Fruit

INTE

NOVA

TRANSACTIONS

AND

REPORTS

OF THE

Fruit Growers' Association

AND

INTERNATIONAL SHOW SOCIETY

OF

NOVA SCOTIA.

1886.

HALIFAX:
NOVA SCOTIA PRINTING COMPANY.
1886.

FRUIT

IN

HIS HONOR THE

REV. J. R.

W. H. BLA

ANNAPOLIS COUN
KINGS "
HANTS "
HALIFAX "
LUNENBURG "
DIGBY "
YARMOUTH "
SHELBURNE "
QUEENS "
COLCHESTER "
PICTOU "
CUMBERLAND "
ANTIGONISH "
GUYSBORO' "
VICTORIA "
CAPE BRETON "
INVERNESS "
RICHMOND "

FRUIT GROWERS' ASSOCIATION

AND

INTERNATIONAL SHOW SOCIETY

OF

NOVA SCOTIA.

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HIS HONOR THE HON. MATTHEW HENRY RICHEY, Q. C., LIEUTENANT-GOVERNOR.

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	Date of Election.
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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	" "
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HON. CHARLES DOWNING, Newburg, N. Y. (deceased)	" "
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D. W. BEADLE, ESQ., St. Catherine's, Ont.	" "
ROBERT MANNING, ESQ., Boston, Mass.	" "
RICHARD STARR, ESQ., Cornwallis, N. S. (deceased)	" "
F. C. SUMICHRAST, ESQ., Halifax, N. S.	Jan. 10, 1877.
JOHN LOWE, ESQ., London, G. B.	" 15, 1884.

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	Date of Election.
J. W. BIGELOW, ESQ. Wolfville	April 9, 1875.
HENRY B. WITTER, ESQ., "	" "
CHARLES E. BROWN, ESQ., Yarmouth	Oct. 1, "
EDWIN CHASE, ESQ,, Cornwallis	Nov. 1, "
R. W. STARR, ESQ., Port Williams	" "
CHAS. R. H. STARR, ESQ., Port Williams	Jan. 3, 1876.
W. C. SILVER, ESQ., Halifax	Dec., 1876.
JAMES SCOTT, ESQ., "	" "
GEORGE LAWSON, PH. D., "	" "
JOHN STAIRS, ESQ., "	" "
THOS. A. BROWN, ESQ., "	" "
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EDWARD BINNEY, ESQ., " (deceased)	" "
JAMES FARQUHAR, ESQ., "	1883.

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AXFORD, REV. F. J. H. .....Rectory, Corn-[wallis.

BAKER, A. T. .....Somerset.
BANKS, E. C. .....Waterville.
BISHOP, SILAS .....Somerset.
BEST, LEONARD .....Grafton.
BISHOP, JOHN M. .....Kingston.
BLIGH, EVERETT. .....Grafton.
BLACK, W. A. .....Halifax.
BLANCHARD, W. H. .....Windsor.
BRYDON, N. J. .....Somerset.
BOWLBY, SAMUEL .....Aylesford.
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CHIPMAN, DR. HENRY. .....Grand Pre
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EATON, LESLIE S. .....Kentville.

FISHER, A. S. .....Berwick.
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FITZRANDOLPH, FRED. .....Round Hill.
FULLERTON, JAMES ..... "
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FITCH, E. H. ..... "

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HAMILTON, GEORGE .....Grand Pre.
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HEMMEON, REV. J. B. .....Wolfville.
HARRIS, T. R. .....Aylesford.
HARRIS, BENJAMIN .....Bear River.
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JONES, J. M. .....Waterville.
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LONGLEY, HON. J. W. .....Halifax.
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MORSE, SHANNON .....Berwick.
MUNROE, DR. CHAS. H. .....Pictou.
MCMAHONE, T. L. .....Aylesford.
MCLEAN, DANIEL .....Woodville.

NEWCOMB, D. B. .....Sheffield Mills.
NEILEY, L. O. .....Aylesford.

PALMER, JOSEPH .....Aylesford.
PORTER, MAYNARD .....Woodville.
PARKER, JOHN M. .....Berwick.
PITMAN, CHAS. J. .....Annapolis.
PARKER, T. H. .....Berwick.
PARKER, A. B. .....S'th Farmington
PINEO, W. W. .....Waterville.
PARKER, WELLESLEY .....Aylesford.

RAND, GEO. V. .....Wolfville.
RAND, DR. T. H. ..... "
REID, J. W. .....Aylesford.
RAND, LEANDER .....Canning.
RUPERT, J. F. .....Kentville.

SUTTON, WILLIAM .....Church St. Corn-[wallis.
SHAW, ANDREW .....Falmouth.
SAVAGE, JOHN .....Windsor.
SPURR, SHIPPY .....Melvern Square.
SLOCOMB, J. P .....Middleton.
SELFRIDGE, SAMUEL .....Aylesford.
SELFRIDGE, GEORGE ..... "
SANDFORD, JONATHAN .....Berwick.

TAYLOR, C. A ..... Aylesford.
TUPPER, M. ..... "

WALKER, ARCH. .....Kingston.
WHITMAN, ALFRED .....Waterville.
WEBSTER, BARCLAY .....Kentville.
WILLETT, J. W. .....Somerset.

FINANCIAL STATEMENT.

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

Year ending December 31st, 1885.

DR.		CR.	
To Expenses Meetings	$ 22 65	By Balance from acct. 1884	

FINANCIAL STATEMENT.

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

DR. *Year ending December 31st, 1885.* CR.

To Expenses Meetings	$	22 65	By Balance from acct.—1884	$	682 43
" " Annual Dinner		35 00	" Membership Fees.		87 00
" Reporting Annual Meeting		30 00	" Proceeds Tickets Annual Dinner		23 25
" Postage and Telegrams		20 28	" Government Grant		300 00
" Printing and Stationery		12 60	" Amt. Securities		365 37
" Printing and Publishing Reports		153 25			
" Amount paid Mr. Elder, Agent		15 00			
" Express Charges		5 35			
" Expenses President		2 50			
" Secretary's Salary		100 00			
" Balance Salary, 1884		25 00			
" Amt. Securities		365 37			
" Balance carried to acct.—1886		671 05			
	$	1458 05		$	1458 05

[E. & O. E.] C. R. H. STARR, *Secretary-Treasurer.*

AUDITORS' REPORT.

WOLFVILLE, N. S., *Jan'y 19th, 1886.*

The undersigned, appointed Auditors of the Nova Scotia Fruit Growers' Association, beg leave to report that they have examined the books and vouchers of the Secretary-Treasurer, and find them correct.

GEO. V. RAND,
G. H. WALLACE.

APRIL MEETING,

HELD IN PALMER'S HALL, KINGSTON, APRIL 21ST, 1885.

President HART in the Chair, and the Hall well filled with representative fruit growers mainly from the surrounding districts.

The PRESIDENT addressed the meeting at some length, referring to the advisability of combined efforts to secure better facilities for the shipment of apples to foreign markets, and thus avoid having them stowed with cargo that is liable to do damage to the fruit. The necessity for better insurance policies, etc. He advocated the formation of Auxiliary Societies, and the appointment of one day to be recognized by the Association as Arbor Day, and enjoined upon all present to remember that our forests were being denuded, and it would be well for us to plant both useful and ornamental trees.

The SECRETARY, after having read a portion of the minutes of the last Annual Meeting, which were approved, called attention to the report that a bill was now before the House of Commons, at Ottawa, regulating the size of apple barrels, and requiring all barrels to be made of either hard or basswood. As soon as this came to his knowledge he had immediately telegraphed to the hon. member for Kings, advising him that such a law would never do for Nova Scotia unless spruce be included. From reports at hand it was not clear just what size the barrels were required to be, but if the Nova Scotia law were adopted the requirements of the case would be met.

EDWARD PARKER said the Nova Scotia law was a good one.

A. B. PARKER said he would rather have the barrels hold two bushels than three.

LEONARD FITCH said the coopers would charge the same, be the barrel larger and smaller.

JOHN PARKER said the same would be the case with regard to freight.

T. H. PARKER thought a law establishing uniformity in size very necessary. At present small barrels governed the market as they were in excess.

A. B. PARKER advocated the use of small barrels. Half barrels realized twenty per cent more than large ones. The smaller and neater the package the better. Would protest against restrictions as to kinds of wood used in manufacturing barrels.

LEONARD FITCH thought we should be allowed to use whatever wood was best suited for our trade.

J. M. PARKER suggested that pine should be prohibited.

ARCH. WALKER said that Yellow or Norway pine made best heads.

JOHN FOSTER said that apples kept best in pine barrels. The heads should be thicker and stronger than generally made.

The PRESIDENT thought the reverse—three-fourths to seven-eighths of an inch quite thick enough.

SHIPPY SPURR asked where the Starr Packing Co. got their barrels. J. S. TOWNSEND & Co. advised the use of such barrels.

The SECRETARY said they were made at their warehouse, Port Williams Station.

The following resolution was passed unanimously :

Whereas, It appears from information at hand that the Hon. Minister of Inland Revenues has introduced a bill into the House of Commons respecting the size and quality of apple barrels,

Therefore resolved, That while this Association heartily approve of any efforts to establish uniformity in the size of apple barrels, they are compelled quite as forcibly to protest against a law that requires the exclusive use of hard wood and bass wood, as impracticable for Nova Scotia fruit growers, those woods not being obtainable in sufficient quantities.

Further resolved, That as the kind of wood used is a matter directly affecting individual interests, it should be left entirely with such individuals to select such wood as may best suit his particular trade.

The following paper on "BEAUTIFYING OUR HOME SURROUNDINGS," by Mr. P. R. JONES, late of London, England, was read by the SECRETARY :

The most marked difference between the appearance of farmhouses in Nova Scotia and in England is the utter want of any approach to a

pleasure garden in connection with the former, whilst with the latter, the *want* of one would be the exception. To my mind a flower garden, be it ever so small, is a necessary adjunct to a country home, and I think the wives and daughters of all our farmers will agree with me, they at any rate would find a pleasure in it. A very little outlay, judiciously expended in the right direction, would materially improve the surroundings of our farms. Surely it is not necessary to plant potatoes or other crops almost under the windows of the drawing room. Would it not be better to lay down a lawn on this side of the house at any rate. As a rule the best rooms of a house are away from the barnyard and its adjuncts, so that nothing in connection with the farm work would be interferred with, were this done. A few hints based upon the principles that landscape gardeners work by, cannot do any harm even though they fall to the ground unheeded. Firstly, as regards the approach to the house. If it stands some distance back from the public road, a curved drive should be made, appearing to lead naturally and directly to the principal entrance, that is, no curve should be so great as to seem to bend away from the house and then return to it again. If there is a bend in the public road conveniently near, so much the better, for then the curve in the drive can be arranged to take up with it and so enhance the importance of the house to which it leads, by making it appear that the public road was made for its special benefit. The drive should terminate at the house in a space of gravel large enough for a carriage to turn round in—say 35 feet in width from verandah or steps of entrance. From this space a road may branch off to the stables, or it may branch from any other point in the drive that may be more convenient. There is one rule in landscape gardening that should never be broken and that is, that no walk near the house, other than drive or road to stables should be curved. If it is necessary for a walk to lead round the house it should be straight; curved walks may lead away from this, but at their commencement they should be at right angles to it for at least two or three feet. No straight walk should leave or cross another straight walk obliquely, and no curved walks passing from or crossing straight ones should do so other than at right angles. A serpentine walk round the plot of ground decided upon for the pleasure garden has a very pretty effect, the curves should be varied as much as possible in length and breadth, and several curves should not be seen at once. This can be

avoided by placing groups of planting, which should be composed chiefly of evergreens in the hollow of the curves. Those curves away from the house may be hidden by the formation of a swell in the ground or by planting two or three specimens, that is single plants, on the lawn. As regards plantations, they cannot have too much good soil. If the soil is heavy it should be trenched two or even three spits deep, and then any good surface soil that may be got in cutting out walks or drives should be run on; all plantations should have at least two feet of good soil on the top. If the existing trees round or near the house are evergreens, then plant the new plantations chiefly with deciduous ones, and use a large proportion of flowering shrubs. If, however, there are only a few existing evergreens, then plant the new plantations chiefly with them, using a large proportion of flowering shrubs. If any trees exist in ground intended for lawn, they should be made to appear to be standing on a sort of mound or slightly rounded knoll and let hollow glades of turf run between them. Plantations should have a roundness of outline and yet be intricate and irregular, no two of them should be exactly alike. The boldest swells should be planted with the boldest trees. In most cases, specimens, that is single trees, should be attached to groups. In placing the groups of planting, the the view from the principal rooms in the house, they being the chief point of vision, should always be taken into account. In this way everything that is beautiful in the landscape may be preserved and anything ugly or offensive to the eye may be effectually hidden. In laying out a garden the idea of size should always be conveyed as much as possible. Flowers can always be planted on the outer edge of the plantations, or beds may especially for them can take a great many beautiful forms.

Mr. John M. Parker said the subject was one of great importance and he was much pleased with the paper.

Shippy Spurr also expressed his approval of the paper.

Moved by T. H. Parker, seconded by Rev. Mr. Axford, that the paper be received for incorporation in the next Annual Report, and that the thanks of the Association be tendered Mr. Jones.

Edward Parker objected to the paper. He did not come to hear about flower gardens but to learn what were the best apples to graft.

MR. AXFORD said fashions change. Some apples recommended for the London market one season were not in favour the next.

S. SPURR said the Londoners were hard to suit, Greenings had brought as much as Baldwins and Vandeveres the last season.

E. PARKER advised not to abandon Bishop Pippins yet. They would yet be *the* apple in England. He had re-grafted his Greening trees, and now Greenings were wanted.

