN. PATTERSON said that he thought it was folly to prune too much, we wanted all the light and heat we could get in our plum trees. He hoped that no one would go home and clip off all their plum trees.

JOHN E. STARR said that we wanted all the nourishment we can get for the cultivation of the plum, and he knew that his method would not do with apples.

A. MCN. PATTERSON.—I would like to know whether there is any law—suppose a man alongside of you has an orchard and allows these caterpillars and pests to annoy you year by year, and you keep your own orchard clean, are you to be fed from the other side of the fence. Is there any way you can have redress?

MR. SMITH said that in the State of California they had a law upon their statute book which remedied such an evil, and he did not see why we could not get such a law passed.

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DR. A. P. REID said that this system of plum orchards was on the trellis system, and he thought it would fill a great many blanks in regard to the plum culture in this country. Then with regard to the market he thought that a foreign market was a good thing to look out for. He said that the French people were looking for a market and that they would find it in N. S. and in the U. S., and he did not see the reason why we could not supply the tons and tons of fruit which go under the name of prunes. He did not see why we could not do the same thing, and with orchard facilities the plums could easily be put up in bottles, jars and boxes, and it would be a great many years before we would raise more plums in N. S. than can be used in N. S. if they are put up in such a way that people can handle them.

The PRESIDENT said that he had no knowledge of any law which would protect us from any pests.

MR. T. E. SMITH said that it was fully high time that we took this matter in hand and put it in its proper light. In California they had very stringent laws. He said he cut a branch from a neighbors tree and found 50 cocoons on the branch. He said to look about Kentville where the people neglected their trees, even in walking along the streets the people are sometimes troubled with these pests.

GEORGE THOMPSON.—They have such laws in Ontario. If a person allows his trees to be overrun with pests and he gets notice from his neighbour to cut them off and he does not do so, the neighbour can go over and cut down the tree and charge his thriftless and careless neighbour his time in doing so. I think it is time we did something. I know that with reference to myself that I am greatly troubled with the canker worm. Immediately adjoining my place is a tree which nobody seems to care for and which is spreading the canker worm all over the neighborhood. I think there should be some law to prevent nuisances of that kind.

R. W. STARR.—The principle is universally recognized. We have an old law upon our Statute book with regard to the "Canadian thistle," and to-day if a neighbour cultivates these thistles he can be fined for it.

This being considered an important matter it was resolved, That the Legislature be requested to enact a statute, compelling all persons

to take proper precautions to destroy noxious insects on their premises, and that penalties be collected in case of failure to do so. Carried unanimously.

It being 6 o'clock the PRESIDENT declared the meeting adjourned till 7 p. m.

#### EVENING SESSION.

*Jan. 6th, 1892.*

After the meeting had been duly called to order the SECRETARY read a letter from Prof. Lawson, Secretary of Agriculture, as follows :

DEAR SIR,—I regret that other duties prevent me attending the Fruit Growers' meeting on this occasion, and my regret is only increased when I read the excellent programme which you have prepared. First comes the president's address, and I can imagine many topics of great interest that will be therein touched upon in reference both to the past doings of the association, and the work that still lies before it. Have not its efforts within the last quarter of a century effected a wonderful extension of orchard culture in this fruitful valley, and led the way to profitable markets, remunerative labor and elegant and comfortable homes. But the fruitful valley has still room for broader and deeper culture, and still more abundant fruitfulness. It is not wonderful that fruit culture should excite enthusiasm in the dwellers in a country so marvellously fair, incited by the beauty of the fruit dropping from the Acadian trees under which they sought shade and shelter during the siesta that relieved their daily labors. But fruit culture, like charity or any other good work, while it may begin at home should not end there, and the Fruit Growers' Association has the whole field of orchardless Nova Scotia for the display of its energies. If gravensteins are more juicy on the banks overlooking Grand Pre than they are at Cape North or Point Prospect, that is no reason why the association should hold its breath. We know that Grimes' golden pippin is more golden and more tempting in every way at Yarmouth than even in the famous Paradise of Annapolis. And ribston pippins are thought likely to do better in the clays and heavy loams of Pictou and Antigonish than in the lighter soils sheltered by the North mountain. I hope, then, that the proceedings of this meeting will be marked by a more determined effort than hitherto to spread sunshine and blessing over the length and breadth of the homologically dark parts of Nova Scotia. You may ask me why disturb the farmers of the province generally? Why not let them work on as they have been doing? And the reply is that if our farmers are to farm profitably they must be disturbed now. With our immensely increased facilities for transport, prices of the common articles of produce that all, or many, countries can raise, are

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so regulated and reduced that a country that has not either an exceptionally fertile soil or exceptionally cheap labor does not find the common agriculture profitable. Hence, everywhere, except in the new lands where the accumulated "fertility" of ages is being extracted by summary process, special crops are being sought for, which from their peculiar adaptation to local conditions of soil, climate, or convenience to market, in perishable or difficultly transported articles, are likely to prove more remunerative than the common run of farm produce. Thus in England at the present time great efforts are being made to encourage the smaller agricultural industries, the growing of vegetables, raising and preserving of fruits, raising of poultry, etc., as remedies for the agricultural depression. So it behooves us here, where we have inducements unknown in the old country to develop such enterprises in every possible way. But the history of special cultures, as in the conspicuous cases of cotton and tobacco in the south, show that a country will not thrive permanently upon them; that they are to be regarded rather as aids to mixed farming than substitutes for it. I hope you will not take it amiss if I venture to say that in the valley of Annapolis fruit raising will prove a delusion and a snare if it is pushed to such an extent as to displace mixed farming. Why? One reason is sufficient. It will be impossible to maintain the fertility of the soil without an unprofitable expenditure for artificial fertilizers. This is a subject that has engaged the attention of the association in former years, and is still well worthy of consideration. The difficulty to which I refer presents really the only limit to extension of fruit culture in Nova Scotia. From time to time orchardists have expressed fears that the time would come when too much fruit would be raised, that the supply would exceed the demand, that no markets would be found for it. If the fruit growers of Nova Scotia give their attention to the fruits that can be best raised here, there will always be ample markets. From various causes the United States will continue to absorb, at prices profitable to raisers here, all the plums that Cape Breton and other plum districts of Nova Scotia can produce. London will give, as heretofore, a fair price for all the fairly grown and fairly packed apples that Kings and Annapolis counties are willing to send. But what if every farm in Nova Scotia were to produce apples. Why, then, all our produce would not be large in proportion to the people to be supplied. I read in a paper the other day that the city of Dundee employs in the jute manufacture alone, as many people as there are in all Nova Scotia. The London and North Western Railway company, a single corporation, also employs as many able-bodied workmen as there are in the whole of our province. The populations of the manufacturing towns of Britain are so vast, Birmingham, Manchester, Leeds, Glasgow—it is needless to extend the list—that persons living in sparsely settled countries like this, and who have not enquired into the matter, have difficulty in realizing their enormous powers of fruit absorption. For the factory hands are

well and regularly paid, and want the best of everything, according to their means. I have not spoken of the mines, the potteries, the iron districts, all teeming with populations hungry for fruit, and possessed of the means of paying for it. Let no orchardist stay his hand from fear or lack of grateful recipients of the fruits of his labor.

Some recent exhibits of fruit sent by the provincial government to the old country, and others for which arrangements are being made, will serve to prepare the way for greatly extending our fruit markets.

One point ought not to be omitted. Whilst our dessert fruit is so much and so justly admired, the same admiration is not admitted by the culinary or cooking varieties. The raising and exporting of cooking apples offers much room for extension, and it will probably be found that the counties in Nova Scotia that have heavier soils and less brilliant sunshine than the Annapolis valley will form the most promising field for this extension. A cooking or culinary apple partakes more of the character of a vegetable than a fruit, and the heavy loams and sea fogs may serve to keep green and juicy the kitchen apples that in the warm valleys would ripen into table fruit.

Yours faithfully,

GEORGE LAWSON.

*Halifax, Jan. 5th, 1892.*

JOHN E. STARR.—The letter seems to have more in it than should be passed over lightly. It is evident the Professor has thought well over the subject, and it contains many valuable hints in regard to markets and the production of fruit, and I am greatly surprised that the learned Doctor is so well able to grasp the situation when he refers to mixed farming and the production of fruit. In mixed farming I think the Doctor grasps the whole idea and I think his hints are valuable, and I move that we accord him a vote of thanks.

DR. A. P. REID.—I have pleasure in seconding that, and I think he opens up a subject that it would not be out of place to discuss. There is a variety of fruit which has not received any especial attention in this Province, that is the table apple. I think the best table apple we have is the old "Belle Fleur" or the "Bishop Pippin," it has advantages over any other, but the question is whether there are not others as valuable as it is, that would not, if especially cultivated for that purpose, bring forth results such as Dr. Lawson suggests, in other words, that would not be as much vegetable as fruit. It is very necessary to have a table apple and it is very necessary to have a fruit. It is a subject upon which I cannot form an opinion, and it is one I think the Association should discuss, and

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I think the learned Doctor points out a line upon which the experiments of the fruit growers might be directed. It is an object of considerable moment, not only to the Valley, but to the whole Province.

J. S. DODD.—I was very sorry to have missed nearly all of this valuable paper, I just came in. Reference was made to one point which I have felt an interest in of late. I am very sorry indeed that I missed it, that is with regard to mixed farming. Mixed farming to me means the raising of a variety of vegetables of various kinds. I believe they can be raised here as successfully as anywhere, and it would be a valuable adjunct to our products. We can easily raise these vegetables, we can find a place in our orchards for them, easily cultivated. There is no question about our being able to raise them if we infer from what he said that we can reasonably look to England for a market for these things. I simply want to ask this question, it is a serious one and means a very great deal.

THE PRESIDENT.—I think not.

J. S. DODD.—If we are to raise them there is no use to raise them unless we know what to do with them.

On motion it was resolved that the thanks of this Association be tendered to Dr. Lawson, and that his valuable letter be received and adopted, and incorporated in the annual report.

The first question in the "Question Box," was as follows:

Has the use of the Fungicides proved beneficial in the prevention of the Black Spot?

GEORGE V. RAND.—I do not know much about it but I am willing to tell you what I do know. It was discussed considerably last spring, and I think it was brought before us in the address by Professor Robertson first and then discussed afterwards. It was tried by a number of persons in this vicinity—the fungicide used principally being the Canadian solution, carbonate of copper. Paris green was also used, and arsenite of copper, but for different purposes. The carbonate of copper was used especially for black spot on the apples. Black Spot is the common name applied to it. I prepared a fungicide according to the formula given at that time—that was a solution of copper carbonate in strong aqua ammonia, and my experience in that way was not very desirable, nor would I advise anybody to repeat it

as a financial speculation—it was decidedly money out. But Mr. Thompson furnished me with a formula from some American publications and an approved method of making it by taking carbonate of ammonia and the carbonate of copper, one dissolved in the other, and it has acted very much more satisfactorily and at very much less cost, and I made up some very considerable quantity of it. Different quantities were tried some tried one quart, others two quarts. One quart would make about 25 gallons when diluted with water. I had my own trees sprayed with it, but if you will recollect that last season was a very showery one, we could scarcely get the solution on before we had rain, and a large portion of it I think was probably wasted in that way. Where it was allowed to dry it would stick on very well, but a large portion of what was really put on the trees was washed off with the rains. Those that used it could likely give their experience as to the effect of it. I happened to have a piece of ground that was pretty early, the gravensteins put out their nose too soon and consequently I did not have near the quantity I might. When they were very small you would not know how many apples were on the tree, and from the discussion last spring the spraying was to be done on several occasions. I think in the first place it was not done quite soon enough. That was one reason why we did not see any more result from it, but from all I can gather nobody seems to know whether it is any good or not. I told my man to spray the whole thing, I had no time to look after it. If there are any apples there they would get it, and if not the yellow shoots would get it. I had a few sprayings on and I think that was all. There were only a few persons tried it. I saw some early apples like Astrachan that were almost nothing but spot. There were a great many gravensteins covered with rust, whether it was the effect of the spray or not I do not know. The apples being so very small it may have affected the whole outside, and as they grew it might have spread. I think it has not been satisfactory. The trees were twice sprayed and I had not so many black spotted apples as the year before, and not so many apples.

The PRESIDENT.—Did I understand you to use Paris Green?

MR. RAND.—Yes. I used one pound to 100 gallons. Four quarts of the solution of carbonate I think was the quantity.

R. E. HARRIS.—How many gallons would there be in a puncheon?

MR. RAND.—One hundred.

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I think I used one pound to 100 gallons. Four quarts of the Carbonate solution. I think it was one pound of Paris Green to 100 gallons. The Paris Green was some I got from a good drug house.

R. E. HARRIS.—If it was the pure English Paris Green I do not believe that it was any too strong. I think that I have used as much Paris Green as anybody in the room. I have tried it in every way and I have found that if you get the pure English Paris Green and take about a fair teaspoonful, perhaps about level, to a pailful of water is about the right dose. I have tried it in every form and I speak from my own experience. I have taken the leaves all off the trees and I have sprayed them so lightly that it has done no good at all, and also sprayed to success. I always use the same spoon in measuring the quantity of Paris Green. About 12 years ago we were scourged for two or three years, about the time Paris Green was first used. The same spoon we used then I think we use now, and that is a dessert spoon. I have just one gauge on it and that is scarcely level full to a pail of water. There is another kind of Paris Green that is used. Three years ago I think it was, I got a lot not a great way from here, and I think I could eat about half a teacup full without any injury.

MR. RAND.—I would not advise you to mix the Paris Green with a solution of copper because I assume the ammonia would have more effect on the Paris Green. We had an arrangement on the cart with a proper pump to it and putting the hose into the water you could stir it from the bottom. Mix the carbonate of copper and then mix the Paris Green. From the discussion last spring I took the idea not to put the Paris Green in until I was ready to use it.

R. E. HARRIS.—Did you find any trouble in keeping the Paris Green mixed. I have been troubled about keeping it mixed. In using it from a pail every two minutes it would be almost pure water on top and Paris Green beneath.

MR. RAND.—I think it should be first mixed in a paste.

GEORGE THOMPSON.—In reference to Mr. Harris's question about the use of Paris Green. It should be remembered that Paris Green is only mechanically suspended in water, that Paris Green is heavier

than water and if it is allowed to stand it will settle down, therefore in the use of Paris Green I would recommend the constant mixing of the water.

C. H. STARR.—Read the following paper from Prof. Craig of the Dominion Experimental Farm :

#### TREATING APPLE SCAB IN 1891.

A series of experiments were conducted last summer with the co-operation of Messrs. Wm. Craig and J. M. Fish, of Abbotsford, P. Q., which were designed to throw light upon the following points :

1. The relative efficacy of copper carbonate in suspension and solution.
2. The relative efficacy of copper carbonate unwashed, (a modified eau celeste,) in solution and in suspension.
3. The possibility and effect of using Paris Green with these mixtures.