A. B. PARKER said there must always be a difficulty in packing Bishop Pippins to prevent their bruising.

T. H. PARKER said that owing to this change of taste in apples it was difficult to know what to do with some varieties.

MR. SPURR asked if any Bishop Pippins had ever been sent to London.

SECRETARY said yes, and had realized from 10/ to 13/ while other varieties at the same time fetched 16/ to 18/.

MR. FITCH said that while the Baldwin had taken well in England, for his own use he'd prefer Greenings and Bishop Pippins. In packing see that apples are laid close to the staves.

MR. SPURR's experience was the tighter the barrels the better. Don't press apples to keep over, but refill and press just before shipping.

MR. AXFORD quoted from a letter from Messrs. Nothard & Lowe, London, saying his apples always turned out well. He attributed his success in packing to the use of the screw header.

JOHN PARKER said that for storing apples he would use a thick head put in upside down.

E. PARKER said the question "What is the best apple for the English market?" is being continually asked. He did not believe the Baldwin would ever come down; would advise grafting it.

SECRETARY said on heavy soil plant Ribstons.

T. H. PARKER described the Golden Russet as well suited for light soils.

ARCH. WALKER endorsed Mr. Parker's views.

MR. SPURR recommended the following as the best varieties, Gravenstein, Ribston, Blenheim, King, Golden Russet, Nonpareil, Greening, Baldwin and Spy.

A. B. PARKER advocated Golden Russet and Gravenstein for light soil.

MR. SPURR said that in Melvern Square there were two Ribston trees growing on a sand hill and doing well. It was suggested that he would probably find a clay subsoil within reach of the roots.

T. H. PARKER would recommend the following list: Nonpareil, Golden Russet, Blenheim, Ribston, Gravenstein, Baldwin, King and Ben Davis.

Some members would not recommend Ben Davis, until it had been tested.

MR. SPURR spoke favourably of the Mann apple, and would not abandon Vandeveres.

MR. SUTTON said Ben Davis was usually marketed too early, it should be kept till spring.

MR. GATES spoke in favor of the Blenheim, it sticks to the tree best.

MR. W. R. L. FOSTER said it was a mistake to think Golden Russets could not be grown on heavy soil, that Blenheim did best on heavy soil.

EDWARD PARKER said two Blenheim trees were the best growers he had, and bore alternately six to eight barrels each.

JOHN FOSTER said he did not have the best success with Ribstons. Thought they needed more pruning; grafted Nonpareils and Ribstons same time, finds Nonpareils most profitable; gave his old orchard a coat of ashes with good results.

The subject of OCEAN AND RAILWAY FREIGHTS on apples was next referred to.

MR. SPURR read extracts from a letter from Messrs. J. S. Townsend & Co., London, saying that freight on Nova Scotia apples was altogether too high in comparison with those from other ports—one shilling more from Halifax than Portland.

MR. BANKS.—The through rate to London is one dollar per barrel. I understand the steamers get seventy-five cents and the balance goes to the railway. If this be the case, the R. R. Co. make eight cents per barrel on all apples from Waterville Station over and above regular tariff rates (17 cents.) This I consider an imposition.

The PRESIDENT said he had shipped from Bridgetown via St. John and Furness Line for 94 cents per barrel. The steamers had 3/- from St. John and the same from Halifax.

MR. PARKER.—The over-charge this season from Berwick would give the R. R. $150.00.

MR. FISHER.—The special rate would pay local rates from Tupperville.

MR. E. PARKER.—Unfortunately there was no competition and the R. R. could charge what they liked.

MR. T. H. PARKER.—The people have contributed largely to build the railway and they have certain rights that should be respected. This matter should be looked into that we may know who is to blame.

The SECRETARY read extracts from Mr. Innes' speech at the Annual Dinner, and also from London letters saying freights from Halifax were higher than from other ports.

Several members bore testimony to having found the Manager very obliging at times, when he had done all in his power to forward their freight.

Resolved, That a committee of three be appointed to enquire into the subject of Ocean and Railway freights. The President, A. S. Fisher, and the Secretary were appointed a committee with instructions to report at a future meeting of the Association.

SHIPPY SPURR said we want a frost-proof warehouse at Halifax. And others expressed the same views. It was a matter of vast importance to the fruit-growers of Nova Scotia.

PLUMS.

The subject of plum culture was discussed at some length.

MR. SMITH said he was prepared to cure the Black-knot, sure every time, he had experimented and been successful in preventing the disease. He believed sandy soil best suited to plum culture and recommended pruning heavily. To catch the curculio he put around the tree a woollen cloth that had been soaked in turpentine or kerosene.

J. M. PARKER considered the curculio a worse enemy than black-knot.

A. B. PARKER believed plums the most profitable fruit he could raise. He would raise blue plums exclusively, and cared no more for black-knot than for grasshoppers. He had six trees covered with black-knot and succeeded in entirely ridding them of this disease. He believed in severe pruning and very high cultivation, in order to secure rapid growth. If black-knot appeared it must be cut out. He had cut in to the heart of large limbs and the wound healed in two years. Believed black-knot was caused by overflow of sap. He believed the curculio injured the plum in the blossom; his remedy was bottles of molasses and water, or corncobs soaked in this fluid, hung in the trees. Mr. Parker explained at length his views upon the habits of the curculio, the Association tendering him a vote of thanks for his interesting address.

Meeting adjourned till following morning.

WEDNESDAY MORNING.

Quite a number of persons were present and engaged in the discusssion of

SMALL FRUITS.

SECRETARY read extracts from "Crawford's Method of Strawberry Culture." J. M. PARKER recommended planting in rows thirty inches apart, one foot in the row, and cultivating thoroughly. He picked off all blossoms first year, and allowed no runners till after the 20th August. Took two crops off the vines, then ploughed them up. MR. MAGEE took six thousand quarts from seven-eighths of an acre. The second crop he considered all profit.

MR. MCNEIL said that when he began he had tried to grow early peas between the rows, but was not successful. The whole of the ground should be devoted to the strawberries. He advocated but two crops. In growing berries on ridges running east and west he found those on the south side ripened at least a week or ten days earlier than those on the north, and recommended *flat* culture. We were largely indebted to G. V. Rand, Esq., for the introduction of strawberry culture and for many new varieties imported by him. Preferred spring planting—rows three feet apart. Wilson's one foot apart in the row, other varieties, particularly Crescent, require more room. Made furrows with plow and set plants below surface. Used a shield on the cultivator to prevent earth falling on plants.

Preferred small plants to large ones, mulched with coarse manure, pine needles, or spruce boughs. Had sometimes washed sandy berries by filling boxes with them and immersing them, box and all, into a tub of clear water and swashing it up and down, when the sand would rinse off without the least injury to the fruit.

MR. PARKER recommended rushes as making a good mulch.

MR. KILLAM.—Was not an extensive grower; had started three years ago; aimed to keep ground free from weeds; had grown 1500 quarts of Crescent on quarter of an acre the second year. Rows thirty inches apart, one foot in row; set a little below level. Owing to extreme wet weather last year had only small crops. Had let two rows grow into one, but did not consider it a good plan. Thought picking the blossoms off the first year could only be practised by small growers.

MR. T. H. PARKER referred to Stephen Killam, of Virginia, who had raised 31,600 quarts, and had twenty acres in small fruits.

MR. AXFORD was pleased to know that strawberries would blossom and yield the first year, and if properly manured and cultivated, without serious detriment to the second year's crop.

MR. T. H. PARKER said Messrs. Coleman, Miller, and Magee were probably our largest and most successful strawberry growers. They differed somewhat in details of managment. Mr. Magee practised hill culture, took one crop of large early fruit, manured heavily, and used bone meal in the drill. His land is rolling and does not require draining. Small fruit culture requires more prompt attention than ordinary farm crops such as potatoes.

JAMES GATES had not been successful in growing strawberries, they required more attention than he could give them at certain times.

J. M. PARKER said the cultivator must be run through them every week.

A. B. PARKER said he proposed making his land rich enough to grow onions, in addition to use about 600 lbs bone meal and ashes in the drill. He made a mound in the bottom of the furrow with his hand and placed the plant on that, planted Wilson's twenty inches apart in the row.

MR. MCNEIL suggested using the ashes and bone on the surface. He cut off a part of the roots, prepared plants during the day and

planted at evening unless it was dull weather; spread the roots on the side of the furrow and covered with the hand, afterwards filling the furrow with a hoe; used about 1700 plants to the acre.

Mr. Sutton had raised strawberries fifteen or sixteen years ago. In removing plants would take up a lump of earth, and use a cupful of water with each plant. He used potato tops for mulching—afterwards forking them in—in this way obtained three and four crops.

John Parker.—Sets plants with his hand, generally in the evening; had his plants wet; seldom lost a plant, except from June-bug larvæ; got his first 200 plants from G. V. Rand—Boston, Pine and Victoria, set them in April—second year got 100 quarts—next year sold $25.00 worth beside using all the family wanted; thought two crops would leave the land in better condition than before the plants were set.

Mr. Killam.—Advised disturbing plants as little as possible—take a sod with each plant.

Mr. Tufts asked what time in the autumn plants should be covered.

Mr. McNeil said in reply—do not cover till the ground is frozen and remove after frosts are done.

Mr. Tufts' experience was that in removing covering in March, berries were earlier. Thought it too much risk to leave Wilson's uncovered.

President read Crawford's "Mistakes in Growing Strawberries," which closed the discussion on strawberries.

RASPBERRIES.

Mr. Killam thought black raspberries profitable—said to be superior to red. To propagate black raspberries bend down the canes, covering the tips in the earth; last of August or first of September Had found the Doolittle hardy.

W. W. Pineo said the Black Cap was doing the best in his neighbourhood.

Mr. McNeil.—Raspberries must be kept cut back.

ARBOR DAY.

The PRESIDENT called the attention of the Association to the desirability of appointing a day to be observed as ARBOR DAY. This suggestion met with approval, and *the first day of May* was named, and members requested to set aside that day in future for the planting of fruit and ornamental trees.

CRANBERRIES.

MR. MCNEIL being called upon, said it would take all day to discuss cranberries. He was plied with questions, and much valuable information elicited.

White's "Cranberry Culture" was recommended as one of the best works on the subject.

Meeting adjourned to the call of the Executive Committee.

JULY MEETING,

HELD IN WHITMAN'S HALL, ANNAPOLIS, JULY 10TH, 1885.

At 2 p. m., President HART took the Chair, and called the meeting to order.

The attendance was small, the people of Annapolis town and immediate vicinity being conspicuous by their absence,—notwithstanding this meeting had been appointed for Annapolis at the request of several of the leading citizens.

The PRESIDENT addressed those present in a few well-timed remarks. He foreshadowed the Apple crop as fair on the whole, although there would undoubtedly be a falling off in the Nonpareil.

Early in the season the reports from England indicated a good crop, but later it seemed the fruit was falling very much, owing to the dry weather.

The prices during the past season had not proved satisfactory to shippers.

We had had a large crop of inferior fruit, owing mainly to the unfavorable season, consequently the total amount received for Apples was comparatively small.

The SECRETARY read business portions of the minutes of last meeting, which were approved.

MR. MILLER asked what progress had been made in the frost-proof warehouse at Halifax.

The SECRETARY replied.—The petitions, which were circulated and numerously signed, were forwarded to Ottawa and presented with a joint letter from the representatives of several counties interested; but in view of the extraordinary drain upon the Dominion Treasury, owing to the North-West troubles, the matter could not be entertained at that time; but he trusted that in the near future this quite indispensable addition to the railway facilities at Halifax would be supplied.

The PRESIDENT, as Chairman of Committee on Railway and Ocean Freights, in answer to inquiries, said that up to the present

nothing had been done with reference to the matter further than an exchange of correspondence.

MR. PATTERSON referred to statements made by the manager of the Windsor & Annapolis Railway, that their rates were lower than any other company's road in Canada.

If this was correct there was no ground for complaint; if not, the statement should be refuted.

The PRESIDENT.—The through rate was what we complained of,—six cents per bbl. were saved by shipping *via*. St. John from Bridgetown.

MR. BLANCHARD.—The rate from Montreal to Windsor Junction was the same as charged by the W. & A. Railway from the Junction to Kingston station, and on a car load of cotton from Georgia by all rail, one-ninth the whole freight was from the Junction to Windsor, notwithstanding the cars passed over a number of companys' roads.

MR. BENJ. MILLER.—It was not easy to meet Mr. Innes' challenge, as it required a knowledge of facts not easily obtained by outside parties. We complained of certain facts that could not be refuted.

MR. WILLIAM MILLER.—Was it fair to charge more than local rates on through freights, and to make such arrangements as prevented us shipping on local rates? Mr. Innes was opposed to a fruit house in St. John. The freight on apples was more from here than from Michigan to London.

MR. BLANCHARD did not consider the arrangement a fair one. People at Annapolis had the option of shipping either direct or *via* St. John.

MR. PATTERSON said he was not there as champion for Mr. Innes, but Mr. Innes had publicly made certain statements—if they were not correct they should be disproved. He thought there was something to be said in favour of the freight all being paid at the other end.

PRESIDENT said freight from St. John to London was 72 cents. Agent there would advance schooner freight whatever that might be.

MR. WHITMAN said freight rates were regulated by competition. He had shipped *via* Boston to London for 2/3.

MR. CHUTE said freight on apples was higher than on almost any other goods;—shippers were losing money. We should use all

legitimate means to have freight reduced to a par with that from other ports.

PRESIDENT said all we asked was to be put on an even footing with our neighbours.