The results are given in detail in the following table, and may be briefly summarized as follows :

SHOWING PER CENT OF FRUIT OF FIRST, SECOND AND THIRD QUALITY, ALSO PER CENT OF SOUND AND WORMY FRUIT.

COPPER CARBONATE.		% First Quality.	% Second Quality.	% Third Quality.	% of Wormy Fruit with Paris Green.	% of Wormy Fruit with- out Paris Green.	% in favor of Paris Green.
1.	Solution . . . . .	33.8	46.6	14.5	21.6	26.6	5.
2.	Suspension . . . . .	33.5	52.	14.5	16.9	25.9	9.
3.	Unwashed Suspension.	33.	50.	17.	10.5	22.3	11.8
4.	Unwashed Solution ..	42.5	46.5	11.	8.5	15.	6.5
5.	Unsprayed . . . . .	18.	51.	31.	18.	27.	9.

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COMPARATIVE RESULTS.

		COPPER CARBONATE.									
		1/0	2/0	3/0	4/0	5/0	6/0	7/0	8/0	9/0	100
(4.)	Unwashed Solution . . .	First Quality.				Second Quality.				Third Quality.	
(1.)	Solution . . . . .	First Quality.				Second Quality.				Third Quality.	
(3.)	Suspension . . . . .	First Quality.				Second Quality.				Third Quality.	
4.	Unwashed Suspension.	First Quality.				Second Quality.				Third Quality.	
5.	Unsprayed . . . . .	First Quality.		Second Quality.				Third Quality.			
With Paris Green . . . . .		Sound Fruit.								Wormy.	
Without Paris Green . . . . .		Sound Fruit.								W	

1. Paying results were obtained from the application of all of the mixtures.

2. In no case was the foliage injured.

3. The unwashed solution, (a modification of eau celeste,) gave the best results, and the same preparation in suspension the lowest returns.

4. The addition of Paris Green to the fungicides at the time of the second application had no injurious effect upon the foliage and increased the quantity of sound fruit 8.2 per cent.

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Green.	% in favor of Paris Green.
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## DETAILS OF THE EXPERIMENT.

The trees selected were of the Fameuse variety planted fourteen years ago and having made good growth are now of fair size. Six trees were set apart for each test. Three applications were made in each case, the first one on May 22nd when the leaves were about half formed and the blossoms just beginning to open. At the time of the second application, June 8th, Paris Green at the rate of 1 lb. to 200 gallons of water was added to each mixture, when *fully diluted* and applied to three trees in each lot, the remaining three were left as checks. On June 20th they received the third treatment and in the same manner as that of May 22nd. The apples were carefully hand picked and graded, the per cent. of wormy fruit in a representative bushel of each class being ascertained by actual count, and the total per cents. computed therefrom.

## FORMULÆ.

The following are the formulæ used in the experiment detailed above, of which the individual results are shown in the tables.

1. *Solution.*

Carbonate of Copper .....	1½ oz.
Ammonia .....	1½ pints.
Water .....	25 gals.
Paris Green, (added in second application)..	1½ oz.

2. *Suspension.*

Carbonate of Copper .....	1½ oz.
Water .....	25 gals.
Paris Green, (added in second application)..	1½ oz.

A slightly increased quantity of Paris Green was used in this instance as without the ammonia solvent there is less danger of injuring the foliage.

3. *Unwashed Solution.*

Has the constituents of No. 1 present in the same quantities, as will be explained hereafter.

4. *Unwashed Suspension.*

Has the constituents of No 2 present in the same quantities.

In bulletin No. 10 the following directions were given which I think it well to repeat here.

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## HOME MANUFACTURE OF COPPER CARBONATE.

As the precipitated form of carbonate of copper is not always obtainable from druggists, directions are herewith appended for the easy preparation of this material at a cost much less than the usual wholesale price.

In a vessel capable of holding two or three gallons, dissolve  $1\frac{1}{2}$  pounds of copper sulphate (blue vitrol) in 2 quarts of hot water. This will be entirely dissolved in fifteen or twenty minutes, using the crystalline form. In another vessel dissolve  $1\frac{3}{4}$  pounds of sal soda (washing soda) also in 2 quarts of hot water. When completely dissolved pour the second solution into the first, stirring briskly. When effervescence has ceased fill the vessel with water and stir thoroughly; then allow it to stand five or six hours, when the sediment will have settled to the bottom. Pour off the clear liquid without disturbing the precipitate, fill with water again and stir as before; then allow it to stand until the sediment has settled again, which will take place in a few hours. Pour the clear liquid off carefully as before, and the residue is *carbonate of copper*. Using the above quantities of copper sulphate and sal soda, there will be formed 12 ounces of copper carbonate.

Instead of drying this, which is a tedious operation, add four quarts of strong ammonia, stirring in well, then add sufficient water to bring the whole quantity up to 6 quarts. This can be kept in an ordinary two gallon stone jar which should be closely corked.

## FORMULA.

Each quart will contain 2 ounces of the carbonate of copper, which when added to 25 gallons of water, will furnish a solution for spraying of the same strength and character as that obtained by the use of the dried carbonate, and one which can be prepared with little labor, and kept ready for use throughout the season.

## CARBONATE OF COPPER IN SUSPENSION.

When the carbonate is to be used in suspension, instead of adding the ammonia to the sediment, add water until the whole quantity is made up to 6 quarts. Stir this thoroughly until the sediment is completely suspended (entirely mixed throughout) and pour the thick liquid in a suitable jar, when it will be ready for use.

Before using shake the contents thoroughly so that all the sediment may be evenly distributed in the water. Pour out a quart of the thick fluid and mix with 25 gallons of water.

The *unwashed solution* is prepared by simply pouring the two solutions together (copper sulphate and sal soda) and when the effervescence has ceased pouring off the top or super-natent liquid add four quarts of strong ammonia, stirring in well, then add sufficient water to bring the whole quantity up to 6 quarts. The formula is the same as that already given above.

The *unwashed suspension* is prepared in the same way, water taking the place of ammonia in making the quantity up to 6 quarts.

JOHN STARR.—Mr. President, I was thinking over what has been said by the different speakers. I noted what Mr. Rand said about his experience and the state it left his fruit in, and what Mr. Harris said about the spoon, this may be a guide to himself but not for other people because they might not have his spoon. A year ago a discussion was brought up here and subsequently the experimental farm sent out some bulletins which were explicit, and the losses we had sustained previously by this black spot, so thinking the matter over last spring I resolved that I would do something in that line. I had concluded before this that I would spray with Paris Green for two reasons. 1st, to kill the Codlin Moth, and 2nd, to wipe out any sprinkling of canker worm that might have crept in. To kill the canker worm with Paris Green you must commence in time. My friend thinks that you must take the leaves off the trees to kill the canker worm. You must begin the spraying in time. When my friend spoke about the russet on the apple, the gravenstein especially, I felt just there my experience as well. I thought what was worth doing was worth doing well. Well with this wet weather I thought about applying the Bordeaux mixture, blue vitriol and lime, thinking to kill three birds with one stone, canker worm, codlin moth and black spot. I sent a telegram to Halifax for 100 pounds of blue vitriol. I went to the nearest shop and bought them out. I had a good force pump which I fixed into a 50 gallon cask, and I placed the cask on a low truck, four-wheel slovens we call them. I weighed out correctly as I remember about 7 lbs. of blue vitriol, and 6 lbs. lime, and a quarter of a pound of Paris Green. Well, I found that when I attacked the gravenstein trees I was delayed with wet weather.

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Secondly, I had to wait for this blue vitriol from Halifax, it did not come. I was delayed one week. I was behind time in killing the canker worm. When I got at the tree I found the canker worm alive and brought them spinning from the trees. I fancied that I was doing the correct thing and did it pretty thoroughly. About 10 days after the gravensteins which I had sprayed early came out and I applied another dose. Now, this did not destroy the foliage. I could see the lime and the blue vitriol on the leaves all summer, and in some places the leaves would curl a little. I did not destroy the foliage, but where ever there was a light skinned apple such as the gravenstein it was russet. One half was russet. And although there were no wormy apples, and they grew to a magnificent size, I was very glad to sell my whole crop of gravensteins for \$1.25 a barrel. Now, my judgment is not that the mixture was too strong but I applied it too freely. I think if anyone tries that again I would advise them to be prepared in time. Don't on any account be a week late or three days late. Begin as soon as these cauker worms begin. We have this year we think prevented any danger from canker worm by putting on paper, etc. However, with regard to the black spot. If we spray we must begin in time and use a good force pump with plenty of force and a good nozzle. Whether I would have had much black scab this season I do not know. I could scarcely tell whether it was the good season or the heavy dose I gave them, I am inclined to think it was the latter.

W. H. HARDWICK.—I did experiment quite largely with what is generally called the Bordeaux mixture, blue vitriol and lime. And first let me say something with regard to its effect upon pears. I do not know whether any of the members of this Association have been troubled with black spot on the "Louis Bonne" pears. Two years previously my crop was destroyed by this black spot. I went at the pear trees and gave them two strong solutions before they came into blossom. I gave them three more sprayings after that with good success and no ill effect. I must say that I was surprised beyond measure at the results. The apples I sprayed three times, and laying aside the russet on the apple that developed on the use of the spray, I may say that it was a success. On the gravenstein there was considerable of russet, but probably they were not burned as much as some speak of and they brought as much as my neighbours. I made the first application as soon as the blossoms were in bud, the second just

as the blossoms fell, and then the third about two or three weeks later. In the first application I used no Paris Green. In the second application on part of the trees in what I call the old orchard there was no canker worm. I used four ozs. of Paris Green to one cask of 50 gallons, 8 lbs. sulphate of copper, and one half a bucket of slacked lime. I know that less would answer just as well. In the old orchard I used only 4 oz. of Paris Green because there were no canker worm, and from that spraying I did not see any ill results. When I went into the upper orchard where there were a good many canker worms, I was like some of the other speakers I wanted to kill the three birds with one stone, I thought I could kill the canker worm as well as the black spot, and I put in what I supposed about six ounces of Paris Green to the cask. I had no ready means of weighing it. I divided the box into 16 different parts and got at the weight in that way, but I found I was using half a pound and that burnt the fruit. The apples turned black. The apples were hardly as large as a cherry then. I thought I had ruined my crop, but as the season advanced the apples grew and the black spot was generally on only one side of the apple. I left a couple of rows of about 20 trees without spraying at all and that fruit was as bad as last year. As far as my experience has gone I feel very well satisfied that the black spot can be cured, and that the pest can be exterminated with a judicious use of this remedy at the proper time.

GEORGE THOMPSON.—I would like to ask the last speaker one question. If these trees which he left unsprayed were of the same description as those sprayed. Because we know that some apples are liable to black spot more than others.

MR. HARDWICK.—They were. They were about as bad as the whole orchard last year. There is another thing which I would just speak of. I attribute the burning of the fruit to the Paris Green I put in, it injured the leaves some, and I judge it was Paris Green for this reason, that the Paris Green seemed to act very slightly in injuring the leaves, it would be at least from five to seven days before you would notice the injury to the foliage from Paris Green, but the sulphate of copper seems to act immediately, the year before last I used it one day and the leaves were dead the next. I judge from that fact it was the Paris Green. It was the extra amount of Paris Green that I put in that probably did the damage. Perhaps I did not use

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lime enough when I increased the Paris Green. I did not increase the lime, probably that may be the direct cause of the burning. However, in one row of trees for experiment I used no sulphate of copper and only Paris Green without any lime, 4 oz. to the cask, a kerosene cask, the fruit was russet just as bad. I came to the conclusion that 3 oz. of Paris Green in a cask of water is all that the foliage will stand without the use of lime.

J. S. DODD.—Mr. President, I will give my experience, or rather my lack of experience in order to prevent any undue prominence being given to the use of this mixture. In common with nearly everybody the year before last my gravensteins were bad, about fifty per cent. having the black spot. I listened to what was said on this subject, and read the bulletins that were sent out and what was recommended for this mixture, however, sometimes men are a bit canny, so I thought I would let my friends experiment this year and I knew I would benefit by their experience, so I made no use whatever of any mixture. I raised this year about 140 barrels of gravensteins. In the same orchard where they had grown before at least fifty per cent were rendered unmerchantable. Out of 140 barrels of gravensteins I do not think that there were more than five per cent. afflicted with black spot. They were clean, bright and excellent in every way. A few small apples showed some small spots. It led me to believe that the climate had a great deal to do with it. With regard to the Louise Bonne pears I became disgusted with mine. I was in hopes of raising about eight or ten barrels, they were not only spotted but cracked to the core. In spite of all we hear about it I am inclined to question its value. The question with me is what to do next year, shall I use the mixture or do without it.

MR. RAND.—I would ask if Mr. Dodd's neighbours used it?

J. S. DODD.—No. I have no neighbours until the fruit is ripe, then I have a number of neighbours.

T. H. PARKER.—I left here last season with the full intention of trying and testing it, however, as the season advanced from a press of other work and care I did not use it. I watched my apples carefully during the season, particularly the Bishop Pippin, as the apple began to develop from day to day. I saw they were looking in good shape, and I came to the conclusion that had I sprayed my trees and followed out the advice as given by the Association I should have

attributed my very good crop to the use of the mixture, and I venture to say had any of my neighbours used it and produced as good as mine you would have their testimony. We had good apples free from spots. I venture to say that there was not one per cent that would be objected to in the market on account of the black spot. Yet I have not lost my confidence in spraying, and I am glad to see those who are pursuing that course and who will give us their experience.

R. S. EATON.—My experience was very much like that of J. E. Starr and Mr. Hardwick. The russet appearance I especially noticed upon the gravensteins. I thought it would disappear when the apple got larger, but instead of that the spot seemed to spread with the apple. An apple when small which had half of its surface covered when it became three inches in diameter still had half of its surface covered and still the russet appearance was as dense as when it was small. I took two gravenstein apple trees, one I sprayed and the other I did not, the one I sprayed I sprayed twice. The one I did not spray I picked 100 apples from one side of the tree and putting them on the grass I picked out a number of bad apples. Out of 100 apples there were 50 that had spots, some more than others. The other tree which had been sprayed twice with the Bordeaux mixture of the same proportion which Mr. Hardwick used, had about 18 apples that had some spots on them out of 100. The tree that was not sprayed had about 50. The experiment I thought was a fairly good one. The trees were similarly situated and everything was as fair as I could make it in that respect. In examining the apples during the autumn I found that wherever the surface of a large gravenstein was russet there I never saw a black spot, where perhaps on the other side would be several black spots. Wherever the russet appearance appeared I never saw a black spot. As to the russet appearance affecting the price I think it did not. The first shipment I think I had of some seventeen barrels which were very largely affected by the russet returned about three dollars. Mr. Rand gave us some information about the use of an extra portion of lime with sulphate of copper. He perhaps will give us some opinion upon that if he has decided in his own mind about the effect.

MR. RAND.—I think that last year I gave my opinion upon that point. The chemical effect of the lime is to neutralize the sulphate of copper. With the use of lime I have made no experiments

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but people often dust their plants and pear trees, dust them with lime and it draws the slug up. I do not think there is much danger in having too much lime in mixing the Bordeaux mixture.

MR. ARCHIBALD referred to the statement made by the Professor of the experimental station on this subject. He said he would like to know if we cannot use carbonate of potash as an insecticide, why will it not destroy spores? It is his purpose to go over a large lot of plum trees by spraying in the early spring before the buds swell and allowing it to run down. It is a fertilizer. If something that can be found which is a fertilizer and would be no detriment to the soil we would get a twofold advantage.

MR. RAND said that question might be answered on the same principle, that hellebore is an effectual agent for killing the gooseberry worm, but there are a number of other insects you cannot destroy with it. It is a caustic, on account of being concentrated and being deprived of carbonic acid it would take the form of soap.

MR. HARDWICK.—I would like to ask the members if they have ever sprayed their orchards with Paris Green when in full bloom, and what were the effects. The reason I ask this question is that in order to kill the canker worm the spraying must be done at the time the orchard is in full bloom in order to catch them when they are young; after the blossom is dropped the worm is two-thirds grown and it is a question whether at that time the worm can be destroyed without hurting the foliage. If the Paris Green can be used early when the worms are small, when the trees are in full bloom without injuring the crop, then the spot and the worms can be fought at once with one solution. It is a question in my mind whether they can be handled together. On a small scale I sprayed a few trees while in full bloom. The tree which I tried for experiment did not have more than half a crop.

R. E. HARRIS.—That is exactly the point I took some time ago. I doubt very much if spraying can be done with Paris Green without destroying the fruit with it. In spraying, the time for canker worm is just about the time you will catch the gravenstein in full bloom, while the other trees will not be out. I knew of an orchard in Kentville belonging to Mr. Dodge, where the trees were white, and were literally alive with worms. I sprayed the whole of them, and I have done the same in my own orchard a number of times, and on

those trees I found very little fruit. I found a strip in my orchard, 25 trees in a block with hundreds of canker worms, I went over them by spraying and hurt my fruit although they were not in full bloom. I had a good crop except this strip.

JOHN STARR.—I used the same strength as I said a minute ago. We have had mention made of a quarter to half a pound of Paris Green to a kerosene oil cask, a kerosene oil cask will hold from 30 to 42 gallons, the largest size is 42 gallons but I think 38 gallons is about the run of them. I doubt if there is more than possibly one twenty-fifth part of a pound of Paris Green in a pailful of two and one half gallons. Wherever I find the canker worm I go for it with the Paris Green. I noticed the last year two Baldwin trees with quite a number of canker worms, I gave them a good square dose of Paris Green. I drenched them and about four or five days afterwards the leaves began to curl up, and I think it was about three days after they were hanging down from the leaf, it killed the fruit with it. On those two trees I do not think I had more than two or three dozen apples where I should have had six or seven barrels. The time I find for spraying is the time you will catch the earliest apples, that is the gravensteins in full bloom, and the baldwin I injured the least.

R. W. STARR.—The inference would be that the material should not be used too strongly and the trees should not be drenched but sprayed. A quarter of a pound of Paris Green to 50 gallons of water would be the proper proportions. When you spray when the tree is in full bloom do not have the mixture too strong.

R. E. HARRIS.—When I sprayed this orchard in Kentville the gravenstein was in full bloom and they had scarcely an apple on the tree. He said that in the late kinds like the baldwins it made a fair cure.

GEORGE THOMPSON said that this was a most unsatisfactory way of killing canker worm as it destroys the leaves and fruit. The most judicious way of effecting a remedy was by using tarred paper and printers ink put on the tree in the fall of the year and kept on until the spring then there would be no use for Paris Green.

J. S. DODD.—In reference to the destruction of the caterpillars they are hatched before the leaves are visible on the tree. Just when the buds are swelling and showing their green tops the caterpillars are out, they are very small, develop rapidly, and are very voracious, and

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I think the most serious fight is with them after all. I think if we adopt the method advocated by Mr. Thompson, it is really the most thorough and best all around cure for canker worm. But I want to find some way to deal with the caterpillar. I used up all the old carpets and coats I had last year in trying to wipe them out.

GEORGE THOMPSON.—I think that any man whose orchard is destroyed by caterpillars is a careless and lazy man.

J. S. DODD.—Mine was not destroyed. I want to fight them.

GEORGE THOMPSON.—It is one of the simplest things to get rid of caterpillars. It lays its eggs in August or July, when you go around picking your apples you can see the rings. Pick them off and there will not be a caterpillar in the spring.

R. S. EATON.—A neighbour of mine, Mr. Pineo, tried a pail of soap suds with an ordinary small pump on oak-trees where the caterpillars were destroying everything and were in immense quantities, he used this pump by spraying the soap-suds with a nozzle sending a single stream, and it seemed to paralyze them and killed them instantly. They were of a large size. I could hardly credit it and he asked me to come and look at them. Now if this can be done with the use of soft soap or its equivalent and put on with a pump, it will certainly save a great deal of trouble and be very much nicer.

MR. ARCHIBALD.—I have had a considerable experience in that line. I have used the carbonate of soda, but in order to use it in spraying we must have a brass pump. Just before the leaves burst, spray with a light spraying and it will run down and destroy the eggs, and I think it will make a pretty clean sweep. Carbonate of potash is comparatively inexpensive, there are about 400 lbs. in a cask, most any farmer can use a cask.

DR. A. P. REID said that he had found that a free application of bone dust in the soil an excellent remedy, and he had found no black spot on the particular row in which he placed the same, and that the trees were growing very well. Mr. Rand's mixture is perfectly correct theoretically, but he thought practically there was a point he did not watch. The lime will neutralise the sulphate of copper but he thought that the way Mr. Rand used it that it did not neutralize it much, he used such a small quantity of lime, the other gentleman, Mr. Hardwick, uses a large amount.

MR. RAND.—I did not use the lime I was merely giving the mixture.

DR. A. P. REID said that one thing struck him forcibly, if it were desirable to spray a tree, say gravensteins in full bloom, killing the worm and foliage ; suppose it were used a few days before that, then it would kill the worm and let the apple tree escape ?

THE PRESIDENT.—A London newspaper states to buy no more American apples as they are supposed to have been treated with fungicides.

MR. EATON.—I would like to know Dr. Reid's opinion as to the bordeaux mixture on fruit, and if remaining on the fruit all the season would it have any effect in poisoning the skin of the apple.

DR. REID.—The copper is very far from being an active poison, and particularly in its insoluble form. If it were rendered soluble by ammonia as soon as the ammonia evaporates, the copper would remain and there would be no danger in using the fruit.

MR. RAND.—You must also take into consideration that the apple is very small when it is sprayed.

DR. REID.—Rains wash it off too.

The PRESIDENT here called on DR. A. P. REID for his paper on "Methods for the Preservation of Fruits and Farm Products." Whereupon the Dr. spoke as follows :

#### METHODS FOR THE PRESERVATION OF FRUITS AND FARM PRODUCTS.

Mr. President and gentlemen, by your accustomed courtesy I appear before you again this evening, and I may say under conditions not very satisfactory to myself. I received a request from the Secretary to prepare something for the Association, and thinking the matter over carefully I immediately answered him that I did not know of anything that I could say about fruit that would be of any value or would be worth the while of the Association to listen to—but on second thoughts I had a large amount of sympathy for the Secretary. He has to prepare the programme and unless he receives assistance would be unable to perform the duties that pertain to the lot of that official. You will have to excuse me partly on the ground that I am trying to assist the Secretary. I suppose you have all heard

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the old saying of the King's fool, "He is a wise man who knows his own ignorance." And if I drop any nuggets of wisdom you can pick them up if you can find them. And again, I will not say anything which I believe cannot be substantiated.

The business of fruit growing touches so many departments of science that scarcely any person who had been in active life with his eyes open to what is going on would fail to have noticed something which would elicit interesting discussions. I am not a farmer or a fruit grower though financially interested. And yet in passing through this valley I have noted again and again fences lying about on the ground all over the country, unfortunately too common, even on the property of wealthy and intelligent men. Any why? At the time those fences were placed there it was known that the posts were going to rot, and if at that time (years ago) an apple tree, or any kind of a tree in fact, were planted between each post; when the post had succumbed to time and the elements, a sound, living and enduring post (as a tree) would be ready to take the place of the defunct, and serve for an unlimited time, then all that would have to be done would be to attach the wires and have permanent as well as strong serviceable fences. And again, had this taken place many years ago what magnificent avenue roads and farms we would have—every field surrounded with living trees. Let them be trees of any kind whatever—but if they were apple trees, we can with difficulty conceive the wealth they would represent. If a farmer were to calculate the number of trees using them as fence posts 12 feet apart that would be required to fence his farm, he would be astonished to find out that they would come up to the thousands, and yet leave the whole of his land for other crops, not counting the proverbial thriftiness and productiveness of the "fence corner tree."

Now, gentlemen, to come more directly to the subject, what do we mean by "fruit preservation." In speaking of this I would discuss its antithesis putrefaction. Almost everybody knows what this is. It was generally considered a something which occurs in the natural order of things. If you asked a chemist about it he would very likely tell you that it was fermentation in several forms, and if you were to ask him the reason for it he might say that it was caused by heat, air and moisture, which has been the explanation usually given. I think, however, I may be a little heretical, and after thinking the matter over

have come to the conclusion that heat, air and moisture has no more to do with putrefaction than several other things. They are simply adjunct or conditions needed, but are not the cause, hence this is an old scientific error. What is the cause? This has been thoroughly studied out, and is due to certain vitalized elements which require in addition to food, heat, air and moisture. These serve only as assistants or hand maidens to their growth, and only in so far as they factor in putrefaction. If you drop below 40° F life is arrested, if you rise above 140° life as a rule ceases, and we have no putrefaction at temperatures that do not come within those limits. Hence temperature is an active agent for or against putrefaction. The air that we have around us contains as the chemist defines it about 1/5 oxygen and 4/5 nitrogen, and a lot of other gases present in small quantities. But if you ask a Biologist what air is he will tell you that it is a mixture of gases teeming with countless millions of living germs of every conceivable kind, with a little of nearly everything on the earth's surface in impalpable powder. These living germs are the sole causes of putrefaction, and like other living things require heat, air, moisture and food for their development, growth and reproduction, and this they find in most organic products. Air which is present at all times and places is thus the active agent in establishing putrefaction. The germs or spores are always ready to take an active life as soon as they get an opportunity.

An old word with a new application is in very general use in the biology of to-day—*Sterile* and *Sterilizing*. Hence the whole subject of fruit preservation is the adopting of such a method as will destroy those germs which come in contact with our products and produce decay, or render them an uncongenial soil for germ life. Germs are present in the atmosphere in large numbers and varieties, and are present to a certain extent in the interstices of the products themselves. Hence the word which has come into general use in scientific circles, "Sterilizing." Until recently milk unless boiled or condensed or rendered different from what we find it in its ordinary state will undergo putrefaction. By sterilization we mean the destruction of those things which cause souring. If you take a vessel of milk and leave it for a short time under ordinary conditions it will become sour, if you expose it to a temperature of 140 degrees it will destroy the life of the germ or microbe, but it will not destroy the spore or the germ or seed which produces that life, as many resist even high

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temperatures. Let milk be heated to 140° temperature but so protected that no fresh air can enter or get at it (the theory that the expulsion of the air was the principle of the process was an error). If you allow it to stand for 10 or 12 hours at a temperature from 70° to 80° those germs, that is the spores which were not destroyed by the heat, are in a proper condition for germinating. The milk is again exposed to a temperature of 140° and then allowed to cool down. All those spores which have germinated in the meantime are destroyed. Now, it is found that four or five heatings of the milk, and cooling between each heating, will enable every germ that was present in the air or milk to germinate and then have its life destroyed. You then have a milk "sterile"—that is it contains no living form and will not become sour—and as well the air, heat and moisture present will do injury. In canned preparations you know that the first thing to do is to fill, or as near as possible fill the can, then it is exposed to a high temperature, and all the air expelled. If air be present it will facilitate chemical change—but the air by itself does not produce fermentation properly so called—yet we know how difficult it is to can properly. The mere fact of filling the vessels and expelling the air by boiling does not make us always certain that the can will keep. A high temperature as generally applied will sometimes fail to destroy the germs, and although all living things may have been destroyed yet germs or microbic spores may remain which under certain conditions will become vitalized and destroy the products. I would suggest to canners that after they have exposed their cans to a boiling temperature to allow them to remain until cooled at 70° or 80° for some hours, then heat them up again. I think you will find that the time will come when canning will be conducted on a different principle, and instead of the fruit or meat coming out of the can boiled to a rag it will be more like the natural condition. Our canning system so far is conducted on an incorrect theory. In many countries, in the canning of meat it is exposed to a temperature of 300° to destroy spores and the meat is preserved, but the product is inferior. Hence the object of the preservation offered is the placing of it in such a condition that it will not serve to promote the life of the thousands of living things that are all the time floating about in the atmosphere, and which will germinate just so soon as they can find fitting soil. Germs have each their peculiar necessities, and need special soils to

suit them. I may assume (when on the subject of microbes) that they include the larger number of what we term parasites. There is no difference between a parasite—the size of the end of your finger, and one which can only be seen by the use of a higher power—lens or microscope. There are, however, two kinds of parasites, be they large or small—some are our friends and some our enemies. We do not yet sufficiently know our friends, but we do know some of our enemies. We have as you are aware the potato bug, it would have over run the country in spite of Paris Green were it not for the fact that it is subject to parasitic disease. You have all heard the old couplet—

“Big fleas have little fleas to bite 'em, and so on *an infinium*.”

A large part of the farmers business all through his life is fighting parasites, and he must fight them big and small if he wants to preserve his fruit even after he grows it.

#### OLD PRESERVING PROCESSES.

1st. DRYING.—One variety of this method of preservation has dropped out of use, and I have often wondered at it. From time immemorial southern countries preserved their meat in this way, “jerked” beef and dried fresh meat, also by pounding it up when dry and mixing it with fat “Pemmican,” in other words producing a product not unlike what might be styled *Evaporated meat*. The difference between the jerked meat in the South or the dried meat of the North West Indian, and the salt junk we too often use is so great that there is no comparison between them either as preparations or as dietetics.

2nd. BOILING is another form of preservation. Every old lady knows that if you boil a leg of mutton that this will destroy any putrefaction and places the meat in a less favourable condition for food for the microbes. Boiling is a good preservative.