MR. F. C. WHITMAN said ocean freights were liable to be raised at any time, though Annapolis was in a position to check this by bringing in extra boats. It was the ship's interest to take freight from port nearest points of production, and it was to the interest of the R. R. to ship from Halifax rather than from Annapolis or St. John. He suggested that if apples were put in the hands of freight brokers, they could make better terms. Having large quantities, they could bring special boats and know where the freight was for them. There was too much risk in depending upon a multiplicity of shippers, who might dispose of their stock to parties interested in opposing lines.

BENJ. MILLER said the best carrying trade in the world was apples at 4/- per barrel. He believed we would yet have freight at 3/- per barrel,—the question being how to bring it about.

MR. MILLER thought that if we would employ extra boats the regular lines would reduce their rates. To this end, thought Annapalis must, to a certain extent, be the shipping port.

CAPT. PICKLES said there were so many conflicting interests, it was not always an easy matter to get extra boats, particularly at less than ordinary rates. Small fruit boats were always held at a higher rate of freight, and small boats could not afford to cut rates, and when they had to carry from 500 to 700 barrels at a reduced rate, perhaps to fill up, it meant loss. Our greatest difficulty had been to get sufficient freight guaranteed. There would be no difficulty if 1000 or 1500 barrels were deposited at one point. Large steamers would not come to Annapolis, preferring to carry for 0/6 less from Halifax, and the regular lines would carry for less money.

F. C. WHITMAN said 40,000 barrels could be stored at Annapolis. Shippers should place their apples in the freight houses there, as the only way to control freights.

C. H. PITMAN said the most discouraging feature of the apple business was the competition from the States and Montreal, where they paid less freight. We could produce apples, perhaps, cheaper than any other country, and we must endeavour to make up in superiority what we lost in extra freight.

The PRESIDENT said this discussion was just what was required. In the opinion of these gentlemen, who had had large experience in shipping and with steamers, it would appear that in order to secure better rates of freight, it would be necessary for small shippers to combine their lots. Again, the idea of other freight being mixed with apples was absurd and should not be permitted. He had himself suffered through bags of char having been put among the barrels, and the cargo in another steamer had been damaged through similar treatment.

MR. MILLER.—The idea of putting our apples into the hands of some one person is a good one. There could be no doubt that one man with a large quantity could make much better terms than could fifty men with the same quantity divided amongst them.

T. S. WHITMAN said the time was coming when the apple trade would be done by fruit steamers or such boats as now sail from New York, having compartments expressly fitted for carrying fruit. The best cargo of apples we ever landed in London was by the *Balcarres*. The thermometer stood at 0 when she came to the pier. We succeeded in getting the temperature up to 25 in the hold and loaded her. We had better pay –/6 more and have apples turn out as did this cargo.

The PRESIDENT said if we could guarantee 3000 barrels per fortnight there would be no difficulty in getting suitable boats to come for them to Annapolis.

BENJ. MILLER.—Competition would take freight to Halifax.

T. S. WHITMAN said he was not advocating for Annapolis alone.

CAPT. PICKLES said the great difficulty was, people would not combine to get these advantages, and they could not be got any other way. He could land 20,000 barrels in London 20 cents per barrel less than twenty-five men could the same number.

F. C. WHITMAN said there was a great advantage in having small steamers that could go to London Bridge and save the lighterage from the docks eight miles below. Experience had taught it was useless to expect the growers to combine even to load one ship. For this purpose he had sent out two hundred letters, three hundred post cards, and as many circulars, and scarcely received a single reply. Growing was one business and shipping another; shippers might combine, but growers would not.

MR. PATTERSON believed in educating men for certain lines of business. Growing and shipping could not be combined to any great extent.

The PRESIDENT.—Growers shipping their own fruit were much more likely to pack it honestly; but the small lots were, on the other hand, a disadvantage.

CAPT. PICKLES said buyers should pick and pack their own fruit.

T. S. WHITMAN said, the man who made a business of fruit growing should have as much as he can do. He should grow to sell, and sell for cash, and, in the long run, would get more money. The buyer, the broker, and the ship-owner were different men, and every man should attend to his own business.

Meeting adjourned till 7 p. m.

EVENING MEETING.

The SECRETARY presented the following Special Prize List from the Crystal Palace Company, London:

A Show of Nova Scotian and Canadian Apples will be held on Nov. 6th, 1885, and following days.

The Crystal Palace Company will give 11 Guineas, Messrs. Nothard & Lowe 2 Silver Cups, and Messrs. Scovell, Cotton's Wharf, 2 Guineas, to be awarded as follows:

CLASS A.—Best collection of Nova Scotian or Canadian Apples, not less than 70 or more than 90 sorts, 6 fruits of each sort. 1st Prize, 5 Guinea Cup and 3 Guineas; 2nd Prize, 3 Guineas; 3rd Prize, 2 Guineas; 4th Prize, 1 Guinea.

CLASS B.—Best collection of 24 dishes of Nova Scotian or Canadian Apples, 6 fruits of each sort. 1st Prize, 3 Guinea Cup and 1 Guinea, 2nd Prize, 2 Guineas; 3rd Prize, 1 Guinea.

CLASS C.—Messrs. Adamson & Ronaldson, with the desire to encourage the best method of packing Apples to ensure their sound delivery, will offer for competition a Prize of the value of Five Guineas for the two best packed barrels of one sort of Nova Scotian Gravensteins, King Tomkins, Blenheims, or Ribston Pippins. Messrs. Nothard & Lowe will give a second Prize in this Class of Two Guineas.

N. B.—Entries to be sent in not later than October 21st, to Messrs. Nothard & Lowe, or direct to Mr. Head, at the Crystal Palace.

The Exhibits to remain during the following week.

W. G. HEAD,
Crystal Palace.

Aug. 26, 1885.

After some remarks as to the evident advantage such shows in London must prove to our fruit industry, as well as to the generosity of the gentlemen offering the above special prizes, it was unanimously *Resolved*, That the Secretary be requested to take charge of and forward all collections for this show, made by the members of the Association, and pay the expenses of forwarding from the funds of the Association.

An interesting letter to Col. Starratt, from friends visiting the Antwerp Exhibition, to whom he had given a few specimens of Nova Scotian apples just previous to their departure from Halifax, was read before the meeting, stating the fruit had been placed in a conspicuous position and elicited a great many enquiries at the Canadian office, and flattering enconiums from hosts of people.

Resolved, That the Association ask the permission of the proper authorities to be allowed to nominate one or more of the judges on fruits at the forthcoming Provincial Exhibition at Kentville.

Mr. Patterson asked what he should do with two rows of Baldwin trees, twenty years old and highly cultivated, that would not bear fruit.

Mr. Blanchard had had some experience with such trees, and found cutting back or severe pruning had the desired effect.

President Hart said an English gardener recommended root pruning and fertilizing near the trunk.

Questions concerning Collar rot, canker in the branches, Moore's Artic Plum, Sharp's Plum orchards, were discussed until a late hour, when the meeting adjourned.

ANNUAL MEETING OF ASSOCIATION,

Held at Kentville on January 26th and 27th, 1886.

(Phonographic Report by W. W. McLellan.)

Kentville, *Tuesday, 26th Jan , 1886.*

AFTERNOON SESSION.

The meeting was called to order by the President, Rev. J. R. Hart, who stated that owing to the absence of Prof. Fletcher, who had been accidently detained in Halifax, it would be necessary to make some change in our arrangement. The programme was in the hands of the meeting and entirely at their disposal. He presumed, however, it would not be necessary to make any change, so far as reading the Minutes were concerned.

The Secretary then read the minutes of the last meeting held at Annapolis, which were passed unanimously.

The President then read the following address :—

Members of the Nova Scotia Fruit Growers' Association :

In meeting at our Annual Gathering it is suitable to give thanks to the Father of Mercies for His care during another year. Through His favor no breach has been made in our official ranks during the past twelve months, and, I believe, but one of our members, Mr. Benson Bowser, of Horton, has been called away, I trust to gather the fruit which grow on the banks of the River of Life.

The crop of fruit in Nova Scotia during the past season was probably scarcely an average one, but for the most part it was excellent in quality. One thing specially noticeable was the small quantity of injurious insects found.

I may be permitted to say, however, that the total quantity of fruit raised throughout the Province is rapidly increasing, and this especially for three reasons ; first, because of increased productiveness of old orchards, by reason of better cultivation ; second, because of recently planted trees coming into bearing, and third, because of

much greater interest taken in the culture of small fruits. Without doubt Yarmouth, Shelburne, Queen's and Lunenburg Counties which, until within a short time, were not thought of as fruit growing sections, will, in a few years, grow larger quantities of apples than will be needed for home use, unless some unforseen disaster should be met with, and the quantity of other fruits raised by the people of these counties is already quite respectable.

I do not, however, anticipate any over-production of really good fruit. Such, I fancy, will always be found to be worth all that it will cost to produce it. I am still of the opinion that it will be best for us more generally to dispose of our poorer grades of fruit in some way other than that they should be sold in their natural state, and market but our choice kinds and qualities as fresh fruit.

It is gratifying to me to be able to say that again it has been proved that most of our apples compare favourably with those raised in other places, and that in manner of sorting and packing we can take the foremost place. It is all the more painful to know that many of our apples sent to the market are of inferior quality, poorly packed, and are packages of anything but of first class kind.

I may be permitted to call your attention to the fact that there is room for the extention of the cultivation of plums, pears, and quinces. Large quantities of these fruits are brought to our local markets from abroad and sold at remunerative prices. Whatever may be our opinion as to the desirability of increasing the size and number of our apple orchards, here at least is opportunity for the development of our resources.

The cultivation of small fruits is receiving, I am pleased to know, greater attention. The number of persons who understand that berries may be raised more cheaply than beef, and that the former are more desirable food for human use, especially during the hot weather, than the latter, is rapidly increasing. The garden now-a-days more frequently contains a few bushes and vines than it formerly did, and these are not so often permitted to grow at their own sweet will. Not an inconsiderable portion of the time of a number of shrewdest cultivators has been spent during the past spring and summer in the berry patch, and while no large fortunes have been made at the business, the results have not been such as to discourage further attempts in this direction.

We have reason to feel pleased that our Governments, both Dominion and Local, are showing more interest in our fruit growing operations, and proving that they are desirous to assist us in making known this source of our prosperity. I am not without hope that the time will not be long before full recognition will be paid to the importance of this branch of our industry.

It is a matter of regret that no one, I believe, of our members found it practicable to attend the meeting of the American Pomological Society at Grand Rapids, Michigan, in September last. You will have observed that the next meeting is to be held in the City of Boston, near the home of the venerable President of the Society, the Hon. Marshall P. Wilder, in the Autumn of 1887. It will be well for you to make your arrangements such that, if possible, you can attend that meeting, and I remind you of the matter thus early that the fullest opportunity may be taken to perfect such arrangements.

Permit me to call your attention to some things which, in my judgment, we need to think of and do, in order that our work, as an association, may be more successful.

We need an increased membership. We find ourselves cramped in our operations on all sides, because of the smallness of our numbers. Allow me to urge upon each member of the Association the importance of acquainting himself with the benefits of connection with this institution, so that he may be able intelligently to urge upon others the desirability of such connection. If each member will not rest satisfied this year without adding at least one more to our number, a large impetus will be given to our work.

We need some means by which we can readily reach the masses of our Farmers throughout the whole Province and imbue them with greater enthusiasm in the matter of fruit raising and kindred topics, for we ought to remember that while the majority of our members have been so situated that they could readily acquire information upon these points, there are many in our Province as favorably situated for raising fruits of some kind at least as are we, yet they do not know their advantages. It is, I am sure, not necessary for me to say to you that our Association is intended to benefit the whole Province of Nova Scotia, and not merely the people of two or three counties, and we must make efforts to reach each locality in our fair land.

We need to pay more attention to the production of new varieties of fruit. As new difficulties are met with, making it necessary to give up the cultivation of old and once desirable kinds, we ought to have new ones to take their places. I am convinced that we can raise fruits suited to our needs finer than any which we have yet received from abroad.

It is desirable that we should learn some better way of preserving our softer and more luscious fruits, that they may reach market in first rate order. Of our early apples and pears which we deservedly prize most highly, how few we can place in the English market in a state fit to sell.

Among strawberries, raspberries and blackberries we know it to be true, as a rule, that the most desirable kinds to eat are the least desirable to ship, and *vice versa*.

We need to cultivate a more intimate acquaintance with the world of insects about us in order that we way better discern our friends and foes, and know how and when to welcome those and to combat these. We need to study their life histories, their likes and dislikes, and thus be prepared to deal intelligently with them whenever we may meet them.

We need, as we must always do, an abiding trust in the kindness of the All Beneficient One, so that even if what to our imperfect sight seem like reverses, do come, we may be able to rely upon the goodness of Him who has promised that "while the earth remaineth, seed time and harvest, and cold and heat, and summer and winter, and day and night shall not cease." (Applause.)

R. W. STARR.—I think there are many points in the President's address well worth the consideration and discussion by the Association, and I am sure we all have had much pleasure in listening to it, —I move that the thanks of the Association be tendered to the President for his paper, and that we incorporate it in our Annual Report. Seconded by MR. SHAW and passed.

MR. BLANCHARD, Senior Vice-President, here tendered to the President the sincere thanks of the Association.

The PRESIDENT in reply said—I am exceedingly obliged for your action in this matter. I realize how far short I have come in performing the duties of my office on account of insufficient knowledge—the fact is, I have very much more to learn than I at first

anticipated. You will notice that the suggestions embodied in the address were not put in for the purpose of inviting debate, but rather to be thought of during the coming year.

The Financial Statement and Auditors' Report (see page 7) in connection therewith, were then read by the SECRETARY, and on motion of MR. BLANCHARD, seconded by MR. WHITMAN, adopted.

MR. BLANCHARD.—I may say that the Secretary was very inadequately remunerated for his services in times past, and the Association, at the last Annual Meeting, passed an order granting him an additional allowance of $25 for the then preceding year, and making his salary $100. The $25 in addition to last year's salary were taken from the funds of this year, thus leaving a balance of $11 less than last year. I think, therefore, that the finances are in a reasonably satisfactory condition; but if we had the membership that the Society deserves, the executive would be enabled, from the increased funds, to carrry out many desirable matters which the lack of funds has hitherto prevented them from doing.

The election of officers was then proceeded with. *(See pages 3 and 4.)*

The following report was then read by the SECRETARY, and on motion, adopted :—

SECRETARY'S REPORT FOR 1885.

Mr. President and Members of the Fruit Growers' Association :

I herewith beg leave to submit my Annual Report. In doing so I am pleased to be able to report a slight increase in the membership of the Association, although our list is still by far too small, and insignificant indeed we appear beside sister institutions of Canada and the United States, who number their members by the thousands. This comparison leads me to the conclusion that our fruit growers cannot be keenly alive to their own interests, or we too would show at least a thousand members.

A number of new members were added to our list last year through the instrumentality of Mr. Elder, as agent for the Association. The Executive Board have now under consideration different schemes with a view to increasing our numbers and the extension of the work of the Association.

SPRING MEETING.

A very successful meeting was held at Kingston on the 21st and 22nd of April last, and much interest was manifested by the good people of that section. The discussions throughout three sessions were maintained with a marked degree of enthusiasm, and much information was elicited.

Full notes will appear in the proceedings, but it is to be regretted that the Association is not in a position to employ a Stenographer to report all the discussions, thereby preserving much valuable information.

Just previous to this meeting the attention of your Secretary was called to a certain bill being introduced into the House of Commons which provided that all apple barrels should be made of hard-wood or bass-wood. Prompt measures were taken to acquaint our representatives at Ottawa that such a measure would never do for Nova Scotia. If certain woods were to be specified, spruce must be included.

This action was unanimously endorsed by the Kingston meeting, and resolutions expressing their views were also forwarded to Ottawa; and from the law, as it now stands on the Statute Book, it would appear our suggestions were in a measure acted upon.

THE SUMMER MEETING

Was held at Annapolis Royal on the 10th of July, but was not largely attended. Matters of considerable interest were discussed, including railroad and ocean freights on apples, and the Crystal Palace Fruit Show. These are the only meetings since the last Annual Meeting held in this room.

As an Association we have taken no part in any of the Exhibitions during the season, although the President and many of our members took an active part in the Provincial Exhibition at Kentville.

Your Secretary, at the request of the Provincial Government, has undertaken to make a collection of our fruit for the Colonial and Indian Exhibition in London during next summer. Notwithstanding this collection was not begun until the close of the Provincial Exhibition, with the assistance of R. W. Starr, T. E. Smith and others, upwards of 200 varieties of apples were secured. An attempt was made to preserve the early

varieties in fluids prescribed for the purpose, but unfortunately this has not proved successful. Consequently, our specimens of softer kinds have been lost. Various experiments have been resorted to under the direction of the Department of Agriculture at Ottawa, with a view to preserve the color and flavor of the fruit throughout the season, but so far only with partial success. In sixteen half barrels we have packed in sets of three about 100 of our longest keeping varieties; twelve of these half barrels are duplicates and intended to replace those on exhibition, from time to time as required: each apple is wrapped in two thicknesses of tissue paper which had previously been soaked in a solution of Salicylic Acid, these were then packed in Calcined Plaster. It is hoped by substituting fresh specimens we shall be able to keep up a continued show of our apples for several weeks at least after the opening of the Exhibition. The advisability of continuing this exhibit throughout the season by transporting specimens of fruit in the manner above described, should it prove satisfactory, is a subject on which you will be invited to express your views during this meeting. In addition to the above collection Nova Scotia will also exhibit about 325 glass jars of Domestic Canned Fruits, embracing nearly all our fruits and berries.

Your Secretary, also at the request of the Provincial Government, prepared a collection ot 118 varieties of Apples for show at the Apple Congress at Edinburgh, held under the auspices of the Royal Caledonian Horticultural Society, on the 25th and 26th of Nov. I am not aware that an official report has yet come to hand, (see report meeting in February) but from a special correspondent to the *Gardeners' Chronicle*, who reported only on "the most important exhibits of the show," we learn the N. S. collection was considered "*remarkably good*," and reference was made to "the fine samples of Blenheims, Gloria Mundi, Gravenstein, Golden Russet, Northern spy, etc."

It is a matter of sincere regret that the fruit for the C. P. Co's. Show did not arrive in London until several days after the opening, and it was only through the urgent intervention of Mr. Lowe that it was then admitted, but instead of the conspicuous place on the main floor, originally assigned this exhibit, it was relegated to one of the galleries, a much less desirable position. From the London *Post* of November 24th, we clip the following:—

"Last week two very important displays of colonial produce were made in London. The first was a highly interesting show of apples grown in Nova

Scotia, which was held at the Crystal Palace. To the growing importation of fruit from this colony we have in these columns frequently called attention, but we were hardly prepared for the marvellous exhibition which has just been held. This was projected by Messrs. Northard and Lowe, and consisted of three classes. In Class 1 the competition consisted of collections of Nova Scotian or Canadian apples of from 70 to 90 varieties. The first three prizes went to Nova Scotia, the growers being Messrs. T. E. Smith, E. M'Latchy, and R. W. Starr—all the fruit shown by these being very fine—the Gravensteins, King of Tompkins, Blenheim Orange, Ribston Pippin, Fallawater, King of Pippins, and the various Russets being of great size and high colour. The fourth prize went to Canada (to Mr. Nicoll), but the apples were not so good as the Nova Scotians, and were poor when placed beside them. Class 2 was for 24 dishes, and here again the Nova Scotian apples were incomparably the superior ones, taking all the prizes. The entries here were large, and the show interesting. Class 3 was for the best packing, and here again the prizes were won by Nova Scotian growers. The show was noteworthy as showing what a small place like this has been able to do in a very short time in this matter. The authorities of the province saw some 10 years ago that there was an opening for the growth of really first-class apples, well-packed, and sent to England and America. The third class in this show ought to have been seen by English growers, for it was a capital example of how to send to market. * * * There was a great lesson to the English farmer and pomologist in this show."

(The other exhibit referred to was made by the C. P. R. R. Co.)

The above extract refers to the prize-winners. In Class A., T. E. Smith won 1st prize—Messrs. Nothard & Lowe's, 5 Guinea Cup and 3 guineas; Ed. McLatchy, 2nd prize, of 3 guineas, and R. W. Starr, 3rd prize, of 2 guineas; the fourth prize going to Mr. Nicoll. This included all the entries for above class.

Class B.—24 sorts. There were 7 or 8 entries. The first prize—Nothard & Lowe's 3 Guinea Cup and 1 guinea, was awarded to C. R. H. Starr; the second prize, 2 guineas, to Edward McLatchy, and the third of 1 guinea, to Robert Marshall.

In Class C., there was a much closer competition, being 8 or 9 entries—for the two prizes for the best method of packing to insure sound delivery. The first prize, a handsome Urn, presented by Messrs. Adamson & Ronaldson, the London Agent for the Furness Line Steamers, of the value of 5 guineas, was awarded Messrs. E. & O. Chase for the best two barrels. The second prize, 2 guineas, given by Messrs Nothard & Lowe, was awarded to A. C. Starr. This was no doubt the most important exhibit of the whole, but as Mr. Lowe's letter treats fully of this class, I will

not detain you with further remarks, only to say we are under obligations to Mr. Innes, Manager W. & A. R., and Messrs. T. A. S. DeWolf & Son, Agents for the Anchor Line, for the free carriage to London of the whole of this exhibit, 32 barrels in all. Messrs. Pickford & Black, Agents for the Furness Line, also kindly offered to take all exhibits free of charge, and Messrs. Cunard for the Allan Line, agreed to take a limited quantity free. We are also deeply indebted to Mr. Lowe, who voluntarily assumed all expenses on the other side, besides giving a large amount of time and personal supervision to the staging and arranging of the exhibits, in addition to the valuable prizes presented by his firm. Messrs. Adamson & Ronaldson have also placed us under obligations, and we are also indebted to the C. P. Co., and Messrs. Scovill of Cotton's Wharf, for generous money prizes.

It is a matter for regret that our efforts to obtain suitable protection from frost at the Halifax end of the Railway have not yet proved successful. The petitions circulated and numerously signed last winter were forwarded to Ottawa and presented with a joint letter from all the representatives of the counties interested, but in view of the immense expenditure in connection with the N. W. Rebellion, the government declined to consider the matter favorably at that time, but Mr. President this is a subject of too great magnitude and one in which every fruit-grower in Nova Scotia has too much interest, to allow it to be set quietly aside; persistent efforts must be continued until this indispensable requisite is supplied in some way.

In conclusion, Mr. President, permit me to remind the members of the Association of the necessity for increased efforts to add to our numbers. Much can be done to accomplish this, if each and every one will use his influence in this direction. There is a bright future for the fruit growers of Nova Scotia; but to make the most of our advantages, we must unite in the discussion of those subjects which are of vital importance to every grower. In no other way can real practical information be so easily and permanently obtained as by such meetings as this; and many other direct advantages to growers and shippers might be obtained by united action of the members were they sufficiently numerous.

Mr. Whitman moved, seconded by Mr. Smith, the adoption of the report, and that the Secretary be instructed to tender the thanks

of the Association to the gentlemen named, who so kindly and free of charge, assisted in the forwarding of our exhibits to London.—Passed.

On motion of MR. SMITH, seconded by MR. HARRIS, it was ordered that section 3, page 167 of the Acts of Canada, 1884-85, be published in the annual report for the information of those interested. The following is the section :—

"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."

PROF. HIND of Windsor then read the following paper:

ON THE RATIONALE OF MANURING AND PRUNING AN APPLE ORCHARD.

BY HENRY YOULE HIND, M.A.

The important success which has attended the recent competitive Exhibition of Nova Scotian Apples in England is of considerable moment to the Province. It exemplifies the suitability of the climate and of some of our soils for the production of fruit of the highest excellence, and it suggests care in all inquiries as to the method by which this pre-eminence, now so publicly recognized, can be maintained and improved upon. A very wide and attractive field for observation and study is thus opened to view, which promises pecuniary advantages to the individual and growing prosperity to a large part of the Province.

THE APPLE ORCHARD.

When discussing the method of cultivation, with the kind and quantity of manure we should apply to an apple orchard, or to a field of grain, such as wheat, or of roots, such as sugar beets or potatoes, it is essential that the object sought should be kept prominently in view.

The aim of the apple orchardist is to produce an abundant crop of large, highly-flavoured, and well-formed apples, with corresponding tree growth for future crops. The aim of the farmer is to secure an

ample return of well-filled grain, rich in gluten, or of beet roots, rich in sugar, or of potatoes, rich in starch.

But the composition of an apple containing particular acids, flavouring principles and other compounds requiring much carbon, differs greatly from the composition of grains containing gluten dependant upon nitrogen, with much silica or flint in the supporting straw. The mode of growth is also different.

An apple orchard in full bearing, properly tilled and cropped, yields annually from one acre of land a much larger quantity of carbon compounds than an acre of wheat, but the amount of gluten or other bodies produced containing nitrogen, is probably less.

The farmer manures his wheat field with bone dust or phosphates and secures a large return of wheat rich in gluten. The explanation of the action of bone dust or phosphates is generally assumed to lie in the observed fact that phosphates promote the assimilation of nitrogen, which is the one important element in the composition of gluten.

But how is it with regard to carbon, of which such large quanti ties are annually carried away from a cropped orchard, or remain fixed in the form of new wood?

The object of this paper is to direct attention to the probable action of another mineral in promoting the assimilation of carbon, and then to advert, for the purpose of discussion, to the application of those manures, and the practical recognition of those principles which are fitted to assist in and promote the great amount of work we demand from a well-cropped orchard in full bearing and good condition for future production.

SEPARATE INFLUENCE OF PHOSPHATES AND POTASH.

It has been observed as the result of recent experiments in Europe that grain-growing crops well manured with ammonia in the proper form and phosphates, yielded a large percentage of gluten, but if to the ammoniacal manure a certain mineral was added, the quantity of carbon in the form of starch was also largely increased,—in other words—a plump and heavy grain, rich in gluten as well as starch, was produced.

The relation which phosphates bear to the assimilation of nitrogen and the formation of gluten in grains, appears to be rivalled by the

action of potash in promoting the assimilation of carbon, derived from the carbonic acid of the atmosphere chiefly, coupled with the joint action of iron in assisting both processes in a special manner hereafter noticed.

SPECIAL INFLUENCE OF CARBONATE OF POTASH AND CHLORIDE OF POTASSIUM.

But it is not always enough to supply a deteriorating mixed orchard with farm-yard manure only, for different varieties of trees in consequence of varying root growth, cannot equally utilize or even reach the plant food proferred. This point will be further dealt with shortly. Again, farm yard manure is not always available, and the object we have in view may be attained by a cheaper and more expeditious process.

Generally speaking, by distributing potash in the form in which it occurs in wood ashes, with or after stable manure, a considerable gain in fruit may be expected, other conditions being favourable. But it is proper to note here, incidentally, that potash in another form, namely as potassium chloride, the old murate of potash, is said to act in a marked degree as a vegetable stimulant in many cases. With us its action is deserving of particular study in the field because we possess peculiar facilities for obtaining a supply in a valuable form.