3rd. COLD.—Cold is a good preservative. Every farmer will tell you that if you place your butter in a sealed vessel in the well that the cold will preserve it. Those who are better supplied have ice.

4th. OLD PRESERVATIVES, SALT, SUGAR AND VINEGAR.—I will not occupy your time in regard to these.

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## NEW PRESERVING PROCESS.

1st. **EVAPORATION**, in place of drying. There is no difference between the meaning of the two terms "evaporation" and "drying," but a great deal of difference in the result. You all know that when the good lady was drying her apples she put them on a string and hung them up alongside of the kitchen or outhouse door, and thus the dried apples were in a condition to collect all the dust and microbes for two or three days, assisted sometimes by dews and rain, and hence the product obtained in that way is not at all choice, and not as good an article as the evaporated fruit. Evaporation means drying in a few hours, it is not much trouble when prepared for it and is done in a short time. Evaporation is generally accompanied by fumigating with sulphur. Sulphurous acid is an active agent in destroying germs of all kinds, it not only kills the microbes but gives a better appearance to the fruit. Everybody can have evaporated fruit if they wish. I question if there be any farmer in the country who has not ingenuity enough to make a sheet iron box the size of his stove in the middle of which he can make a few projections to hold trays with wire cloth bottoms, (one tray above the other). In this contrivance he can dry all the fruit he may ever want for his own purposes. He can easily dry a bushel a day. He should cover loosely. All he has to do is to lay the fruit upon the tray and allow the air to circulate around it. Any article of fruit can be evaporated, and it will be a healthy and perfect article of food. The Kerr Evaporating Company is about as good an illustration as you can get of the correctness of this statement. Did you ever see a prettier article than cabbages, potatoes, turnips, and they call them soup vegetables? A vegetable so prepared will be preserved indefinitely, is fit for any market in the world, and there is no reason why such a method of preserving should not be used in this country or in any place. The kitchen stove can evaporate all that is needed for the family use. The greatest trouble a farmer has in storing and marketing his products is due to the great mass of water he must handle. In every product he raises there are 60 or 70 per cent. of water. I question if there are 25 pounds of solids out of every hundred. Our own bodies have about 75 per cent. of water. Hence you can see a farmers difficulty is to handle the immense amount of water, that is also an agent in assisting deterioration of products. A

New York paper described a farmer as a man who was selling water, as his product was three-fourths water, and that he was really getting paid for putting up water in parcels.

It reminds me of a story of a milkman who was brought up before the court for putting water in his milk. A witness, who was an old milk dealer, was asked how many years he was at the business, he said about 35 years. It was brought out in evidence that he had put one pint of water to every gallon of milk. He was asked his opinion on the subject, well he said, "I think that is just about the right thing." What, said the judge, a pint of water in a gallon of milk. Yes, said the dealer, "that is what I did." How much did you sell in a day, three or four hundred gallons he replied. Then the judge said you must have made \$10 a day on water. You must have made \$300 a month. You must have made \$3000 a year on water. And you have been 35 years in the business, well, you must have made \$105,000. Well, replied the old dealer, if I had not done that I would have been about \$5,000 in debt after 35 years work, as I am reputed as being worth \$100,000. A mass of water interferes with the marketing of the farmers and fruit growers products. Makes bulk, weight, and liability to decay, all he sells contains from 70 to 90 per cent of water, and he will not on an average have more than 20 to 25 lbs. of solid in the 100 lbs. he must handle and preserve to get to the market. Remove the water and both obstacles are obviated. How to do this is well known, but not sufficiently practiced; but it will be when practical science is more generally understood. Choice specimens can be honestly and well packed in barrels or boxes when the following too common incident will be a thing of the past. A poor man goes down to the market and buys a choice barrel of apples, paying three or four dollars for them, he pays cheerfully expecting to get a good thing, frequently he discovers he is sold and he must feel pretty bad about it, he loses his money because the farmer has put in fruit not worth ten cents to him. We must manufacture the poor articles and send only the best to the market. "Honesty is the best policy."

2nd. SULPHUROUS ACID AND BISULPHITE OF LIME.—Sulphurous acid is as old as the hills and is very easily handled; it is also very cheap, is perfectly harmless, and is most efficient for the preservation of food. Bisulphite of lime is the form it is presented in the market for their purposes. It can be used in any quantity. I remember last

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summer experimenting with it. Take a piece of meat and brush the surface over with the ordinary buisulphite of lime with or without water added to it. The meat can be hung up in the kitchen and kept without putrefying there until it dried. Of course it would have a smell of burning sulphur at first, but this passes off or is easily removed with water, and under any circumstances it cannot be injurious. It is used very much in Australia for preserving meat. It is the old proved harmless preservative.

3rd. BORAX is another preservative very efficient and present in most of patented preparations of the day.

4th. SALICYLIC ACID.—This is also very valuable and may not be injurious, it is used now chiefly for preserving beer, cider, milk, &c., and has proved a commercial success. It has no taste. One part in 1000 will preserve by making the fruit unfit for the nourishment of germs. They are our new preservatives, they are all valuable and can be used in their proper place, but the harmlessness of borax and salicylic acid is not proved.

A French process that is esteemed as being most satisfactory is as follows for the preservation of potatoes: Make a mixture in any cask or wooden vessel of two per cent. of commercial sulphuric acid in plain water, soak the potatoes in this for 10 hours, then dry them thoroughly and they will keep for over a year easily. The acid only sinks into the potato about the one-fortieth (0.025) of an inch, about the thickness of the skin, but it destroys it for germinating, (potatoes so treated are useless for seed). The acid solution can be used as long as it lasts. Might it not be serviceable for preserving apples and similar fruit? The acid destroys all putrefactive germs clinging to the fruit and makes a surface not adapted to the growth of any travelling germ that may locate there. I would presume that if the apple was simply soaked for one hour it would be sufficient to thoroughly destroy the germs or spores which exist on it, and would likely kill the *black spot* that germinates and spreads its roots (mycelium is the proper term) over the apple. The acid would have no effect I think on the flavour, possibly on the color, but not on the flavour. The two obstacles that the farmer has then to contend with is the bulk of his product and the difficulty of marketing. Business or science of marketing then is a question which has much to do with a farmer's success, and it is not clearly dealt with by this Association. I do not know enough

about it, but it is a subject I would suggest to you. Let us give you an illustration. Crab apples would not bring more than one dollar a barrel. I question if scientific marketing would not make them worth four to five dollars. The secret of this is to present your products to the market in the form and quantity that is desired and the people will buy them. 1000 people will buy five pounds where not one will buy a barrel. This product amongst others cannot be brought to those who want them, and a finer article of fruit does not grow in this valley. We are not guided by business principles in our marketing. But there is one gentleman present this evening from whom I think a paper on that subject would be well worth considering. I refer to Mr. T. H. Parker, of Berwick, who I think is a thoroughly practical man on business marketing. In addition to the science of marketing, for it is a science as well as a business, there are a multitude of other scientific, interesting, practical and paying things, all of which would demand from the farmer a deeper collegiate or scientific training than is required for any other profession or business I am acquainted with.

MR. RAND.—I would desire to express my appreciation of the remarks which fell from Dr. Reid. If folks will think it over and practice it there may be some good results. I have done a good deal of investigation myself. And there is nothing like learning by experience. The subject is one in which every housekeeper is interested, everyone who has a home it will help in making his home comfortable and happy.

JOHN DONALDSON moved that the thanks of the Association be tendered to Dr. Reid for the very able address which he had given, which was seconded by Mr. Rand, and unanimously passed.

PETER INNES.—I would like to ask a question for my own information. Does the use of land plaster do away with the necessity of using lime?

DR. REID.—It does and it does not. If he wants lime for a special purpose then he has to use lime. If he wants lime for his plants and the soil is deficient in it he can use plaster, but quick lime has a different effect upon the soil from plaster while at the same time supplying plant food.

MR. RAND.—The effect of the lime as I understand it acts as a strong alkaline, it unites with the soil and is a sweetner, you can

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decompose it with swamp mud or other substance. Sulphate of lime which is plaster, is soluble, it is supposed to furnish sulphur and also acts as an absorbent of ammonia. Plaster will not take the place of manure nor will manure take the place of plaster. Plaster is a combination of lime and sulphuric acid, and sulphur is often needed.

DR. REID.—Mr. Rand is perfectly correct. I did not understand that that was the question.

JOHN DONALDSON.—Is it not a great advantage in applying quick lime to land to get it incorporated with the land as quickly as possible?

DR. REID.—You have got to use it as soon as possible, as it absorbs carbonic acid from the air and becomes insoluble (chalk).

GEORGE THOMPSON.—Sulphuric acid, or plaster or sulphate of lime is an absorbent of ammonia. I have seen it stated that the plaster should be moistened in order to absorb ammonia?

DR. REID.—I lost about \$4,000 in experimenting once with sulphate of lime, the effect of the plaster is to convert the ammonia into sulphate of that base. The free use of water is desirable for the full advantage of the plaster as an absorbent of ammonia.

MR. RAND.—I had some hydraulic cement in my water pipes, it seemed to set very quick, it gave off a very strong odor of ammonia showing that it must have absorbed a large amount of ammonia.

GEORGE THOMPSON.—This plaster I refer to is not calcined plaster?

MR. RAND.—It is the plaster in ordinary agricultural use.

T. E. SMITH.—In reference to fruit being evaporated and preserved by the use of sulphur, etc. I saw an article in a leading Horticultural paper and the writer had a great deal of experience with it, and he advised not to use the sulphur. It is true it gives the fruit a white appearance, it also gives a taste which cannot be got rid of. It destroys the nice brown color of the fruit. I am surprised to hear the statement made in recommending it.

DR. REID.—Sometimes a very large amount of sulphurous acid is used to whiten. It is perfectly harmless. It may give a taste for a time, but can be removed by washing it. It improves the appearance and is a good preservative. The quantity used is very small. They do not apply the sulphurous acid to the fruit after it is cut up. The surface is merely exposed to sulphur fumes after peeling and before slicing.

The PRESIDENT.—Are our apple trees of over 20 years growth decreasing in individual production of fruit?

The shipments of 1891, were 85,000 bbls. ; 1890, 92,000 bbls. ; 1889, 102,000 bbls. ; 1888, 50,000 bbls. ; and 1887, 121,000 bbls.

“The census of 1891 gives 50 per cent. more land in orchard than in 1881.”

Meeting adjourned at a late hour.

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## SECOND DAY.

WOLFVILLE, *Jan, 7th, 1892.*

The storm predicted yesterday when nature was indulging in unwonted smiles for the season of the year, came last night, deluging the country with rain and a high wind prevailing. At 10 a. m. to-day, when the Association met, it was still raining with a warm wind blowing. The effect has been to make the roads and streets exceedingly muddy and largely reduce the attendance at the Convention. The morning session was devoted entirely to business matters. The financial report was submitted, the election of officers proceeded with, and the report of the committee on constitution was taken up. The financial report showed that the Association stood in the excellent position of having \$1,085 cash in bank to its credit and a note of \$73, making a total of \$1,158. The audit committee reported that they found everything in accordance with the statement.

The PRESIDENT congratulated the Association upon the excellent financial showing made. During the year there had been a considerable increase of membership and a great improvement in its financial position. All its assets were now available.

The PRESIDENT then drew attention to the proposed amendments to the constitution, and invited discussion. The first clause pledged the Association to use all means of improving transportation facilities, and encouraging and promoting the growth and cultivation of fruit throughout the province generally. The PRESIDENT argued that the Association, acting as a solid body, would be in a position to make better terms with steamboats and railways than at present. The cost of transportation seriously interfered with the profits of fruit growing.

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After a lengthy and animated discussion, in which several of the speakers demonstrated that the present transportation facilities are highly unsatisfactory, the clause was unanimously adopted. One speaker, A. McN. PATTERSON, declared that the extra cost of shipment under the facilities hitherto provided entailed a sufficient loss upon the farmers of Kings and Annapolis every season to enable them to half buy a steamer for their own use. This remark was warmly applauded.

A. WHITMAN stated that one shipment, which brought £214 in London had £89 of this swallowed up in cost of transportation. They had to pay \$1 a barrel freight, whereas they could be carried at a good profit for 75 cents a barrel. He thought it a great hardship that the farmers should have to pay their share of \$25,000 a year subsidy to a steamer, and then be compelled to pay an unreasonable freight rate.

The only objection raised to the resolution came from JOHN DONALDSON, who expressed a fear that an effort was being made to turn the Association into a business affair, by which certain large shippers might further their personal ends. The sense of the meeting was decidedly in favor of the Association acting as a body to bring its influence to bear in favor of reasonable freight rates, by which all shippers, large or small, and consequently all fruit growers, would get better prices for their product.

A long discussion took place on the amendment to the constitution respecting the Secretaryship and Treasurership of the Association. Hitherto the two offices were combined in one person. Several propositions were discussed, the resolution finally arrived at being that the offices be separated, and that the Association have a Secretary and a Treasurer.

The election of officers was proceeded with, J. W. BIGELOW, Wolfville, being unanimously re-elected President by standing vote. C. R. H. STARR, by standing vote, was unanimously elected senior Vice-President. The result of the proceedings in connection with this matter can be seen in the list of officers on page 3.

The business of the morning being concluded the Association adjourned till 2 p. m.

## AFTERNOON SESSION.

Met at 2 p. m. The first event on the programme was a paper read by S. C. PARKER.

## THE FRUIT GROWER'S NEED.

The Annapolis Valley is one of the finest fruit growing regions in the world. For fertility of soil, salubrious climate, for variety and quality of fruit, few countries can equal our valley home. Sheltered on the North and South from the fierce winds, with a comparatively mild winter climate, the soil freely watered by rippling brook, and swift running streams, with wooded slope and fertile vales, there is abundant room for development. The fruit growing interest in N. S. is as yet in its infancy, the past five years while witnessing a tremendous increase in the quantity of fruit and improved methods of cultivation, but demonstrates what unbounded possibilities lie in the future. In apples the staple fruit, we put it mildly, when we say the acreage has doubled in the past five years and will double again in the five years to come, our fruit growers are just now awakening to the fact that plums, pears, and even peaches can be grown to perfection and with a large margin for profit. The small fruit industry has sprung from nothing into a great business. A dozen fruit farms have each shipped this year more strawberries, raspberries and blackberries, than five years ago would have supplied all the markets in Nova Scotia, while the cranberry is turning into mines of wealth large tracts of land hitherto considered worthless. Nowhere else do we find the gravenstein and nonpariel as with us; other countries have their apples, we have a great variety, but take all other fall and early winter apples from the list, and we still have a host in the gravenstein; after other fruit is gone, and apples grown again, the nonpariel comes out crisp and fresh ready for the spring and summer trade. Other countries are in competition with us but they all have their drawbacks. New York and Michigan grow large quantities of apples, but a long rail journey lies between them and a shipping port. Ontario is cut off in the winter by the frozen St. Lawrence.

California has many attractions, her sunny climate, the variety of her semi-tropical fruit, and liberal advertising is drawing people even from our shores, but parching winds, dry summers, and distance from

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great markets are very serious drawbacks. I have tried other countries in the vain quest of a better fruit region. In sunny Florida, on the palmetto shrouded shores of Orange Lake, where the orange, the banana, the mandarin, and a hundred other fruits of which in Nova Scotia we do not hear the names, please the eye and tickle the palate. On the banks of the Ocklawaha River there are gentle slopes, that in ten years, with lavish expenditure, could be made a perfect Paradise; where a fertile soil will grow tropical fruit in abundance, where a roof on the hillside will protect one from the sun and rain, with a dark river on the front filled with many kinds of fish, winding among giant oaks and cypresses; and rising from the banks the slender palm, the brilliant magnolia, the towering gum entwined with running vines and hanging moss, and wild flowers of every hue, combine to make a forest scene that has few equals. At first glance it would seem as if nothing were wanting to make life a never ending sunshine. But there is a dark side to every picture, from this beautiful lake and sinuous river rises a cloud of deadly miasme, malarial fever claims all men for its victims. Clouds of mosquitos rise from the marshy shores and make life miserable. I can well remember a solution of this difficulty made by one of the party, a humorous Yankee, when some one expressed the opinion that the mosquitos were a nuisance not easily overcome. "Mosquitos" said our Yankee friend, "I can kill every mosquito in Florida." "Yes," (after a pause of anxious expectation by our party), "I will kill them too. I will kill them for a cent a piece. Yes I'll kill them for ten cents a dozen if you will catch them and bring them to me." Our party concluded it was too expensive a process and did not engage an executioner, and I doubt not to-day swarms of these noxious insects are still punishing the unhappy victims of that region. I left this friend in Florida where he was about buying land to go into fruit growing, but a few months after I got a letter from him saying he had a "chill" and would not stay in Florida if they gave him the whole State. In a country like this, although the profits may perhaps be larger than in Nova Scotia, the drawbacks are too many and dangers too great in proportion to the openings that are available.

To make a success in Nova Scotia, as well as elsewhere, the fruit grower needs *energy, enterprise and perseverance*. There are large profits in the business if what we see on a small scale can be

reproduced on a greater. In all manufacturing enterprises as the capital and business increases, the cost of production decreases; and there is no good reason why, with improved methods of culture, proper fertilizers and careful superintendence, such should not be the case in fruit farming. Instances abound of profits that are simply immense. There is a gravenstein tree owned by Jos. Kinsman, near Woodville, that has packed 25 barrels of apples in a single year. I went there to see it one year in bearing and was disappointed in its appearance, it is a large tree but shamefully neglected. Evidently it had not been pruned for years, broken boughs were hanging here and there through it, and an immense limb had broken away and was reclining on the ground. That tree is worth \$500, and with proper care will pay interest on that amount of capital. It would be a fine investment for this Association to buy that tree and spend a few dollars in fitting it up and keep it as a standing advertisement of the capabilities of the valley. Almost every orchard has trees that will turn off fifteen or twenty barrels in a good season. I have picked on more than one occasion 18 or 19 barrels of baldwins from trees in our own orchard. If a single acre of orchard is worth from \$500 to \$1000, and many of us have acres for which an offer of that amount of money would be laughed at, why can not you or I make a twenty acre orchard that is worth \$10,000 or \$20,000, or a hundred acre orchard that is worth \$50,000 or \$100,000, the matter is simple enough, it is only a question of labour and fertilizers. In the smaller fruits frequent instances are at hand of profits of \$500 per acre in a year. Mr. G. C. Miller, the Middleton strawberry king, told us at the April meeting he had raised his standard and was working to produce \$5,000 in fruit from his 10 acre lot, and if we may judge from his work in the past he will get there in good time. Cranberry culture is but in its infancy, yet the Kingston people a few weeks since shipped a carload of fruit at \$6, or thereabouts, F.O.B. We've got the land, we've got the men, we've got the money, all that is needed is to put them together and these figures can be multiplied indefinitely.

We need *organization*, not for offensive but defensive warfare. It is a day of combinations. Every business but ours is organized, the farmer alone of all men fights the battle single handed. There are a hundred crying evils that co-operation would remedy. This Association, in the centre of the fruit district with 10,000 fruit growers for a

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constitency, numbers less than a hundred members. Even with this paltry number much good has been accomplished. Give the Association 500 or 1000 members and you strengthen our hands a thousand fold. At the April session the Association discussed at length a scheme for a shippers Association, much talking was done, many schemes propounded, various opinions ventilated, and the matter ended as too many valuable schemes end, in talk. Mr. Dickie, one of the promoters of the organization, was not willing to stand idly by with folded hands. He put a steamer into Kingsport and what was the consequence, a freight from Kingsport at 75 cents per barrel, and a decline from \$1 to 90 cents, via Halifax, adding by that stroke of the pen five per cent. to the value of the apple crop of the valley. Should we as fruit growers not feel our insignificance when we ship our apples year after year in subsidized boats paying \$1 to \$1.25 freight, when 75 cents will pay freight and a profit to the charter party?

The fruit grower *needs education*, practical, thorough, experimental, in the line of his profession. The Dominion Government have experimental farms here and there through Canada, doing what they can to advance our interests and supply our needs. The experimental farm at Nappan, under the capable management of Col. Blair, is doing good work in this line, but it is not in the fruit region, and work is being done there that the boys in this valley know all about. We have men in this Association who know more about fruit and fruit culture than could be learned in a life time at the Nappan farm. Men who have worked this thing out, who know how to plant, how to grow and how to market, men you have spent years and money in careful study and practical work, and who are thoroughly qualified to instruct beginners and advance our interests. Acadia University is making a new departure in the proposed manual training school, a much needed and practical work, and which will give a new impetus to the work of the Institution, a few thousand dollars would establish a chair of Agriculture and pay a thorough instructor in fruit growing. Abundant suitable land could be readily obtained in the vicinity for a model fruit farm, and the plucky student who works his way would often prefer to spend his summer vacation in fruit growing there at reasonable pay, than in travelling some back settlement doing mission work at eight dollars a week, in both cases doing work not only for this generation but for future time. An experimental fruit farm

would test new fruits, produce new varieties, try improved methods of culture, learn the best fertilizers, and disseminate their results, warning our fruit growers against their failures, and introducing their successes. Such a scheme could readily be incorporated in the University, and at comparatively small cost.

The fruit grower needs *better and cheaper means of transportation*, What true Canadian here to-night is not proud of that gigantic work, the C. P. R. That continuous line of rails that binds Halifax to Vancouver, the Atlantic to the Pacific. A work that ten years ago pessimists declared would tax the whole resources of the British Empire to build. Yet Canada alone and unaided moved along her way, and a few days since a thrill of pride throbbed in every British breast when 500 blue jackets, who man those giant ships that to-day proclaim Britain the mistress of the seas, the sleepless guardians of that empire on whose soil the sun never sets, were whirled across the continent in four days time, never leaving Canadian soil, as easily and comfortably as they sleep in their berths in those leviathans of the deep that are their ocean home. Then we are also justly proud of the I. C. R., that great government work on which millions upon millions of the peoples money has been expended to bind these Maritime Provinces to the great West. But what is this to us, pride does not fill our pockets, sentiment is not dollars. This Association know, the people know, our legislators know, that every barrel of apples, every crate of fruit we ship west pays two freights, one on the W. and A. R. and one on the W. C. R. They know we pay \$2 per car on every car of apples shunted on the I. C. R. from Richmond to the Terminus, they know we pay 50% higher freight on the W. A. R. than our neighbors do on the I. C. R., they know that the tens of thousands of barrels, boxes and crates shipped yearly to Halifax are side tracked at Richmond and we pay 5 cents to 10 cents each for cartage to the centre of the city. We know all this and our legislators know it. Yet when you broach these subjects to those in authority, you will soon be led away from the point to hear of the C. P. R. and the Hong Kong train, of the Quebec boodler, or the Ottawa boodlers. Why not arise in our might and place our railway communication on a par with the rest of the Dominion. The W. and A. and W. C. Railway should form a part of the great Intercolonial system. Nova Scotia to-day is the back bone of the Federal Government, without Nova

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Scotia Premier Abbott is in the cold shades of opposition. Let the western counties that are interested in this thing, say to Kenny and Stairs, to Putnam and Borden, to Mills and Bowers, to Flint and Kaulback, make these disconnected links a part of the great I. C. R. and it will be done. Nova Scotia is in a position to make demands and they must be satisfied. It will not cost much. The McGreevy Connolly Co. pulled in about enough to do this work. Mercier's Quebec gang stole enough to buy out these roads and place them under government control. It practically effects us but little which government is in power at Ottawa. Yet we feel these things and pay for them year by year, and yet in a few days when the turmoil of an election contest is on us grit will be grit, and tory will be tory, and every man will pocket these grievances, and wrongs that touch us so deeply will be allowed to sink into insignificance before matters of greater importance to the Dominion as a whole, but really of less moment to us.

We need to *develop the love of the beautiful.* While straining every nerve toward the practical we should not forget the ornamental. There is no necessity of urging upon the fruit growers the importance of careful keeping of their orchards and fruit farms, success demands that, but while doing this let us find time for improvements. A row of fruit or ornamental trees on the highway adds wonderfully to the beauty of the place. Travellers in Spain report the highways lined with vines and fruit trees, and there is a legend that the passer by who eats of the fruit shall plant the seeds. It is almost useless to advance ideas on this point in this Association, for the gentlemen who are before me, and ladies too, are foremost in this work of beautifying our country homes. But there are places, as you all know in the remoter districts, where ornamentation is sadly neglected.

' We call to mind old homesteads where no flower  
' Told that spring had come, but evil weeds,  
' Nightshade and rough leaved burdock, in the place  
' Of the sweet doorway greeting of the rose  
' And honeysuckle, where the house walls seemed  
' Blistering in sun, without a tree or vine  
' To cast the tremulous shadows of its leaves  
' Across the curtainless windows, from whose panes  
' Fluttered the signal rags of shiftlessness.  
' Not such should be the homesteads of a land,  
' Where whose wisely wills and acts may dwell  
' As king and law-giver in broad aced state,

With beauty, art, task, culture, books, to mak  
 ' His hour of leisure richer than a life  
 ' Of four score, to the baron of old time.  
 ' Our yeoman should be equal to his home,  
 ' Set in the fair green valley purple walled,  
 ' A man to match his mountains, not to creep,  
 ' Dwarfed, abased below them.

I will assert, and am prepared to maintain this point, that there is nothing for a man who owns even an acre of land that will so enhance the value of his property as setting ornamental trees. What man is there in the hall with ornamental trees growing on his property who can place sufficient value on them. Anything else you can price, trees you cannot, money cannot buy them. Let every man in this valley but spend one day in each year in planting and caring for ornamental trees, and in ten years time what a Paradise this country would become.

I had almost said we need a market, but I do not think this is a pressing need, we are conveniently situated for communication with the greatest market in the world, the English market, our orchards are all within 100 miles of a shipping port. The English markets demand all our fruit, and there is no McKinley tariff wall around them. The market for small fruit seems to grow as productions increases, and a surplus will surely open canning and evaporating factories to consume the product. I think the market prices for fruit for the five years past will compare favourably with any five years in the history of the fruit growing industry. There will be an occasional year when a large crop will cause low prices, but there is no better business in Canada to-day than growing gravensteins at \$1 a barrel net, and who can estimate the consumption of apples at that price, it will increase almost without limit.

Life is too short, MR. PRESIDENT, to even name all the needs of the fruit grower in a paper of this kind. Man is not easily satisfied, as one need is supplied another is created, and we can not tell where the end may be. Let us have confidence in ourselves, in our country, and our business, and remember that a contented mind is the greatest need to secure our earthly happiness.

*Resolved*, The thanks of the Association be tendered to Mr. Parker, and his paper be published in the report, passed.

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DR. REID moved that a vote of thanks be tendered to the late Secretary-Treasurer, C. R. H. STARR, for his valuable service to the Association. The President spoke in cordial terms of Mr. Starr's work and the motion was carried unanimously.

C. R. H. STARR.—This has taken me by surprise, and I have to thank the mover and seconder, and the Association, for the kindness in which the resolution was received. I feel that in my past connection with the Association I have done no more than my duty, and I fear in many instances have fallen far short of that. If I can be of further use to the Association in the future I will only be too pleased to render any assistance I can in any way. Again thanking you, Mr. President, and the members of the Association, for their kind resolution.

WM. CHIPMAN, of Bridgetown, being called upon, briefly addressed the convention upon matters pertaining to the general interests of fruit growers, more especially upon the matter of placing apples on the market.

MR. DODD addressed the convention, pointing out several matters which required to be reformed in connection with marketing fruit. The present system was slipshod and unsystematic and unsatisfactory to buyer and seller alike.

A. McN. PATTERSON said that an Act should be prepared and submitted to the Legislature imposing fines and penalties upon those who neglected to clean their fruit; and thus exposing careful growers to ravages of destructive insects.

He then made the following motion:

“That this Association petition our Provincial Legislature to pass an Act compelling all owners and occupiers of enclosed land to keep their premises clean and free from insect pests, and in case of neglect thereafter to impose a fine for such neglect.”

C. R. H. STARR desired that a committee formulate Mr. Patterson's idea and report at another meeting of the Association to be called before the meeting of the Legislature to discuss this question.

DR. REID.—I would appoint a committee of one, Mr. Patterson to formulate such legislation.

MR. PATTERSON.—With all due deference to the suggestions made since I made the motion, I would say that I have a little home and a

little world of my own which takes all my time mentally, physically and morally to the utmost extremity.

GEORGE THOMPSON.—In reference to that motion I would not confine it to orchards because there are many ornamental trees.

DR. REID.—And include potatoes.

MR. PATTERSON.—Make your new Act so that it would reach all those things.

After some discussion it was resolved that the executive committee be instructed to petition the Legislature to give us such an Act.

T. H. PARKER suggested that a law be made providing for the appointment of inspectors of young fruit trees sold by agents. A great many were palmed off on purchasers by which they were swindled. They were undersized, deformed, and without sufficient root. An inspector should be appointed in each electoral district for the protection of the public. This suggestion elicited a good deal of discussion, but no action was taken.

GEORGE THOMPSON.—How would you suggest that the inspector be paid?

DR. REID.—Has the council power to select them?

MR. PINEO thought that the present law covered the matter, and a man should see that he gets what he bargains for.