Chlorides, such a common salt, are known to be often beneficial, but the rationale of their action in the plant does not appear to be clearly understood. It may be that the influence known to be exerted by alkalies on dead animal substances, and sometimes styled "the influence of presence," is one mode by which potassium chloride exerts its alleged power. It may by its presence, like iron in the leaf, determine the formation of products of nutrition or structure in the sap, the material for which would be otherwise appropriated, or remain inert, or be exuded.

The action of potassium chloride on the apple tree is worthy of trial, especially as it has been a notable component of the lasting soil of our marshes, and is present in recent marsh mud. Sea water contains about one pound to a ton of 2,000 pounds, and the newer the marsh mud the more potassium chloride it holds. Potassium chloride is manufactured to an enormous extent in Germany from a

certain mineral. In France from sea-water. Germany exported in ten months of 1884, 629,223 double centners or hundred-weights; in the corresponding ten months of last year (1885), 565,653 double hundred-weights or more than 1,100,000 pounds. Potassium chloride is said to be largely used as a special manure in both France and Germany, but much of it probably in the cheaper form of the refuse of the manufactories.

THE GREEN COLOURING MATTER IN THE LEAF—CHLOROPHYLL.

The active agent in the digestion of plant food, and the manufacture of woody fibre, starch, sugar, gum, gluten, acids, flavouring principles, &c., in the green colouring matter in the leaf—the chlorophyll, as it is named, is a body containing nitrogen. If this important agent be deficient, or not kept up to the working mark, the vegetable manufactory is impaired, and disease sets in, or non-production of some of the products named.

SPECIAL INFLUENCE OF IRON.

Chlorophyll cannot be produced without the presence of iron, although it is by no means certain that iron actually enters into its composition. Some physiologists state positively that it does not. This doubt suggests that iron, which by all is acknowledged to be essential, acts largely by its presence, and in this particular it may be paralleled by the chloride of potassium. It seems, however, to be established that if the soil does not contain a sufficient quantity of iron in a proper state for absorption to keep the chlorophyll of the leaf in working order, the potash can not be utilized and the manufacture of carbon compounds by the chlorophyll is diminished, although the normal quantity of carbonic acid is present in the atmosphere from which the chlorophyll derives its chief supply. As to the practical use of iron, we all know that a good dose of black-smith's scales arrests the browning of the leaves and the cracking of the fruit in certain varieties of pear, and is often used for that purpose with excellent results. I should like to see it tried in suitable form and at the proper season, on those varieties of apple trees of which the fruit is liable to become much spotted in particular seasons. Both the browning of the Pear leaf and the spotting of the Apple, are due to fungoid growth. One of the prettiest illustrations of the importance of iron to the leaf, is to select

some leaves of a pale colour on any plant growing in the shade and to wash them with a dilute solution of a salt of iron. The green colouring matter will soon be restored and the leaves will assume a healthy appearance.

CONDITIONS OF CONTINUED GROWTH.

The necessary conditions so far, of continued growth, other things being equal, appear to be as follows :—

First.—When supplies of ammonia, with phosphates and iron, are present in the soil, then a rich and abundant chlorophyll in the leaf is produced, and nitrogen is assimilated. But as the work of the chlorophyll is continuous in sunlight throughout the season, and leaves are continually growing during its greater part, the supply of nitrogen, phosphates and iron must also be continuous to keep up the supply of chlorophyll.

Second.—When a continuous supply of potash in suitable form is furnished to chlorophyll, the manufacture of the sugars, the acids, the flavouring principles, &c., goes on in seasonal succession without break, the carbon required being derived from the carbonic acid of the air.

THE FUNCTIONS OF THE ROOTLETS AND LEAVES.

But now steps in another and wholly different office or function of the rootlets and the leaves jointly. It is known that all minerals and other plant food taken into trees from the soil are in a state of very dilute solution in water. The amount of food from this source accessible to the leaves, is dependant in a great measure on the quantity of water entering by the rootlets or roothairs and reaching the surfaces of the leaves.

But the volume of water thus entering plants is sustained or kept up by two very different processes, and is closely related to the amount of transpiration from the leaf surfaces. A small proportion probably passes off otherwise with the descending sap through the inner bark, another small portion is given off by the leaf hairs and points of the leaves, as may be easily seen in the vine, and in grasses; a third portion may pass off with the acid sap through the root hairs, having completed the circulation, and frequently carrying with it certain products which are produced in the plant, such as tannin, the acid of the sap, &c., &c. This is the summer process, when leaves

are abundant, but how is it when there are no leaves? We know that in the maple, the birch, &c., early in the year a most vigorous flow of sap takes place when the buds even are undeveloped, and when snow is on the ground, and the soil is ice-bound. This vigorous upward flow of sap is said to be due to "root-pressure," a difficult subject to treat briefly and popularly. Neither do I intend to allude to the force (Osmosis), further than to ask the attention of those who may have given thought to the matter, that this force (Osmosis) necessarily involves the active exercise of the opposite and co-existing force Ex-osmosis, which should carry an appreciable quantity of acid sap from the rootlets to the soil. I do not see how this excretary power of trees can be got over. It seems particularly important in relation to large grafted fruit trees, for ex-osmosis leads, one would suppose, to the accumulation of excreted acid sap in the soil, which may exercise a considerable influence on those varieties of apple trees which have a bearing year and non-producing year. It would be worth while trying a good dose of lime, or, by way of experiment, a dose of freshly prepared lime-water, about the roots of one of these varieties in the spring of its unproductive year. The law of root excretion, as far as known, appears to be that the different families of plants excrete the substance which characterises them. Thus the poppy excretes by its rootlets a substance allied to opium; the oak, a substance allied to tannin; the milk-worts, a gummy substance, &c., then, why not the apple-tree malic acid, which is so abundantly produced as the season progresses. Excreted malic acid may temporalily render ineffective much of the potash in the soil otherwise accessible to the rootlets. After a time the malate may become decomposed and the potash again available. Liming or the suggested use of lime-water is to decompose these supposed malates, or other acid compounds, and the method of application is to do the work quickly and effectively among the deep seated roots of certain varieties. Very little is known respecting the root-producing powers of plants, or their extent in the soil.

It is proper to notice here that recent very remarkable discoveries in Europe respecting the roots and rootlets or root hairs of trees have received confirmation. It is now accepted by high authorities that the rootlets of a large number of the most common trees in Europe such as the oaks, beeches, chesnuts, hazels, birches, alders, &c., are covered with a fungus, which makes its first appearance on the roots

of the seedling, and continues to grow with its growth. I mention the fact in order to show how much we are still in the dark with regard to vegetable life. It is supposed that this fungoid growth is very general in its distribution, but the discovery is so recent that its influence may be said to be as yet unknown.

It may here also be mentioned that we must distinguish between the flow of sap proper, with its circulation through the entire system of the tree, and the transpiration current direct from the rootlets to the leaves and thence into the atmosphere. These different currents flow in different sets of vessels, and a word may be introduced with particular reference to the transpiration current.

THE TRANSPIRATION CURRENT.

The volume of transpired water from the leaves varies with the moisture of the atmosphere, the degree of cloudiness and the wind. Sunlight has a very powerful influence. Cutting off a small twig when the tree is in full leaf diminishes for a varying length of time the transpiration power of the leaves on the entire limb from which the twig is cut. The effect seems to be that of a shock. If numerous twigs are taken from the different branches of a large tree in full leaf, the transpiration power of the entire tree is sensibly impaired. How far the shock to the tree arrests or influences the course of the sap is not known, but inferentially the act of maiming must produce an unfavourable effect on the circulation. It is certain, however, that the energy of the tree is temporally impaired, and under these disadvantages its impaired energies are directed to the process of covering the wounds with fresh bark, and diverted from their proper constructive work in forming fruit.

One would infer from these observations that pruning in the summer is not to be recommended. We may rub off buds, or stop a shoot and minimize the shock and waste of energy which maiming creates.

In order that the sap current may be most effective it is desirable to induce as large a leaf surface as possible, but well exposed to the direct rays of the sun. Therefore it is an object to remove before leafing all branches or twigs which, if allowed to remain, would be shaded and thereby made incapable of properly performing their functions as organs of digestion and absorption of food from the air

(carbonic acid) in direct sunlight, or transpiring under the same powerful agency water from the soil.

THE INFLUENCE OF THE STOCK ON THE SCION.

We are now in a position to consider the different habits of apple trees in respect of root growth, and approach a subject of the highest interest. We know that the root filaments or thread-like extremities are the agents by and through which both the transpiration and the sap currents are determined. Therefore these members all are important. Certain varieties of grafted apple trees have wide-spreading, shallow-seated roots of a fibrous character. Other varieties send down a few prongy roots many feet into the soil, and are less abundantly supplied with fibrous filaments. High cultivation determines the approach of the roots of some varieties towards the surface, but appears to have less effect on those of others.

The appearance of a tree above ground very frequently corresponds in general outline to the distribution of the roots below the surface.

The area, therefore, over which the different varieties of grafted trees find their food supply in air and soil varies greatly. It follows as a consequence of this variation that equally diverse conditions must exist in relation to available moisture and temperature, for the temperature of the soil with the advancing summer is continually changing with the depth until that point is reached where the mean annual temperature of the latitude is represented. This point varies in different soils in our climate, but the approaches to it, which alone concern us, can be made tolerably uniform by draining.

THE SOIL AFFECTING THE STOCK.

It has been shown, more than fifty years ago, that the kind of soil in which a stock has grown, affects to a certain degree the growth of some varieties of scions. Lindley, in his "Theory of Horticulture," gives a table of the kinds of stocks most suitable for apple, pear, plum and cherry on loamy, calcerous and light soils. The influence of the soil on the stock in relation to certain scions is especially deserving of study in districts which are so distinguished for the production of fine fruit as those distributed throughout the country between Windsor and Annapolis. It may turn out that home grown stocks for grafting are more desirable on some of our soils than imported grafted trees, and there is always a merit in home productions if they hold their

own in competition with foreign, and a special merit if they excel them. Stocks raised on a red sandstone soil have a different influence over the scion to those produced from similar seed on a gravelly soil, or a retentive clay, or a limestone soil. The influence is probably due to variations in the structure of the root, arising largely from the mechanical composition of the soil. The differences observed in root growth of grafted trees are in a measure under our control, and the best means by which this control can be further secured and improved in the direction of attaining superior fruit, are to be found in patient enquiry into the reciprocal relations of the stock and the scion. Who, for instance, is prepared to declare that the stocks grown from the seed of the Pomme Gris on a retentive clay soil, are as suitable for grafting the Northern Spy as stocks raised from seeds of the Gravenstein, grown in a gravelly soil, or a warm limestone soil, or a red sandstone soil? But our stocks are frequently raised from the refuse of the cider press, and our knowledge of root growth is still very meagre.

THE SCION.

It has been alleged in some American periodicals that the scion, practically, sends out roots of its own, converting the stock into a mere support, and disposing of it as if it were a part of its own substance, by overcoming all its natural tendencies. This appears to an extreme view. We are here reminded of an important paper read before the association, at its last annual meeting, by Mr. Morris, of the Fonthill nurseries, Ontario. I regret, for my own sake, that the writer of this suggestive paper did not enter more into details. In the discussion which ensued on Mr. Morris' paper, Mr. R. W. Starr brought before the association some important facts which I am glad to have the opportunity of supplementing. Mr. Starr stated as the result of actual observation that he had arrived at the conclusion that 'the time of the ripening of the stock has an influence on the wood and fruit of the scion." This is a most important deduction. Mr. Starr instanced two Baldwin trees as bearing out his conclusions derived from observations on the ripening of the young growth from the roots of the different stocks on which these Baldwins were grafted.

IN MY OWN ORCHARD

I have two Bishop Pippins seventeen years old, planted in the same soil and in precisely similar conditions as regards drainage, shelter, etc. The stocks are widely different, the tops of the trees are equally

diverse. The fruit of both is good, but that of the smaller tree has been exceptionally good for some years. The smaller tree has a large collar above the junction of stock and graft, and the circumference of the graft is 7 inches more than that of the stock. The spread of the branches of the smaller tree is also much less than that of its neighbour, and some of the branches exhibit a different growth. I have thought that the tree is slowly failing, and although the stock has enabled the scion to produce splendid fruit, yet it looks as if its powers were on the wane. Very superior fruit has apparently been produced by this stock and scion at the cost of the durability of the tree. The slow-growing stock has checked the descending sap current, and thrown it into fruit development, giving rise to the well-known effect produced by ringing grape vines. Now,

THE PRINCIPLES INVOLVED

in these observations have been known and discussed for more than half a century in relation to the Crab, the Doucin, the Paradise and seedling stocks. But the effect of climate and soil upon the varieties of fruit produced on these different stocks when grafted, in particular relation to flavor and disease, such as spotting, scabbing, etc., can only be ascertained by close observation and experiment in a new locality. Hence all such effects deserve to be recorded. Perhaps further illustrations of the influence of the stock on the scion may be furnished by gentlemen present. It is desirable to collect home illustrations, so that these may be collated and inferences drawn, having due regard to the great differences which the mechanical constitution of different soils and climate produce on stocks. The subject is so comprehensive and important to fruit growers that no fact bearing on the question should be omitted or disregarded. The leading efforts

OF MODERN APPLE TREE PRODUCERS

have been directed towards swiftly multiplying promising scions, but very little attention appears to have been devoted towards those conditions which affect the stock in its relation to the scion. It is a subject which, with us, can hardly be taken up in its entirety by practical nursery men. It requires the co-operative work of an association with orchard experimental grounds devoted to that and similar work. But we can collect and examine and discuss the information supplied by local experience on this attractive subject.