J. S. DODD.—I have a resolution to make if in order. I refer to some system with regard to our fruit. Reference was made to railway facilities, that should also be a subject that should come up before the same committee. We have to pay two railway fares between here and Halifax, and labor under the present disadvantages, and that would be a proper and legitimate matter for the committee to deal with, especially when we consider the railway facilities offered our people in the west. On motion it was

*Resolved*, That a committee be appointed to obtain information as to the practicability of adopting a general system for the disposal of our apples and other perishable fruits, particularly with reference to the gravensteins and other early varieties, and that such committee report at the regular quarterly meeting."

MR. DODD said that in consequence of certain legislation with which we are all familiar, our local market would be flooded with fruit from the Western Provinces. This fruit had been shut out of the

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American market, and it would find an outlet in the Lower Provinces. Already we had experienced this, and in the future we would have more of it. This state of affairs necessitated keeping a close watch on our market, so as to make the most of it. And that there should be a man in Halifax to dictate the prices of the products for each day, who would telegraph us the different quantities of apples wanted and the prices offered. At the close of each day he would know the quantity and quality required for the next day.

MR. PARKER.—One cent per barrel would pay a man to look after the Halifax market.

On motion the resolution was unanimously adopted.

The following gentlemen were appointed a committee, MESSRS. PARKER, DODD, MILLER and ARCHIBALD.

MR. R. W. STARR, the chairman of the fruit committee, hereupon read their report as follows :

#### REPORT OF FRUIT COMMITTEE.

*Mr. President,*—The winter of 90-91 appears to have been remarkably favourable to the preservation of the fruit buds and the young wood of fruit trees. There were few complaints of winter killing, and fruit trees of almost all kinds blossomed healthily and well. Apples of all kinds were full. Peaches, pears, cherries, quinces, and most small fruits gave promise of large crops. Plums were rather more variable, some trees being full while others in the same orchard scarcely showed a single blossom. But the cold dry weather of June seemed to have a very injurious effect on many orchards—in some instances the fruit did not set in proportion to the amount of blossoms shown, and in almost all instances the loss by falling of the embryo fruit before the rains commenced toward the last of the month was very large and very general. It has been observed that the best cultivated orchards suffered least from this cause, thus proving that a mellow surface is an effective mulch in dry weather.

We have suffered less from "black scab or spot," "*Fusicladium Dentricicum*," this season than for several years past. This we may safely ascribe to what our worthy Secretary for Agriculture most truly calls "a bad germinating season," preventing the growth of the spores deposited last fall, thus the bad weather was not all an unmixed evil, but may yet prove a blessing in disguise.

There also seemed less insect depredation on fruits to contend with this year than usual. May we hope that this was owing to the greater care taken by farmers generally in destroying them in the previous years, thus giving us greater encouragement to persevere in their destruction, and to make the effort general all through the Province until we shall have stamped out those insect pests and have got them under control.

The strawberry crop, which is rapidly becoming of great importance in this valley, was of full average in quantity and the quality superior. Growers do not as formerly confine themselves to one sort, the *Old Wilson*, for many of the new sorts are being tried and grown quite extensively and profitably, and by their better quality raising the character of our fruit in the markets.

Currants, Gooseberries and Raspberries gave full crops and markets were found for all offered, at fair rates of remuneration for the grower.

Cherries were a large crop with less injury from curculio than usual. This fine fruit is too much neglected by growers generally, *i. e.* there are not enough trees planted to supply the demands, which are threefold, first the birds, second the family, and third the market. The first is a tax we cannot evade, and must therefore prepare to supply, the second, will be supplied as long as there is any fruit—consequently there is but few left for the markets,—therefore plant more trees—they are as sure a crop as any other fruit we grow.

Peaches have been planted quite extensively *on trial* during the last few years, and this year the crop has been very satisfactory. In Wolfville, several instances are reported of young trees so heavily laden as to require support, ripening from  $\frac{1}{2}$  bushel to  $1\frac{1}{4}$  bushels per tree. From Kentville and from several places in Cornwallis are reports of heavy crops of good quality. The main thing is to get early and hardy sorts.

Plums.—Although the past season was reported an off year for plums, the markets seemed to be fairly well supplied, and the crop on the whole turned out much larger than was anticipated in early part of season. In Wolfville some of the growers report very large crops.

Pears were a full crop in most instances, and the quality good; the prices may not have ruled quite as high as usual, on account of the great influx of this fruit from Boston. The pear crop of Massachusetts this year was something enormous, and their surplus stock as usual

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affected our markets during the early part of the season, later on our markets seemed to recover tone and fair prices were received for good fruit.

Quinces, wherever properly cultivated and cared for, have given heavy crops of well-grown and ripened fruit this year, and the demand is always greater than the supply, growers do not pay enough attention to this fruit. On proper soils and with suitable cultivation there are large profits to be made in growing this fruit.

Cranberries.—The cultivation of this fruit has passed its initiatory and trial stage, and has become one of the recognized industries of our fruitful valley. We have no means of estimating the acreage of cranberries under cultivation, but it is rapidly growing on those soils suitable to its habits and nature, and the export this year will have risen to something about 800 or 1000 barrels, the largest portion of these have gone to Montreal, some to London, and the rest to local markets. The prices have been good and the demand is still increasing. The industry seems capable of very large expansion, as there are hundreds of acres of land suitable for the growth of the cranberry that is worthless for other purposes, and there appears as yet to be no call for fertilizers for the crop other than water.

The apple crop of '91, notwithstanding the drawbacks of the early part of the season, and the severe gale of the 7th of September, which destroyed for market purposes more than half of the fruit in some of the more exposed orchards, and the continued series of severe frosts in October which caught some of the later varieties on the trees, and ruined them for any purpose but feeding or cider,—notwithstanding all this—the crop has exceeded all the earlier estimates and will not fall so very far below the average as we were led to expect.

The gravenstein as usual heads the list for profit, giving the largest returns per tree of any variety taking the whole orchards together, and it is an incontrovertible fact, that taking one year with another, over a series of years, 100 gravenstein trees will give from 20 to 25 per cent. greater dividend than 100 trees of like age and cultivation of any other variety that we grow.

The ribston has shown up well this year, the quality good and comparatively fair yield.

Kings, fair, well coloured and large, but some complaint of "watercore" in some orchards.

Blenheims, good where the gale did not blow them off.

Baldwin, fair size, good colour, less spot than usual.

Greening, better than usual in quality.

Spys, good.

Golden Russet, good, fair crop.

Nonpariel, rather a failure.

Fallowater have done well in protected orchards, but where exposed to the Sept. gale a failure. If not too late, we must here give a few words of caution to all growers who were so unfortunate as to have apples ungathered during that cold weather in Oct., don't trust too much to appearances but examine closely before you ship, cut some open, and see that there is no discoloration of the flesh. Apples that are chilled more than once on the trees are not to be trusted to keep well under any circumstances, much less in the heated hold of a steamship. We understand that already there have been complaints of our baldwins, greenings and vandeveres being off in quality and appearance, not equal to first shipments, and far below the same varieties from Ontario. If this is the case there must be a cause, and we must know exactly what that cause is and apply the remedy, for we cannot afford to take a second place in the market. We have already gained the first place in the apple market of the world, and it becomes the duty of every grower and shipper to do all in his power to maintain that enviable preeminence.

After a short discussion on this paper, MR. R. W. STARR was called on to read a paper, subject,

### THE FRENCH IN KINGS COUNTY.

#### THEIR WORKS.

From the time of the first settlement at Grand Pre, to the deportation of the Acadians in 1755, some ninety years has elapsed. During that time every improvement to the country was the result of their own labor, they had no outside assistance either in men or money, they had to clear the land, build their dwellings, raise the dykes to keep the tide off the marshes, and besides growing food for their families, they had also to grow flax and hemp to provide the material, with their wool to clothe themselves and their children.

For many years every thing that they could not produce themselves had to be brought from Port Royal, and paid for, at first in furs and

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skins, afterwards in wheat, peas, pork and cattle. Their upland clearings were for the most part very small, mere gardens to grow vegetables and fruit. The dwellings were log cabins, or more often "Tilts," *i. e.* the walls made of stakes set close together, and the outside and roof covered with bark, the fire place of stone built in the wall, with a chimney of sticks and clay mixed with chopped straw and tempered with cow dung, carried up on the outside of the wall; the interstices in the walls being filled with the same material, and the floors frequently of pounded clay. This was the typical cabin of the Acadian, as they grew more wealthy they built saw mills and constructed frame buildings for churches, store houses, dwellings for priests, and sometimes for the leading men of the hamlet.

Their most important works were the dykes, which they raised to keep the tide off the marshes, at first they enclosed small portions near the shore, and kept adding to them as they grew stronger in numbers and able to accomplish larger works. On the Grand Pre and also on the Canard River, the history of those works can still be read in the old embankments remaining to this day. On the Grand Pre they assume many forms and intersect in a peculiar manner as they grew larger, until at last they were boldly thrown across to the Island at both ends of the "Great Meadow" and still later, probably not many years before the expulsion, they enclosed what is now known as the "Dead Dyke" a two hundred acre addition to the already large enclosure. This involved building a heavy aboiteau over a creek that had been navigable for vessels of from 40 to 50 tons.

On the Gasperaux they appear to have had about all the marshes enclosed much as they are to-day, and on the River Inhabitans, now called Cornwallis River, part of what is called the Beckwith dyke and a part of the dyke near Port Williams station was enclosed by them, also the dykes at New Mines and Kentville. Some of these dykes show evidence of earlier inside enclosures, as at the Tannery Brook near the railroad where the remains of an old dyke are still plainly to be seen.

On the north side of the river at "Town Plot" they threw a small aboiteau across the "Prescott Brook" which forms "Shad Creek," just where it leaves the upland and enclosed about 25 acres of thin, or "born dyke," and between Town Plot and Port Williams, close on the south side of the road is the remains of an early French dyke, while out near the river is a later embankment enclosing what is

know as the Farnham dyke and doing good service at the present day. Above Port Williams nearly all the marshes were enclosed to the head of the tide, and most of them show evidences of early enclosures near the shore.

On the Canard River the settlement evidently commenced at the upper marshes first, and the probabilities are that the first enclosure was that on what was formerly known as the Nesbit farm near Upper Dyke Village. On a small brook coming from the north was a marsh of some extent, and just north of the present road where the low points of upland come near together they built a small aboiteau and a few rods of dyke which enclosed about forty acres of prime land. Small dykes were built on both sides of the river near the shore and across the narrow marshes on brooks. One on the Isaac Reid farm, another across the Dewey Brook on the S. Walton farm, one running not far from the shore in front of Levi Clark and L. Eatons farms, with one or two others on the south side.

Growing stronger or bolder they then built the Upper Dyke across the river. Later on growing more enterprising they built the Middle Dyke, this had two large aboiteaus with heavy sluices, crossing the main stream and the Chipman Brook a short distance above their junction. They had also make large enclosures on the north side, one known as the Bowen Dyke had a large aboiteau over the Dewey Creek, and another since called the Bigelow Dyke which also had a large aboiteau. On the south side there is a long dyke running the whole distance from the Middle Dyke to the Grand Dyke, and it had a heavy aboiteau over the creek formed by the brook on which Cochran's mill is built. Lower down is the Union Dyke with a good sized aboiteau over the Marsters Brook.

But their last and greatest effort on the Canard River was the construction of the Grand Dyke. This work did not enclose so very much land, but it protected all the land already enclosed. It was the third dyke thrown across the main river and very much larger, and more expensive and difficult to build than either of the others, and must have taxed the resources of the whole community very severely to accomplish; for the largest estimate of the population of Canard that I can find, that of Judge Morris, drawn up shortly before the expulsion, puts the whole settlement at 150 families, and many of those living on other rivers could have had no more interest in the

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dyke than those living at Grand Pre; and as to the cost we may form a partial estimate from what it cost to repair or rebuild it by the English settlers in 1770. The records of the commissioners of sewers for township of Cornwallis gave as the amount of rate for rebuilding the Grand Dyke, £954. 17s. 6d. to be levied on 1230½ acres. And in 1783 the dyke or aboiteau was rebuilt above the French dyke at a cost of £2,583. 15s. currency.

The site of the French aboiteau was where the present road crosses the stream on a wooden bridge, and the remains of the English dyke of 1783 are still to be seen a few yards west. At what time or in what year this dyke was first built we have no means of knowing, but it certainly could not have been many years before the deportation of the people who built it. For in the census of 1714, 40 years before, the population of Canard was only 77 souls, so that all this work of dyke building on the Canard River must have been done within a period of fifty years.

I can find no traces of dyking by the French on the "River de La Veille Habitation," or as Morris designates it River of the Nieux Habitans, although he reports 10 families settled there and five more on the Pero River, these people seem to have contented themselves with fencing the salt marshes for hay and cultivating the uplands for grain and vegetables. But probably they drew most of their living from the shad and herring fisheries for which these rivers were especially noted in those days as well as after the advent of the English settlers.

#### THE LOCATION OF THEIR ROADS AND VILLAGES.

There are still plain traces of a nearly straight and well defined road marked in places by willows, from Grand Pre to James Woodman's, north of the present high way, thence it apparently ran on the same location as the present road to "Mud Creek," and from thence to the Johnson Hollow, it seems most likely that the road is on the old French trail, but from there to Kentville it runs its general course not far from the railway, and beyond Kentville to Cambridge it is near the railway most of the time, further west I have not traced the old road to Port Royal. From Grand Pre to the landing, said to be near the railway bridge, the road was near the dyke, and there were numerous trails over the hills southwardly to the Gasperau, but the main road to Pesiquid followed the line of the road from the station

to the Wallbrook Bridge, and crossed the river at that point on a sunken bridge that could only be crossed when the tide was out.

The most direct road to Canard crossed the river at Town Plot by a ferry and ran directly north-west over Fox hill to Church Street, and straight on to the Canard River at Ratchford landing where that river was ferried also. From Town Plot roads ran north-east to Starrs point and west to Port Williams, where there was a road nearly on the line of the present road to Canning, and the river was sometimes fordable opposite the bluff bank below the Ferry creek. From Port Williams the road continued west to the Belcher farm, but I do not know if it went further but think probable that it went as far as upper settlement on the old Morton farm. There was a road from the Middle Village dyke crossing the Joel Cogswell Ferry and Belcher farms in a north-west course to Church Street, another from the Curry farm crossing the Reagan and Gesner farms coming out near Chipman's corner. These were merely well worn trails, without bridges or culverts, only the trees cut out and cradle hills leveled. From the Fox hill a road ran north-east to the marsh near the Wellington Dyke road, this was well defined until a few years ago, and used by ox teams when going and returning from repairs on the dyke to avoid hills and shorten the distance. Church Street follows the French trail from Fox hill to Master's Brook, from that point the trail turns more to the north crossing the road to Canard north of the Rectory barn and continuing to follow the course of the marshes to Chipmans corner and then west to the line of the road to the "Steam Mill Village" to where Killam's Mill is, and from there through the pine woods to a point on the Cornwallis river above the head of the tide, at a fording place the trail joined that to Annapolis but just where the ford is or was I cannot say.

The villages of the Acadians and their supposed localities have for a long time past been a matter of speculation to the antiquarian and the curiosity seeker. We have but little in the history to guide us in our search other than the general outline of the country. The buildings being of wood only, were burned by Winslow's troops as fast as they were vacated by the people, leaving to mark the site of each a quantity of charred wood, ashes, burned clay and a few stones. Fruit trees there were no doubt in most of the gardens, but of large orchards there were not many. The burning of the buildings must

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that point on a tide was out. Over at Town Plot to Church Street, finding where that north-east to Starrs road nearly on the river was sometimes creek. From Port Arm, but I do not think went as far as there was a road from Perry and Belcher over from the Curry at near Chipman's about bridges or leveled. From the Wellington Dyke go, and used by the dyke to avoid follows the French until the trail turns north of the Rectory crosses to Chipman's the "Steam Mill" through the pine head of the tide, is but just where

have injured and destroyed many of these garden trees thus lessening their number, but enough remained to excite the admiration of those who came from New England to examine the country, by their vigorous growth and productiveness, and doubtless had much to do with the successful filling up of the country from New England.

At the present day but few of those old French trees are living in comparison with those to be seen 30 or 40 years ago, they have lived their allotted time and passed away. There are still a few at Grand Pre. The old "Wine Apple" on the Stewart farm is still living in the form of a sprout from the old roots. And there are some at New Minas, and on the north side of the river there are French trees on the farms of J. G. Byrne, McKittrick and Ward, also on the Joel Cogswell and Terry farms near the river. A few years ago there were a number of scattering French trees on the Gesner farm and on the farm now owned by Mr. Young, and there is one large healthy tree near the Ratchford Landing on land owned by Mr. C. R. H. Starr, that usually gives full crops in alternate years of a fair size good cooking fall apple. I have heard my father say that when he was a boy there was a pear and three apple trees stood there, one of the apples ripened early, last of August, and was very good but small. The pear was small and sweet ripening in September, and considered first rate by the boys of that day. There is the site of a French cabin within a few yards of this tree marked by a mound of clay on the fine sandy loam of the natural soil. But the greatest number of French apple trees now in existence in the county are to be found near Upper Dyke and Upper Canard. On the Nesbit farm before spoken of, is an orchard of about one hundred trees originally with some vacancies now. These trees were regularly set about 24 feet each way, and although showing signs of great age, are many of them healthy, and the large number of them have been grafted with modern sorts within the last twenty years. This orchard is claimed to be of French planting and used to be noted for the quantity and quality of its cider. It has always been nearly surrounded by second growth spruce and fir, only open to the south-east, and until late years has never been cultivated or manured. On the same farm near the road are several scattering trees the remains of an old French garden, two of which were blown over last fall. One of them bore an apple which has quite a local reputation as a first class dessert fruit, said to be a bright red

localities have for an antiquarian and history to guide us in the country. The inslow's troops as mark the site of a few stones. The buildings must

apple of medium size, crisp, juicy and very high flavoured, but it has never been propagated until about two years ago when scions were cut from the old tree and set in a young healthy stock and are looking well, so we may yet be able to test its qualities.

But we must return to history for such information as we may gather. Mascarenes description of Minas in 1721, says "vessels of "40 or 50 tons run up with the tide, which rises 9 or 10 fathoms "up a creek to the town, where they are left dry on a mud bank by "the receding tide. The houses which compose a kind of scattering "town lie on a rising ground along two creeks which run between it "and the Meadow, (*Grand Pre*) this last a kind of a peninsula."

The creeks are there since dyked over. The one the vessels came up runs East to the Gaspereau through the Dead Dyke, the other West to near the Railway Tank House, and then North by the Great Discharge to the Cornwallis River. In 1749, Judge Morris, surveyor general, recommends building a fort on the little Island at Grand Pre, says it is 1,300 paces long and 400 wide. In 1755, Winslow says, "I am encamped having the church on my right which "I have made a place of arms, the church yard on my left,—the "priests house for my own use and am picketing camp." "Six days "later, says "finished picketing and began oven, 4 men from each "company to assist masons, and 4 from each company to help the "well diggers." Orders quit players to go outside camp to the back or north side Sept. 1st, encamped Mercer and party on the west side of the church. Made tour around the settlement in front or to the southward and *discovered* several villages." All this points to the little knoll of upland surrounded by dyked marsh just north of the station as being the "Little Island" of Morris, the site of the church and of Winslow's camp, and very probably the well uncovered there a few years ago is the one dug by Winslow to supply the camp with water.

Judge Morris, in a paper dated 1755, says of Minas: "In 1748 they were reported upwards of 200 families of which 180 live in Minas, 30 on the Gaspereau, and 16 in two small villages on the River Habitants. In Winslow's list of villages which appear to have been named after the leading men of each hamlet and number some 28 or 30, we have no Minas or Canard. We have "Grand Pre," which was probably the center of a cluster of villages or hamlets occupying the

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whole country from Scott's corner down and between both rivers comprising the Minas of that day, and here I would place the hamlets of "Grand Le Blanc," "Peirre Blanc," "Jean Le Blanc," "Richard," and "Gotro."

On the Gaspereau we have the villages Gaspereau and Melanson. Just above the tide on the Colewell farms on the north side of the river are traces of a village and of a mill driven by the waters of the river which were diverted from the main stream some distance above, traces of the old raceway are still to be seen; and on the south side directly opposite are traces of cellars and gardens and the tradition of a burial ground on a ridge of land just south of the present road, there are also plain traces of a roadway and ford crossing the river to connect the village. A short distance south-east from this spot, on the Duncanson Brook near the foot of the mountain, is the site of an old mill with garden spot and apple trees yet remaining, which tradition says was a French grist mill that escaped the general destruction by fire and was used by some of the fugitive Acadians who remained in the country to grind such small quantities of wheat as they were able to save from the universal destruction. I have always understood that "Benjamins Mills," now called "Hunters," was on the site of an old French mill and that there were several French cellars on the "Island south of the mills, and I can well remember going to mill in my boyhood, and while waiting for grist to be ground, exploring the Island and testing the merits of the apples that grow on some very ancient trees scattered over it, and I was told at the time by the late Perez M. Benjamin that they were French trees. Near Avonport I am told there are the remains of a village, and several foundations are yet to be seen and some interesting relics have been found indicating a settlement of some size. This may have been the second village on the Gaspereau, "Melanson."

On the south side of the Habitant or Cornwallis river there are still traces of houses in and near Wolfville and all the way to Greenwich. It is said that there was a mill on the Johnson Brook near or above the tannery, and there was a mill and several houses on the farm of E. R. Bishop near the railway, a few hundred yards west of Port Williams station. At New Minas, on what used to be known as the "Foster Farms," are evidence of a considerable cluster of houses and a mill site a short distance below where Redden's Mill stood a few years ago. There is a tradition that there was a church in that village,

and I am told by a gentleman living in the vicinity that there is still some evidence of the fact in the stone foundation of a large building yet remaining that can be traced. We may therefore consider the central points of the two villages on the south of the river as mentioned by Morris to be at Wolfville and at New Minas.

The settlement or Parish of Canard must have comprised all the country north of the Habitant River. In Morris' paper, before alluded to, (in which he, for a surveyor general of the Province, seems terribly mixed as to the points of the compass) he says, "The River Canard settlement lies in the south-west? (*North-West*) and "contains about 150 families of whom 50 live on a point of land "lying between the River Habitant and the River Canard." Winslow writing to Moncton says, "Ordered Capt. Adams with half my "command to a place called Boudro's bank on the fork between the "Rivers Habitant and Canard to collect the whole of the inhabitants "of those rivers. River Pero and River Dis Habitans." Again writing to Governor Lawrence, "Sent Capt. Adams with half my "party to encamp between Rivers Habitant and Canard at a place "called Boudro's Point, where the whole inhabitants of those rivers "and Larure Habitans and Pero were ordered to be and actually "came with all their families."

Thus, "Boudro's Point" must be Starr's Point of the present day, and "Boudro's Bank" from whence the transports "Mary," "En-Cheer" and "Industry," carried away into exile 525 of the inhabitants, must be Town Plot, as there is no other place where there is a natural landing for vessels of their size, viz., from 75 to 100 tons.

Referring to Morris again he says: Sixty families live on the West (?) (*North*) side of the River Canard in a compact village about two miles from its mouth, and 25 more up the river on both sides to Penus Mills which are near the road coming from Annapolis to Minas, and distant from Grand Pre nine miles.

In Winslow's list of villages we have no Canard. We have "De Michel," with 30 males, which comes nearest to Morris's estimate of the large compact village two miles from the mouth of the river which would bring the location at about Hamilton's, or as it used to be known as Jaw Bone Corner, where as a boy and young man I remember the location of many old French cellars and long lines of old French willows between the dyke and uplands, some of which are

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still remaining. The probabilities are that this large village was the site of the church referred to by Capt. Adams in his report to Winslow on his return from Canard. He says, "It is a fine country full of inhabitants, a beautiful church and abundance of the goods of the world, with provisions of all kinds in plenty." From some hints gathered from Winslow's journal I should place the villages of "Antonine" and De Landry on the north side of the river and also perhaps De Clan Landry, but where? There are cellars and willows on the S. Walton and Ward Eaton farms near the Dewey Brook, also south of the Baptist church were cellars and quantities of willows, and one of the most interesting spots because the least disturbed is on the farm of W. E. Newcomb, of Upper Dyke Village. On the western border of what is supposed to be the oldest dyke on the river, that on the Nisbet farm referred to, can be found at the present day some of the best defined foundations of buildings known in the county. First a stone foundation that a few years ago was nearly perfect but has since served as a stone quarry, but enough remains to find the corners, gives the following measurements. From east to west 30 feet, from north to south 25 feet, on the center of the west end is the stone foundation of a chimney, outside the wall as proved by the quantity of ashes and burned clay, but evidently no excavation for a cellar, near the chimney a few years ago was dug out a quantity of clay pipes and an iron pot. This house, if a dwelling as I suppose it to have been, was evidently one of some pretensions as we found some quarried stone that evidently came from Horton Bluff, and were shown what evidently had been the jambs of the fire place that must have been hewn from the red sandstone of Starr's Point and were most likely brought up the river in boats before the dykes were built. This building, like all the rest I have examined, gives evidence of having been destroyed by fire.

Ten rods west is the remains of a cellar with well built dry stone walls all round, measuring from east to west 60 feet, and from north to south 16 feet. I should take this to have been a store house or barn. These are the largest and best defined foundations I have yet seen among the French remains in this county. About 60 paces south-east is an ordinary appearing cabin site. Then north across a small brook on the same farm are three or four more cellars, and east of them on the Nesbit farm are a number more and the orchard before referred to.

On the south side of the Canard there was a village of some size near Chipman's Corner, and it has been claimed that the church stood there and possibly it may be so, as that would be no doubt the oldest village, getting its importance at the building of the Middle Dyke, while the other one at Hamilton's Corner would owe its growth and prosperity to the Grand Dyke, which must have been built many years after. From Chipman's Corner down the settlement must have been pretty continuous as there are traces of habitations all the way with quite a cluster on the point of upland north of Armstrong's, and continuing quite thickly as far as the Grand Dyke road. Here I should locate the "Grangers," and south of them on the north side of the Habitant I place the "Heberts."\* There was quite a cluster of dwellings near what is now called Middle Village Dyke on Belcher Street, and also further up a continuous settlement from the Curry farm to the old Morton farm near Kentville, where there was another center or cluster of houses.

Near Port Williams was a mill on the site afterward occupied by the Newcomb or Wood's mill, this was one of the two reservations of mill sites in the division of the township of Cornwallis by the New England settlers the other being Sheffield's mills, and both are now useless as water powers. There was several cabins near, and on the south side of the Fullerton farm, now owned by E. L. Collins some years ago, the site of a blacksmith's forge was found and quite a number of plowshares, coulters, and other implements collected. From there to Starr's Point there does not seem to have been much that could be called a village, a few dwellings at Boudros Bank as it was a ferry station and shipping point, but the country between the two rivers was all cleared and the uplands better cultivated than further up the rivers where they depended more upon the dyked lands for their crops.

I have no accurate information as to the location of the settlements on the Canning or Pero rivers, and would like to get all that is possible from any party who takes an interest in these matters, and any corrections or additions to my statements will be gladly received, for the main object I have in writing this paper is to try to preserve in a feeble way the few facts that can be gathered respecting a civilization and a people that existed for a hundred years in this country, and

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\*See Murdoch, vol. 11, p. 25.

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then was by the exigences of the times so completely wiped out, that these few pages describe all that I have been able to find as the result of their labors.

MR. STARR'S interesting and very instructive paper was well received and ordered to be incorporated in the report of the meeting.

It being then after six o'clock the business of the annual meeting was drawn to a close.

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## EVENING SESSION.

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### SOCIAL IN COLLEGE HALL.

For the evening the usual programme of an Association dinner was departed from, and the evening was devoted to a social in College Hall. This proved an exceedingly enjoyable and successful affair. Among the guests were, The Hon. Attorney General, President Sawyer and the Faculty of Acadia College, Miss Graves and the Teachers of the Seminary, the students of the College and Seminary, and a very large representation of the Fruit Growers of the valley, with their wives and daughters.

Addresses were delivered by the Attorney General, President Sawyer, A. McN. Patterson and others. Prof. Shaw of Acadia, rendered several selections in his inimitable style, while the College Quartette furnished music for the occasion. A prominent feature of the meeting was a magnificent display of medals and diplomas won by the Association at fruit exhibitions in London, Edinburgh, and elsewhere. A poem by MR. C. F. HALL, prepared for the occasion, was read by the writer as follows :

#### GRAND PRE (REVISITED.)

A low murk veils the marsh,  
 A mist the mount ;  
 Beyond a billowy basin reach  
 Of brown mud with miles on miles  
 of rippling beach  
 And a winding view of russet dyke,  
 Low hills around loom blue and far  
 And pen us in, as if the only breach  
 Of thrall were at the bar.

Upon a runt of low  
 French willows near the forge  
 Where Basil wrought his fate  
 a crow ;  
 His voice a mean  
 of care, and croke and cackle,  
 Sure the Devil in Hell would  
 Laugh that way  
 As loath a bird like that  
 To tackle  
 In a lift of song  
 Sunburst and fogbreak ;  
 And Blomidon frowns  
 A blue black bastioned fort  
 With sheer pitch of  
 a thousand feet  
 Into a foss of the eternal sea.