The special reason why with us local experience is advantageous, arises from the fact that excellent results have been attained on the red sandstone soils of some parts of the Annapolis valley, on the red marly clays and gypsum soils and gravelly drifts about Windsor and elsewhere. So that if the soil affects the influence of the stock on the graft to a marked degree, we have the best opportunities for comparing the fruit obtained from imported stocks grown on different soils, with those of home production. By this means we shall be able to

CONNECT CAUSE WITH EFFECT,

and doubtless arrive at conclusions which may be profitably applied. Although Mr. Starr's deduction was no doubt a correct one in the cases cited, yet it should not be taken too literally or too generally by amateurs in selecting, without fruiting, seedling stocks for grafting. So high an authority as Darwin states in his "Animals and Plants under domestication": "These several differences in leafing, flowering and fruiting are not at all necessarily correlated; for as Andrew Knight has remarked, no one can judge from the early flowering of a new seedling, or from the early shedding or change of color of the leaves, whether it will mature its fruit early in the season." Loudon also remarks in relation to this matter: "An early blossom in the spring and an early change of color in the autumnal leaf would naturally be supposed to indicate a fruit of early maturity; but I have never been able to discover any criterion of this kind on which the smallest dependence may be placed. The leaves of some varieties will become yellow and fall off, leaving the fruit green and immature; and the leaves in other kinds will retain their verdure long after the fruit has perished."—[Loudon on Gardening.] It seems, however, that Mr. Starr's illustration is conclusive as to one effect of the stock on the scion. In one case the stock has exercised an influeuce towards improvement; in the other case, towards deterioration on the same variety of fruit, and this is a very important practical fact. I think that both the stock of the Baldwin and the stock of the Bishop Pippin should be preserved and multiplied. In Europe the value of seedlings for grafting purposes, whose roots run near the surface, has long been recognized, and it is perhaps, in this direction that we should give special attention, having in view the character of our climate and soils. Other things being equal, should we not graft a scion whose natural tendency is to throw out

prongy roots inclined to penetrate deep into the soil, on to selected stocks whose roots are disposed to run near the surface and are of a fibrous character. Should we not graft a late ripening variety of scion on a stock known to be an early fruiting variety, and having the habit of wide-spreading roots running near the surface. Thus specially selecting the stock and specially selecting the scion, both in relation to the soils on which they are to be permanently grown, and the natural habit of each. We must deal with the vegetable as we do with the animal.

It will be seen that this subject is of a very comprehensive character, and can only be faintly outlined in a brief paper. I have purposely brought the different points forward in such a manner that they may promote discussion and thereby elicit information. In concluding I venture dimly to foreshadow

THE SUCCESSFUL APPLE ORCHARD OF THE FUTURE.

Competition is now so keen, population with individual wealth is increasing so fast, and means of communication are so rapidly improving, that only skill and industry will win in the race. The finest fruit will command the market, and always find a market, so that the durability of particular trees will become of secondary consideration, and provision will be made by the orchardist himself for a continued succession. Trees will be planted at first much closer together in the row, for the benefit of mutual shelter from storms. The rows will be some 40 or 50 feet apart to afford room for cultivation. Stocks will be selected with particular regard to soil, root growth, and ascertained forcing or modifying influence on the scion, but always with due recognition of the principle that the stock is subservient to the scion for the purpose of excellency in fruit production. Grafting and budding will be studied and pursued as a science with special reference to large and high flavored fruit. The stock will receive as much attention as the scion. There will be established stock nurseries for grafting purposes, which will contain groups of stocks carefully classified with respect to fitness for different soils, local climates, habits of scion, character of fruit, nature of market contemplated, durability of tree, etc. The collar above the stock, will I think, become common, for by it we generally, but not always, secure very superior fruit. In the apple orchard of the future, properly conducted, the pedigree, so to speak, of each tree will be

known and preserved both with respect to the stock and the scion. We hybridize in relation to the scion, why not hybridize with regard to the stock? Pruning will be largely done with the finger and thumb, and only the best varieties of fruit preserved.

SPECIAL MANURES WILL BE APPLIED

at the proper time and for special purposes, such as size, flavour and keeping qualities of the fruit, the support of the leaf in its continued work, etc. From the nursery connected with each orchard a constant succession of young trees will be supplied to take the place of those showing imperfections or deterioration, and room will be given by thinning to desirable trees, or those of special excellence. The land between the rows will be carefnlly cultivated and cropped. When we reflect that the skill of our forefathers in grafting, budding, hybridizing, selection and propagation, has succeeded in producing from the puny product of the wild and acid crab, numerous varieties of splendid fruit which ripen in July, together with other equally fine varieties of different ffavour and qualities, which ripen week by week throughout the intervening months to the middle of October, and some of them keeping in perfection to June of the next year, we may feel sure that with our increasing knowledge of horticulture and the life of the plant, coupled with a constantly growing demand for excellency, we are far from the profitable limit of improvement in many directions.

I am aware that

IT IS EASY TO THEORIZE

in comparison with putting theory into practice and thoroughly testing it. But I also propose to put theory into practice, and therefore venture to introduce now an outline of some experiments it is my intention to carry on during the ensuing summer and for which I am now making preparation.

THE QUESTION OF TIME.

I propose during the coming summer to test practically the value of the reasoning In this paper in relation *to the time* of applying manures in our climate.

The plan adopted will be to select three varieties of apple trees on gravelly soil, with a gravelly substratum, and loamy soil with a

sandy substratum, thus securing drainage in both cases. One set of trees will be manured with wood ashes in the dry way and one in the humid way as hereafter described, the application being made *just after the setting of the fruit.* Another set similarly situated will be manured at the same period and in the same manner with potassium chloride. The wood ashes and the potassium chloride in the dry way will be scattered about each tree in measured quantities, and within the circle covered by the branches of each tree. The same quantity and over like area will be distributed in solution in water by boring with a bar of iron eight holes about one foot deep and pouring in the liquid, as practised occasionally in Germany and France. The application will be made *just after the setting of the fruit.* If other gentlemen would kindly consent to try similar experiments on red sandstone soils, or on heavy clay soils, the results when compared might lead to such valuable and profitable information as would further one of the leading objects of this association.

Mr. Blanchard.—I think the paper just read is the best that has been brought before the Association since I became a member. We can scarcely appreciate its importance at a glance and most of us do not feel prepared to discuss it at the present time. I now move that our sense of appreciation of the valuable paper be conveyed to Professor Hind, and that he be requested to allow it to be published in our Annual Report.

R. W. Starr.—I have listened with intense interest to the points mentioned in the paper, and believe they deserve our most careful consideration. I see foreshadowed here such opinions as will solve some of our most intricate problems. It is of the greatest importance that gentlemen who have made this subject a life study should publicly express their ideas upon it. I have much pleasure in seconding the motion.

President.—I thought while the paper was being read by the professor that it was one to be studied rather than to be discussed. We should adopt the suggestion to experiment. It has recently been stated by some one that the use of potash in liquid form applied to the roots tends to sweeten the fruit.

Motion put and carried.

Prof. Hind.—I will be most happy to comply with the wish of the Association.

The PRESIDENT here suggested that any member desirous of assisting the professor in experimenting, could communicate with him personally or otherwise.

MR. BLANCHARD.—We have heard a good deal about an experimental farm, and I believe the Government has taken the matter into consideration. It has been urged that such a farm should be established in Nova Scotia or in the Maritime Provinces, and the paper just read has deepened that idea in my mind. Should this Association direct its energies in that direction something might be accomplished. Such an undertaking as an experimental farm would be infinitely more valuable to us than theoretical essays and prove a very satisfactory investment.

MR. SMITH.—In my opinion we are yet in our infancy in fruit growing. We need not take a back seat in the production of pears. We hear hucksters in Boston and New York crying out "Nova Scotia apples," "Nova Scotia pears," which forbodes results that we have never yet thought of. The theory advanced about stocks may be very valuable for experimental purposes, but so far as I am concerned I find that the ordinary wild apple gives the best stock. I find too that stocks grown here give more fibrous roots than those imported. With reference to pruning I have noticed that severe pruning in some cases does not check the growth while in others the tree is completely killed. I have some ideas, but as I have not satisfactorily tested them I will not publish them.

MR. SHAW.—I know that the scion will influence the stock. The Bishop Pippin grafted will produce entirely different roots from those produced by the Gravenstein graft—the latter will have deeper roots than the former but not so numerous.

JUDGE WEATHERBE.—I agree with all that has been said with regard to how much we are indebted for the excellent paper of Prof. Hind. He has dealt with the subject in a purely scientific manner, and devotes his attention chiefly to the apple of the future; but what we wish information on is the apple of to-day. Nevertheless he has treated us to some very important information. I would like to obtain some information on two or three subjects referred to. As to pruning I do not profess to understand it at all, and all I know was obtained from others and reading the discussions of this Society. I find that very few people agree, and one might be

misled by some remarks of the professor. I understand that he objects to summer pruning, but I don't understand that to be the opinion of practical orchardists. No such prejudice exists with cultivators in the north of France, but I am informed by Mr. Andrew Johnson, from whom I have received great benefit and advice—a man of thorough knowledge—that the French apple at Covent Garden is a poor wilted specimen in comparison to that of Nova Scotia. I have been told that a great advantage is obtained in France from limb bruising. One would suppose, after listening to the learned professor, that limbing would be very injurious. It is true enough that heavy wood should not be cut off during the summer season, but the larger limbs can be broken in summer and cut off afterwards, say in the following winter. Of course, while the paper is very valuable to this Society, the professor does not wish us to adopt everything in it. He admits himself that there is a great diversity of opinion on these subjects. I mentioned the matter of pruning to Mr. Laird, a friend of mine, and he said that he had practised the limb-breaking process for a long time and with great success. I am considered slightly deranged when I go through my orchard breaking limbs.

I should like to hear an exhaustive discussion on the subject of the distance apart that trees should be planted. From what I have heard I don't think the majority present would agree with the professor on that subject. He says that trees should be forty or fifty feet apart and the reason is for cultivation. I may say that I have received great benefit by way of advice, but if I had followed the instructions which I received when I was planting my orchard I would be $7000 or $8000 out of pocket to-day. A man who has spent all his life in planting trees told me that the apple tree was the same as any other, where one would succeed the other would. Dig a hole, two and a half feet deep and seven or eight feet across, and turn the sods upside down on the bottom, and plant your tree, and that will feed your tree for fifteen years. I planted trees in the rough pasture land. I read in the *New York Herald* that we lost fifteen or twenty-five per cent of the bearing power of a tree by branching high up the trunk, and that as no sensible man pretends to cultivate his orchard it is not necessary to branch high.

MR. BLANCHARD.—Is your land burnt pasture?

JUDGE WEATHERBE.—No, it is a spruce tract, and I cut away only enough of the spruce to get the apple tree in and give room for the sun. I mulch with all kinds of grasses, spruce, and in fact hay.

PROF. HIND.—With reference to pruning it must be borne in mind that the French adopt the principle at the outset—that is they begin at the beginning—after the first year they prune the graft systematically and regularly; so there is no necessity for pruning afterwards. Although their vines grow for forty years they allow but few branches. They prune from the birth of the tree up to middle age. I know of trees in my native town dying from having the limbs cut off.

MR. CORNWALL.—The French method is very well for young trees, but suppose our trees be forty, fifty or sixty years old and the branches are beginning to decay. I would like to ask what month in the year a large limb can be taken off.

REV. GEO. DAY.—I may say that I am a disciple of Judge Weatherbe for I believe his theory is correct. We have been told that chloride of potassium is just what the orchardist requires. Instead of a sandy soil the Judge has a clay soil, and he has made it self-sustaining for all time by underdraining. He takes nothing from the upper soil and thus an endless amount of potash remains to nourish his trees. If I had forty acres of land I would follow his example.

MR. BLANCHARD.—I can easily understand the course pursued by the Judge and I think he is right. He has a farm that seems to have been cultivated years ago, but now is covered with underbrush and scrubby spruce, and it has had a long rest. During this time the foliage has fallen and supported the trees from year to year, and the manure thus accumulated has been placed under and about his trees. Under such circumstances, with the addition of his underdraining, he will surely succeed. Every one is not so situated, and consequently each cultivator must be governed by his surroundings. He acted very wisely in not cutting down all the spruce. Our farmers generally have their orchards in fields cultivated year after year, and if they could afford to raise crops and plough them under, an immense advantage would result to their trees; but unfortunately few can afford to pursue such a method. The next best thing is to cultivate in such a way as to afford some manure to the development

of the fruit trees and at the same time secure a crop of grain, roots, etc., thus giving the trees the additional advantage of a loose soil allowing the air to permeate the soil and rain to descend to the roots. I believe it is profitable to cultivate the soil where it is possible to do so.

As regards close planting many advocate a great distance between the trees, others hold the opposite opinion. At the last meeting of the Association it was argued that in close planting the trees will grow high and not spread; on the other hand if they grow high you have a larger yield of fruit, and as they grow too close they can be cut down. I believe it would be advantageous in early planting to place them nearer than forty feet. I know it requires great courage to cut out an apple tree when it is in full bearing. The soil of the Judge's being underdrained the water will not accumulate, and the fact of the native trees remaining will keep the soil in a moist condition and a great growth in his apple trees is assured.

J. Christopher Starr.—I may say that the method of planting orange tree in Florida is similar to that adopted by the Judge. They simply clear away sufficient of the forest trees and, without burning them, use all matter as a mulch and allow it to decompose on the surface of the soil. Before planting, the holes are nicely grubbed and cleaned of stone and roots, and the upper soil placed on the bottom. The soil there is not clay, but has the appearance of sand. The trees flourish very rapidly without anything in the way of manure being added. Common farm-yard manure is not to be obtained there—as it is not a country in which stock is raised. They have to seek for commercial fertilizers of which potash has received the preference. Ashes have been tried within these last two years, but with what success I am not prepared to say. Professor Hind in his paper spoke of salts—some few years ago quantities were imported into Florida but it proved worthless. As for cropping the land I never heard of such a thing there.

Mr. G. C. Johnson.—A question was asked by someone concerning the pruning of a tree sixty years old. My experience has been that the tree is too old to allow the bark to grow on again, and, therefore, an attempt to prune it will probably meet with failure.

Professor Higgins.—I have an orchard which twenty years ago produced fine fruit. Sometimes it bears well but the fruit is very

small and one-half of it is fit only for cider. I have tried to screw up my courage to cut it half out, but I am inclined to think that the closeness of the trees is not by any means the only reason. The soil is sandy and has been cultivated for many years. It is quite dark in colour as far down as four or five inches from the surface as the result of the manure put upon it from time to time. Below that it is red, hungry looking sand. I think that these trees when young received their nourishment from the upper soil, but now that they have struck their roots deeper are obliged to obtain food from below. The question is what shall I do? When I manure I plough the manure in, and in doing so I break up the roots that are in the good soil. Would it not be better to allow it to grow to grass and spread the manure on the surface? I would like some imformation on the point.

JUDGE WEATHERBE.—How old are the trees?

PROF. HIGGINS.—About thirty years, but the older they get the less valuable is the fruit.

JUDGE WEATHERBE.—I would try three or four different kinds of fertilizers. I found many orchards just like that last summer and they had all been cropped year after year.

PROF. HIGGINS.—But mine has not.

PROF. HIND.—How deep do you plough?

PROF. HIGGINS.—About three inches.

PROF. HIND.—I would plough about three feet if possible.

C. R. H. STARR.—How long since it was ploughed?

PROF. HIGGINS.—About two years.

R. W. STARR.—I think you should loosen the soil and thin out the trees.

MR. SMITH.—I approve of the mode referred to by Professor Hind of planting the trees close and cutting out a part of them when necessary afterwards. If we follow the example of the Judge in digging holes we will have to import the tools. I think he loses a good deal of labor by throwing the earth to the surface—why not dig a part of a hole and throw the earth from other parts into that?

JUDGE WEATHERBE.—It only costs from ten to twelve cents for each hole. I do not hesitate to say that a great deal depends on the

kind of spade used. The spades used by me cost three or four times as much as those purchased here.

PROF. HIND.—The question of potash is one of extreme importance, and many gentlemen appear to be under some misapprehension as to the condition in which it may be found in marsh mud. I have here a piece of marsh mud dried in the air, also a piece which has been burned. If you examine the burnt piece with a magnifying glass you can detect the silver mica. That is the source from which our marsh tracts receive and retain their fertility for centuries without any fresh additions from the sea.

PRESIDENT.—We have large quantities of brick clay—is it not possible that it contains this silver mica?

PROF. HIND.—Exceedingly probable. Horticulturists are beginning to use per manganate of potassa in solution with great effect in the production of beautiful flowers.

JUDGE WEATHERBE.—It is in the marsh mud is it not?

PROF. HIND.—I think not.

JUDGE WEATHERBE.—What effect has age on the mud?

PROF. HIND.—I think the new is better than the old, because it contains the chloride of potassium. Dry mud decomposed with lime will make a very valuable fertilizer.

Adjourned till 7.30 p.m.

EVENING SESSION.

TUESDAY, *January 26th, 1886.*

Association met at 7.30, President HART in the Chair.

QUESTIONS.

"*Should the same varieties of apples compete at exhibitions in collections of winter apples and in collections of long keepers?*"

R. W. STARR.—I think it has been affirmed that no apple that has been entered as a long keeper should enter in any collection as a winter apple, and *vice versa*. I think that apples should be divided into those classes to which they belong.

"*I have an orchard of Baldwin trees planted twenty-nine years ago, well underdrained, soil clay loam, trees thrifty and producing from two to ten barrels every alternate year. I do not like the color*

of the fruit. While large and ordinarily fair the apples are green or a dusk red instead af a light red. The orchard is highly cultivated and nothing is grown directly under the trees which are liberally manured, 1st. Shall I continue to cultivate the surface. 2nd. Or lay it down to grass. 3rd. Or mulch heavily with a view to growing fruit of a better color?"

C. R. H. STARR.—We are all more or less interested in this question, and few of us know what value to put upon our Baldwins. For my own part I wish I had not a Baldwin tree upon my place; at the same time I do not know what apple I would adopt as a substitute. We require an apple that is fit for shipping at this season of the year—a good, first-class mid-winter apple, and the Baldwin does not fill the bill. With the Baldwin there is too much immature fruiting.

MR. SMITH.—I think we should be careful about condemning this apple. Some twenty-five or twenty-eight years ago the Bishop Pippin was very poor, but after a time returned to its usual vigour, then it was very poor again, and in five years time it will be one of the first apples on the list. Has not the Baldwin been going through similar changes during the last few years?

MR. BLANCHARD.—Our Baldwin is very poor indeed in comparison with that cultivated in New Hampshire its native home. Now what effect would it have on our Baldwin if it happened to be placed in competition in the British market with the New Hampshire Baldwin? I think it would seriously injure our reputation. The sooner we get an apple to take its place the better it will be for Nova Scotia fruit generally.

MR. PARKER.—I grow a great many Baldwins and prefer them to any other. I have two acres of orchard. When they had been growing for eight years I picked forty barrels of Baldwins, in fourteen years I got 200 barrels, and sold them in St. John at $3.50 a barrel. I can grow three barrels of Baldwins to one of other kinds. In regard to Ribstons they were a failure with me and I grafted them out. In some localities an apple of a particular kind will grow well while in others they are almost a total failure; that is the case with the Ribston. The difference in the soil affects the production of the fruit.

JUDGE WEATHERBE.—What kind of soil is yours?

MR. PARKER.—It is a very heavy loam and rich. I suppose it would bear any kind of apples. There is no clay in my soil.

MR. MILLER.—There is one thing about the Baldwin, viz., it is a great bearer. There are not many varieties that will produce in eight years the number of barrels which Mr. Parker says he obtained. It is true that the Baldwin has many imperfections, but I believe it is as profitable as any other variety. It will turn off ten barrels before the Ribston will turn off one; but at the same time I do not believe any cultivator should confine his attention exclusively to Baldwins.

The PRESIDENT.—The fact is I have asked this question. I am satisfied with the Baldwin as far as the quantity and kind of the fruit is concerned, but the color is not bright enough. Where I cultivate the fruit is dark, but where I do not cultivate it is small and bright in color. I am told that the best Baldwins grow around the fences. The bright colors bring the best price, but they are small. I would like to know what to do with my orchard in order to improve the fruit both in color and size.

MR. PARKER.—It has been intimated that the Baldwins have failed during these last few years. I cannot say that they have. I think mine are improving. I generally leave the apples on the trees as long as I think safe, and the longer they remain the better they are. I notice that fruit on the north side of the tree is very apt to be green; and I find if there is a little frost it does not injure it. A few years ago I picked Baldwins as late as Christmas which were frozen through and through. If the frost comes out of the apple in cloudy weather it will not be hurt any, but if the sun shines on it, it will be ruined.

JUDGE WEATHERBE.—From inquiry I was induced to plant no Baldwins. We should plant those trees that are most profitable. One gentleman says that the Baldwin tree produces excellent fruit, another says it produces very poor fruit. Mr Parker's orchard is naturally drained. I know an orchard of Baldwins which produced well a few years ago but the owner now finds it very much deteriorated. I am inclined to think from what I have heard that all young orchards bear good fruit. Mr. Parker's orchard bears well but it is drained. Is it not possible that the President's trees have gone into cold clay? If so probably a tile drain would remedy the evil. I am told that such a method often doubles a crop.

R. W. STARR.—With regard to my own case, the trees are young. Trees of the Gravenstein and Ribston in the same orchard have been bearing for the last four or five years, and gave good crops last year and this year; but the Baldwins only gave twelve or fourteen barrels from forty trees of the same age as those of the Gravenstein and Ribston. As to the soil, the complaint is that it is too dry rather than too wet. It is simply this,—the apple does not suit the soil or climate; that is also the experience of my neighbours.

MR. WEBSTER.—I know of a man who had a couple of rows of Baldwins in the back part of his orchard. He thought the fruit looked small and concluded he would not pick it till late, when he would have more time. About three weeks after potatoe digging in the fall and after two or three frosts, he thought of his apples, which, to his astonishment, turned out the finest crop of Baldwins that he ever had. His land was not cultivated, the road being on one side.

MR. R. E. HARRIS.—I grow a good many Baldwins. Two years ago I had an average of five barrels to the tree. Last year I had 250 barrels, and I never saw finer fruit. The soil is light sandy loam. I put on a coat of marsh mud and spread manure over that, and allow it to stand for two or three years. In the driest summer season my soil is quite moist. I have picked Baldwins when it has been freezing hard all day. I agree with Mr. Parker that an apple freezing once or twice on a tree will not hurt it. They acquire a bright, glossy color by being picked late. My trees are about twenty years old.

MR. WHITMAN.—It appears to me that Baldwins are fast depreciating in value. It may be that I pick mine too early.

MR. PARKER.—They are something like a turnip and will grow very late in the fall.

MR. CORNWALL.—There are two kinds of Baldwins, are there not?

The SECRETARY.—I do not know that I can answer that question positively, but I think not; any differences are probably due to soil or stock. My experience with Baldwins has not been confined to my own orchard. I have said time and again that I wish there was not a Baldwin tree in King's County. Yet, as others have already stated, I would at present hardly know what to substitute for them. When they bear heavily, about half the crop is refuse. We cannot com-

pete with Ontario and the States in growing Baldwins; ours are so inferior in size and color. We only have this advantage, and the same applies to all our apples,—that is, they keep longer. I can grow them as well as any one in the eastern end of this county, yet they are far from satisfactory. In my orchards the Ribston is much more profitable. Just as soon as we can find an apple with all the good qualities of the Gravenstein that will keep till March, let us adopt it. In my opinion the Golden Russet will be the apple of the future.

Question.—"*Are we warranted by the present demand in increasing our apple orchards; if so, what kinds shall we grow?*"

Mr. A. Whitman, at the suggestion of the President, in connection with the question, read the following paper on

FRUIT INSPECTION.

Mr. President and Gentlemen,—Feeling deeply interested in the welfare and prosperity of this Association, I consider it incumbent upon me, as a member, to assist in such a way as will tend to the benefit of all concerned. Permit me, therefore, to present a few ideas upon a subject of vast importance to every person interested in the growing or shipment of fruit. I allude to the necessity of a radical change in the methods of sorting and packing fruit for exportation. I have been engaged in the growing of, and dealing in fruit, for a number of years, and can therefore speak from experience.

I contend there must be something done to protect the dealer from impositions at the hands of a certain class of packers. While I do not deny there are some honest packers, there seems to be a large majority that cannot be classed under this head, and unless the strong arm of the law can be brought down upon dishonest packers, the latter class is likely to increase more rapidly than the former.

In view of the constantly increasing orchards of Nova Scotia, I consider it is of paramount importance to the orchardist and the dealer alike, that some system be adopted at once that will put a stop to the fraud and deception practiced by some men in packing apples both for local and foreign markets.

I know of no better way to effect this most desirable change than the appointment of competent men, who will do their duty when called upon to act as INSPECTORS, in every ward throughout the fruit-growing sections of the country.

I would therefore recommend that petitions from this Association be sent to the Municipal Councils requesting them at their next meetings to appoint such officers, said Inspectors to be paid either from the County treasury or by a stated fee per barrel, to be paid by the owner of the apples.

I would further recommend that we petition the Local Parliament to enact a law prohibiting the shipment of apples to either local or foreign markets until they have received the Inspector's brand, and also imposing a penalty upon Inspectors who refuse to do their duty.

Now Mr. President, if this plan is adopted and carried out I believe it will advance the price of our apples twenty-five per cent.

The question is asked, Are we warranted by the present demand in increasing our apple orchards?

I would answer in the affirmative, on the following conditions, viz.: That we plant only the best varieties, grow those well, and pack decently. The European markets must be our main dependence in the future, but to secure these we must look to the quality rather than the quantity.

There can be no doubt but that the reputation of the Nova Scotia fruit growers has been seriously injured during the two last seasons, by the very inferior quality of many of the apples sent to the English markets. I believe, in many cases, if shippers had taken only the best of the fruit, put it up in good shape, and sent it to the right men, they would have received more money in return. It must be remembered that the expenses are a very large item, and are quite as much on a barrel of inferior stuff as on that which sells for a much larger price; hence the importance of shipping only first-class fruit. My opinion is, if we can establish and maintain a reputation for first-class apples in London, the quantity we can grow in Nova Scotia will not seriously affect prices. "Experience is an old school master," and I am surprised that many lots bring the prices that they do, knowing something of the way they were packed.

It is generally believed there has been an improvement during the past few years in packing apples; but, I am sorry to say, my experience has not confirmed this belief, but has rather convinced me that quite the reverse would be nearer the truth. However, it is only fair to say, I have found some worthy exceptions.

In conclusion, Mr. President, I would ask for a full discussion of this matter, which, I think, should take precedence of subjects of

minor importance; and if anything I have written will help to bring about the much required reform, I shall feel amply paid.