And the light of thee  
 O primal peak of Sinai  
 Olives and Olympian sky  
 Shone faint in that  
 Old tender *Ronde de Nuit* ;  
 " A light that never was  
 On land or sea,"  
 The consecration and the  
 Poet's dream.  
 O punny pen puissant art  
 O magic man !  
 Thou art  
 In every age  
 The world's Evangel seer,  
 And Saint and Sage  
 Thy day adorning, and  
 Thy first awake.

The gathering broke up at a late hour being a very successful  
 ending to a successful meeting of the Association.

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*A paper*  
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## APPENDIX.

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### MAINTAINING THE FERTILITY OF THE SOIL IN ORCHARDS.

*A paper read before the New York Horticultural Society, Jan. 28th, 1892, by PROF. I. P. ROBERTS, of Cornell University, Ithaca, N. Y.*

We usually speak of fertility in a general way, that is, if the land produces well, we call it fertile; if it produces nothing we say it is barren; and yet, the land which produces little or nothing may, and often does, contain far more of the elements of plant growth than does the productive soil. The products of cultivated land are not, usually, in any sense the measure of the amount of plant food which it contains, nor the amount which may be liberated by scientific culture. In most cases it will not pay to have the soil analyzed, but the shrewd cultivator will have learned, if he has made any careful study at all of the land that all plants love a fine soil which has been aerated and relieved from stagnant water, and has been compacted, except possibly a little of the surface.

In our farm vernacular fertility means production, whereas it should mean the amount of plant food which can be profitably set free by the best and most scientific methods. To the orchardist, the amount of plant food which the trees can get out of the land is practically the true measure of the fertility of that land.

The question of how best to secure the fertility which is already in the land, should be discussed before we speak of manures or fertilizers. The roots of an orchard after it is fairly grown, occupy very fully the entire ground except a small portion of the surface. From this time on, the feeding roots are practically confined to the exact ground from which they have been feeding for the last fifteen or twenty years. The roots of fruit trees, where set the ordinary distance apart, have extended themselves nearly as far into the subsoil at fifteen years of age as they will ever go, because there is little more food that can be reached in that direction on account of the physical and chemical

condition of the subsoil ; and because the surface roots have by this time extended themselves so as to interlock with those of the adjoining rows, but of this, more hereafter.

How best to get the orchard grown to the time when it is in full bearing, is now to be considered. First, the land should be reasonably dry. If it is very wet, it should be made dry by draining ; if only slightly wet, the field may be thrown into ridges as wide as the rows of trees are to be apart, and if the plan is not to drain the land after the trees have begun to bring an income, then the rows and ridges should be wider ; that is a little land may be sacrificed in order to save the expense of draining, and where the land is not too dear, this is often the cheapest and the best way to solve a somewhat embarrassing problem. Having decided the method of drainage, a full year should be given to preparing the land. It should be plowed deep, and often ; if thrown in ridges or lands, then it will be well if the subsoil plow be used freely in the bottom of the dead furrows. If the land is at all sandy and poor, the plowing should not be less than four times, and none of them should be later than the middle of September. With this start, for the next five to fifteen years, according to the variety of trees set, enough plant food can easily be set free by shallow ploughing, cultivating and by the use of plants. Many a young orchard is ruined by over feeding with manures, as are also many by starvation, while the soil contains an abundance of food for all necessary growth. The trouble in this case is, the orchardist lacks both skill and forethought. The tree is too often treated like the unwise dairyman treats his stock which are fed to repletion when young, and semi-starved at maturity when the demand for food is great, especially if a large surplus product is to be secured ; by such treatment both alike are greatly injured, the tree not less than the animal. Healthy, continuous, hardy growth, and not too much stimulating nitrogen, is what is wanted in both cases.

In rare instances the land may be deficient in fertility ; in that case, a little mineral fertilizer will be all that will be needed. When the orchard begins to fruit readily there will be an extra demand on the soil for food, and that must be met—and in a liberal way if large supplies of fruit is secured. As the roots have been growing upon this soil for several years and as they can find no soil from which they have not already extracted the supply of the readily soluble food, the fact that the quality and quantity of the fruit diminishes and the tree

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becomes an easy prey to its enemies if something is not done ; something usually is done at about this period of the orchards' existence. Not infrequently it is seeded down to timothy and very often this grass is cut for hay. Of course the apple orchard at least, cannot well be kept under the plow all the time after it has come into full bearing because of the inconvenience of gathering the fruit on a plowed surface in the late, wet fall months. There is usually a better way than to keep an orchard constantly under the plow. First, clover should be raised so far as possible in the orchard, and it is not necessary to plow it up often as clover "catches" on sparsely seeded land, nearly as well without as with ploughing. This treatment usually provides sufficient nitrogen in conjunction with a little farm manure.

It should be kept clearly in mind that we are dealing with trees that have already occupied the ground for several years ; that have creamed the soil ; that have already trespassed upon and robbed their surrounding neighbors, and that in turn have been robbed ; and there is no escape from slow but certain starvation, sooner or later, if the trees are reasonably thick and nothing is done. First, in order to reach the best results the amount of fruit raised on a tree should not be large, and the quality should be of the best. We fail to learn quickly that quality is nearly everything, that numbers ruin, and quantity floods the market.

The fertility of the orchard will not be preserved by numbers of specimens, or quantity of product, both of which usually bring loss. Is it not possible to trim the orchard by the same rules which are observed in trimming grape vines ? Our grandfathers let their vines grow as they would and they never produced any really fine bunches of grapes. As soon as we learn to control and direct the growth of the vine, the value of the fruit increased a hundred-fold, while the least possible amount of fertility was removed from the land. Is it not quite possible that fertility might be conserved and the quality of, say King apples be greatly improved by reducing the length of the limbs upon which they grow ? Is it true that the nearer the total product of fruit is to the total product of food supply of the tree the better the results ? Or state it in another form, are the apples improved by transporting the plant food which produces them eighty feet through root and branch before they receive it ? Is the soil of the orchard being unnecessarily drawn upon by growing too much timber ?

These questions are worth considering as they all look toward greater economy and better results.

It will be seen that provision has been made for maintaining the fertility of the orchard up to the time of its coming into bearing. What I have said also implies that the trees have not been unnecessarily stimulated by manure, or otherwise, that they have made a steady, healthy growth, and that they have come into bearing early. All this, too, has been done from the plant food already in the soil, which has been liberated by intelligent culture. Before treating of the bearing orchard I again call your attention to the danger on the one hand of over feeding, and on the other, of under feeding the orchard while it is being raised. As the heifer is simply kept growing and great care is taken not to over feed, or change the direction of her inbred tendencies while she is young, and as she is more liberally fed as soon as she begins to produce something, and as she is fed moderately liberally, or very liberally, as she responds to the food given, so in like manner should the orchard be treated.

The amount and kind of food furnished to the orchard should be studied as carefully as is the food of the dairy cow. What kind of food does the orchard want? Like other plants, it is likely to have enough of all kinds except potash, phosphoric acid and nitrogen. As the cow cannot give good returns without a full supply of albuminoids, carbohydrates and fats, so neither can the orchard respond without a full supply of digestible plant food. How shall it be secured? Would it be best to get the annual dressing of fertility wanted by purchasing commercial fertilizers, or by the purchase of cattle food and animals, and through them secure the desired elements in the form of farm manure.

If the orchard contains ten acres, it will carry one hundred sheep from May to October, provided one-fourth of their food be furnished to them in the form of bran and cotton seed or oil meal. One hundred sheep, weighing eighty pounds each, will require for one-fourth of their daily sustenance one-half pound of meal per head. In the spring they will want something less than this, in the fall something more. If these animals take ten per cent. of the manurial value from their food for their natural growth, there will still be left scattered on the land in solid and liquid droppings, 228 pounds of nitrogen, 146 pounds of potash and 90 pounds of phosphoric acid, or 22.8 ; 14.6 and 9 pounds, respectively per acre.

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One hundred and fifty bushels of apples—that is enough if they are good enough and too many if they are poor—contain about 8 pounds of nitrogen, 24 pounds of ash; 13 pounds of which is potash and 1 pound phosphoric acid, worth together, \$1.86.

How much the trees will require for increased growth, how many of the leaves will be blown away, how much nitrogen will escape by leaching, and how much will be restored to the soil by the clover roots, and how much of the fertility produced by feeding the bran and meal the trees will be able to readily secure, neither the theorist nor the practical men can tell.

All know that the orchard requires food, and all can easily see that this method will furnish at little or no cost the fertility required. No charge should be made the sheep for the grass, as the work they will perform in transforming the poor apples and the worms into valuable fertilizers will be a fair equivalent for it.

Summoning up the case, we have the orchard raised through skill and the unaided fertility of the soil. The draft made on the land by the production of apples and the necessary growth of wood and the losses of fertility which may occur are to be fully met by restoring to each acre yearly through feeding animals upon it, some 23 pounds of nitrogen for the 8 pounds removed by the apples; 14½ pounds of potash for the 13 removed and 9 pounds of phosphoric acid to replace the one carried off. It will be seen readily that if there is any deficiency, it is likely to be the potash, as scarcely more is returned to the soil than is removed by the fruit, so a dressing of potash is likely to not only improve the quality but the color and aroma as well.

The hundred sheep would consume in five months at pasture, 2,750 pounds of oil meal worth \$28 per ton, and the two would cost together \$82.50. The value of the plant food left on the soil computed at commercial prices would be \$43.07; but whether it is really worth that or not no one can tell.

Can a hundred lean sheep purchased in the spring be made to gain \$100.00 in value in five months of grazing and grain feeding with a half pound of meal per day per sheep, or with the feeding of three-fourths of a pound if thought advisable? I shall make no attempt to answer these questions but leave them for your thoughtful and earnest consideration. While I cannot answer them myself accurately yet I contend that the orchardist is growing too much wood, too many apple seeds, too many apples, too poor apples, too

many badly colored and bad flavored apples, and that this can be remedied by "heading back" which will largely serve in lieu of thinning, and by furnishing to the bearing orchard yearly a reasonable amount of available plant food, largely through the aid of plants and animals. I am well aware that the methods here suggested will have to be varied to suit local conditions; still I claim that the principles involved are correct, and that if they are intelligently practiced in connection with the best methods of defending the fruit from its enemies, a great advance will be made.

In the peach and plum orchards the practices which I have suggested are not likely to be the best, as it will be found advisable, in most cases, to keep these constantly under cultivation. But here like in the former case, fertility may be preserved by feeding animals during the winter and by preserving and removing the manures produced to the orchards. I have the utmost faith that this method of getting plant food through plants and animals will be found to be the most economical in most cases.

In order to give some idea of the amount and value of the manure produced by various classes of animals, I give somewhat in detail some of the results secured at our Station in the last few years:

	VALUE PER TON.	QUANTITY PER DAY.
Horses	\$2.79	Cows in full milk, 81 lbs.
"	2.30	" " " 89 "
"	2.80	Horses 58 "
Cows	2.08	" 52 "
"	2.46	150 lb. Pigs 3½
"	2.29	140 lb. Sheep 5½
Sheep	4.19	
Mixed	2.38	150 lb. " 7½
"	3.05	
"	3.61	
Swine	3.41	

Another method of determining the value of the manure is to compute the plant food in it at commercial values. In this case, the value will be found to exceed one-half of the cost of the food fed to the animals which produce the manure; but we must be cautious in estimating the value of the elements found in farm manures, as they are not likely to be so available nor so easily nor perfectly distributed as are good commercial fertilizers. I contend that the soil should be cultivated and plant food set free to the utmost limit; second, that

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leguminous and tap rooted plants should be used as plant food gatherers ; third, that animals should be kept often as much for the value of the manure they produce as for the profit realized from them by their other products ; fourth, that the least possible amount of straw and vine and limb be grown consistent with economy and the health of the plant ; and fifth, after having practiced all the economy possible in conserving the fertility of the land, and after having used most intelligently all the fertility that can be secured from the soil, the plant and the animal, if there is still a lack in order to secure the highest quality of product and the greatest net income, then, commercial fertilizers of a high grade purchased from reliable firms should be applied with a liberal hand. And if it is found at any time that commercial fertilizers give better net results than farm manures, then there should be no hesitancy in changing from one to the other. I believe that farm manures which have lain in the open yard or have been heated and which have to be drawn long distances, are far more expensive than are high grade fertilizers. We have seen that well preserved manure is worth on an average scarcely more than three dollars per ton, and our experiments prove that such manure exposed in piles from April to October of ten loses one-half of its value, therefore I am led to believe that many tons of manure which are transported from the city contain less than a dollar's worth of soluble plant food. This manure may act beneficially as a mulch, but so far as the plant food it contains is concerned, it is too often an expensive way of preserving the fertility of the land.

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#### THE TOXICOLOGY OF THE COPPER COMPOUNDS WHEN APPLIED AS FUNGICIDES.

*By* PROF. D. G. FAIRCHILD, *Assistant Pathologist of the United States Department of Agriculture.*

In using Bordeaux mixture, the speaker said, the horticulturist should begin the treatment early in the season, later using an ammoniacal solution to assist the rain in washing away the former solution. There was danger, the speaker continued, in the absence of the use of the Bordeaux mixture. The mixture may be used too frequently, so that rains cannot wash off the fungicide, or it may be used too late in the season so that before it is washed off the harvest

time arrives. The subject was exhaustively treated by the speaker, who referred to the arguments advanced both for and against the use of the mixture. In closing, Prof. Fairchild said that as a measure of precaution and to insure a mixture that would be absolutely harmless, he would advise a reduction in the strength of the Bordeaux mixture. The formula he proposed was : Sixty-five to seventy-five gallons of water, six pounds of copper sulphate, four pounds of lime. In reply to the question whether the Bordeaux mixture might not be entirely abandoned by growers, Prof. Fairchild said that while the ammoniacal solution was nearly as effective as the Bordeaux mixture it was not entirely as satisfactory. Prof. Fairchild then gave some interesting statements concerning experiments made on fruit orchards in Geneva. Trees treated with the Bordeaux mixture gave 42 per cent. better fruit than nearby untreated trees, those treated with copper acetate gave 28 per cent. better fruit, while those upon which chloride of lime was used gave 20 per cent. poorer fruit than the untreated trees, showing that chloride of lime was useless as a fungicide.

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#### ACT REGULATING SIZE OF APPLE BARRELS.

(Section 3, page 167 of the Acts of Canada, 1884-85.)

"All apples packed in Canada for sale by the barrel, shall be packed in good and strong barrels of seasoned wood made as nearly cylindrical as may be ; the staves of such barrels shall be twenty-seven inches in length from croe to croe, with heads from sixteen and one-half to seventeen inches in diameter ; and such barrels shall be sufficiently hooped, with a lining hoop within the chimes, the whole well secured by nails. Every person who offers or exposes apples for sale by the barrel, otherwise than in accordance with the foregoing provisions, shall be liable to a penalty of twenty-five cents for each barrel so offered or exposed for sale."

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