JUDGE WEATHERBE.—There seems to be a prevalent opinion that apples can be grown profitably outside of this valley. I learn that such is not the fact. This valley is only a small part of the Province of Nova Scotia. The apple producing region comprises about 400 square miles. In the Bay of Fundy there is a prevailing south-west wind which produces fog, and this fog is wafted across Colchester and Cumberland and hinders the growth of the apple during that period of six weeks when the absence of continual heat is fatal to the crop. If it were not for the North Mountain, we would not be here to-night. We have a belt averaging about five miles wide extending from Windsor to Annapolis—that is about four hundred square miles, capable of producing an annual revenue of $30,000,000. In Antigonish they raise apples, but the trees do not thrive long. There is no land in the world that will yield like this valley, and we should plant the whole area. There is no fear of raising more apples than are required. We can raise them more profitably than in any other part of the world.

MR. BLANCHARD.—Is it wise for us to increase our orchards with the present methods of packing and marking our fruits? That is a serious question, and one that has been brought before this Society many times. We wish to place our fruit in the market so that it can compete with the fruit of other countries. In connection with this, I think the Executive Committee purpose making a recommendation. I know that apples can be raised outside of this belt,—for instance, in Cape Breton; but they do not understand their cultivation to proper advantage. They are sadly deficient in knowledge concerning the matter of underdraining, and until they become educated in that direction and in the other proper methods of treatment, we connot expect them to grow fruit successfully. I have heard of marvellous production of trees; of such things as old boots, and they have been found safely packed when the barrels were opened in market. If we expect that people will be satisfied with buying the product of such trees we will surely be disappointed.

Then again, the fruit is shipped acrose the Atlantic to two or three ports only, and thence it is distributed through second and third hands throughout the British Islands. Is that a proper method to

follow? Are we right in allowing our fruits to lose their identity in that way? Nova Scotian fruit is sold in the London market, but after it leaves there it may not be Nova Scotian fruit any longer. Should we not pack our fruit properly and have it brought into different localities for sale?

MR. R. W. STARR.—With reference to inspecting fruit, after the fruit has been packed, the difficulties appear to be almost insurmountable. The only feasible way is to make every producer or exporter his own inspector, and oblige him to put his name, address, and the quality of the apple upon the barrel. The law should step in and say what the size and quality should be. If that suggestion were carried out, the buyer would have redress. That is the only way, in my opinion, that the object can be attained, and it is as necessary as the size of the barrel.

With regard to the point of growing more apples, we have doubled the acreage in the last fifteen years, and we should quadruple that during the next fifteen years. I do not think a better area for producing fruit can be found in Nova Scotia; but farmers in other parts of the province should go into the business more extensively. I have seen fine trees all along between Upper Newport and the Shubenacadie, and there are noble trees in the valey of the Stewiacke.

On motion of MR. BLANCHARD, the discussion was postponed to hear the address of Mr. James Fletcher, F. R. S. C., Dominion Entomologist, on the subject of

INSECTS INJURIOUS TO FRUIT TREES.

MR. FLETCHER having just arrived, the President invited him to the platform, when he addressed the meeting as follows :

Mr. President and Gentlemen,—Some time ago there came into my hands, by accident, a copy of the Transactions of your society, and in the perusal of this report I was so much struck by the amount of practical common sense by which the discussions at your meetings were characterised, that I was induced to write for a complete set of the Transactions. By this means, and through the courtesy of Mr. C. R. H. Starr, your energetic Secretary, I was put into communication with several of the leading fruit-growers of the Annapolis valley, members of this association, from whom I have received most valuable assistance in carrying out the work with which I have been entrusted by the Government, the importance of which none can appreciate

better than you, who are daily brought face to face with the large amount of injury wrought by our small but powerful enemies of the insect world. When I received an invitation to be present at your annual meeting and deliver an address before you, I accepted gladly the permission to attend, given by my Minister, the Hon. J. Carling, a gentleman whose name is well known as a promoter and patron of scientific agriculture in Canada, and to whom really belongs the honour of having conceived and organized the institution which was afterwards re-located and has developed into the Ontario School of Agriculture and Experimental Farm at Guelph. It may not be amiss, here, to explain exactly what my position is as Dominion Entomologist. The appointment was made by the Hon. J. H. Pope when Minister of Agriculture, in 1884, in response to recommendations from several persons interested in agriculture in various parts of the Dominion, and particularly by the Select Committee on Agriculture which met at Ottawa during the Session of 1884. It was decided that the appointment should be purely an honorary one; in fact, it was an experiment to test the value of such investigations, to the country at large. This decision was, I believe, a very wise one, for I have found by experience that farmers, agriculturists and orchardists throughout the country, among them many of you here present this evening, upon learning this fact have gone to considerable trouble to assist me in my studies, which might not have been the case, to such a large extent, had this been a remunerative political appointment. The importance of the work itself would, of course, have demanded their attention before long; but I cannot help thinking that at the beginning, at any rate, this kind of work should be carried on by a specialist—one who takes it up, and labours at it, for its own sake, without thought of any reward, further than that the results arrived at may be of benefit to the world. For my own part, I feel highly privileged in having been allowed to labor in this great cause, knowing well the enormous importance, to all engaged in agriculture and horticulture, of a knowledge of Economic Entomology—that is, the life-histories of Injurious and Beneficial Insects, and the best methods of keeping the former in check.

I am safe in saying that an average of at least 20 per cent. of all crops produced is annually destroyed by insect agencies. Of this proportion 15 per cent. can undoubtedly be saved by simple methods. It has been calculated that there are upwards of 200 different insects

which attack the apple alone. Of this large number probably most can, with care, be prevented from seriously injuring the crop.

The fame of Nova Scotian apples is world-wide. I have seen them in England exhibited and advertised as such on account of their well-known good qualities; and again, I have had apples shown me in the far west of this continent, in Oregon and Washington Territory, with the boast that they were as good as any which could be produced in Nova Scotia This plainly showed that yours were recognised as a standard of excellence.

The apple trade between your Province and England, which has been so largely built up by the efforts of this association, is now of great importance, and therefore any subject which materially affects it is of the deepest interest to every member of the community. Such a subject, I maintain, is practical Entomology.

I am aware that many of you here, already know the value of this study; but there may be some amongst you who have not yet fully appreciated to what extent and with what comparative ease you may be helped in your constant struggle against injurious insects. It is the conviction that I can give you advice which will enable you, by simple and practical methods, to keep down a large proportion of your insect enemies, which has induced me to come here and presume to take up a part of the time, all too short, which you set apart for the discussion of the important subjects you have to consider at your annual meetings. Fully recognising the value of every minute, I shall endeavour to make my remarks as short and as much to the point as possible. With this object in view, as soon as I knew for certain that I was to have the honor of addressing you, I wrote to several of your members to enquire what insects had made themselves most obnoxious, so that I might treat especially of those kinds concerning which information was most required and would be most acceptable. I found that the insects which trouble you are mainly the same kinds which, although in a varying degree, harass the fruit-grower in other parts of Canada, and as published accounts of these, with the best remedies, are easily accessible, I shall, during the time at my disposal this evening, direct your attention to a few general principles, a knowledge of which will be found useful for the proper understanding and intelligent application of remedial measures; and I shall rely on further opportunities of giving information concerning special pests, by answering questions

put to me during the meeting, or by private conversation afterwards with individual members. I beg you to remember that the more questions you ask me the better I shall be pleased, and should you not agree with what I say, I shall take it as a special favour if you will tell me so, and by this means we shall come to an understanding which will be mutually beneficial. The accusation has occasionally been made that entomologists couch their language in scientific terms and mar their writings by using unnecessary technicalties, which render them unintelligible to many, for whose benefit they profess to have specially prepared them. This is possibly, to a certain extent, true; but it must be borne in mind that these scientific terms are merely exact names, applied for the special purpose of avoiding error; and as in every trade, those who traffic in it, find it necessary to become familiar with the terms used therein, so in like manner is it the case with the different branches of science; but, whereas a trade may be confined to any one country, the special terms belonging to it may be in the language of that country, without causing confusion; on the other hand, the results of science—which is merely another name for the highest knowledge—cannot be confined to one country alone, and therefore, in order that they may be comprehended by all nations, scientific students use for their special terms a language which may be learnt by all. For this purpose the classic languages, Latin and Greek, are, by common consent, made use of, from the fact that being dead languages, and not spoken by any living people to-day. they cannot change, but remain now, and will remain for all time, in exactly the same form as when spoken in classic times by the ancient Romans and Greeks.

These terms, however, are for the use of scientific entomologists, who require to speak or correspond with each other, in exact language, about a large number of different insects. Now, I am under the impression that for the purpose of Economic Entomology these technical scientific terms may be almost, if not entirely, dispensed with; for although the actual number of known insects is enormous, those species which bring themselves conspicuously under our notice, by means of the ravages which they commit on our cultivated crops, are comparatively small, and I think distinctive English names can be found for them all. The chief thing necessary when a farmer finds his crops attacked by insects is to discover the cause, so that he may apply the proper remedy, and it matters little

to him what the name of the culprit may be, or by what minute differences it is separated from its nearest relatives. What concerns him most is to recognize the nature of his enemy by the state of his crops, and thus to discover the best means of putting a stop to its ravages.

To enable him to do this, some knowledge of the life-histories of our common insect pests is indispensible. By this I mean he should strive to get sufficient information to recognize them in their different stages of grub, chrysalis, and perfect insect; for it frequently happens that they are open to our attacks in one of their stages, while they can defy our efforts in the other stages of their existence. The life of an insect is divided up into four well marked periods, during each of which their habits are entirely different. These are; 1. The egg; 2. The caterpillar or larval stage, during which, as a rule, they are most injurious; 3. The chrysalis or quiescent stage, in which, except in a few orders, the insects lie quiet, and are without the power of motion; and 4. The perfect insect. Some insects are injurious in three of their stages, but the larger number in one only, so that unless we know them in all their forms we may lose opportunities of destroying them, from not recognizing them as enemies. It is clear that the farmer who possesses this information has a great advantage over the one who does not.

I would not, of course, advise men who are actively engaged in fighting the battle of life to stop and study the, to them, unnecessary details of a difficult science; but I firmly believe from the fact that insects play such an important part in the economy of nature, that a knowledge of the general principles of Economic Entomology is an absolute necessity for all who wish to become successful fruit-growers.

There seems, however, to be a prevalent opinion that much time and study is necessary for the acquisition of sufficient knowledge to bear practical results, and many of my correspondents, who give me most useful information concerning the lives of insects, begin their letters by saying that because they know little of entomology, therefore, their information will probably be of little value.

Now, I hope this evening to be able to couvince you that both these views are very erroneous. With regard to the former, I shall endeavour to show you that the actual amount of this information, necessary for a farmer to secure good results, is small and easily acquired; for it will be found upon examination, that all injuries

committed by insects conform to certain general plans in accordance with the form of their mouth-parts, and also that all remedies are applied upon broad general principles, dependent upon the same structural characters.

If you examine large number of different insects you will find that, they all may be roughly divided into two large groups, by the form of their mouth-parts. These two groups are: 1. Those which possess jaws, by means of which they consume the substance of their food, and 2. Those which have, instead, a hollow tube, by means of which they suck up their food in the shape of liquid juices. Now, it is apparent that for insects of the first group, as the Colorado Potato-beetle, which consumes the whole substance of its food-plant, all that is necessary is to apply to the foliage some poisonous material, which will not injure the plant, but which, being consumed with the leaves, will destroy the insects devouring them. Such poisonous materials we have in the various arsenical compounds which I shall mention later.

For the second group, however, which do not masticate their food, these remedies are useless, for the insects having their mouth-parts in the shape of a hollow tube, as we find in the *Aphides*, or plant lice, can pierce through these poisonous applications on the surface of their food, and extract the juices upon which they live, from the interior of the leaf. *Aphis Mali*, the plant-louse of the apple, belongs to this group. With such insects it is necessary to make use of remedies which act by mere contact with their bodies, and do not require to be eaten at all. For this purpose Coal Oil (Petroleum) and Carbolic Acid, as well as the vegetable insecticides known as Hellebore and the Persian and Dalmatian insect powders, are most useful. These remedies, too, as they will destroy all insects, are of much wider application than the poisons mentioned above.

And now with reference to information received from those who are not scientific entomologists. Do you know, gentlemen, strange as it may sound, I believe there are sometimes advantages to be derived from this very want of scientific knowledge. Farmers are practical men, and only want practical information, and while all must, of course, acknowledge the necessity for some one to do the accurate scientific work, and carry out the tedious experiments which are necessary, they are not the ones to do it, for with very few exceptions, they have not the leisure. No! this is the work of

the scientific entomologist, and the more extensive knowledge he can acquire the better he will succeed. Economic Entomology is a practical branch of Agriculture, and deals with the successful results arrived at by the scientific entomologist. All the farmer requires is to know the common Injurious and Beneficial Insects when they appear, so as to apply the proper remedies, and be able to refer to them by some name when recording his observations or when seeking for information concerning them. The chances of mistake, as to the identity of the insects referred to, are slight, especially when specimens can so easily be sent by mail; and every single fact in the life-history of any insect, when accurately recorded, has its scientific value. Moreover, scientific observers might possibly be led astray by preconceived notions or theories as to what any given insect ought to do; but the practical farmer would have no such danger, but would carefully record, only, exactly what he had seen. This is one reason why I am here to-night. I want to show you the value of Economic Entomology. If I satisfy you, and you think what I tell you is of value to you in increasing the yield of your orchards, I, in my turn, expect to reap much benefit from your experience in fruit growing, which will assist me in carrying on my studies. In all sciences there is a great deal too much theory; but what we require is practical results. Ever since I have concerned myself with the study of Injurious Insects I have always kept before my eyes a short motto, which is also a warning and according as I can follow out its admonitions, by so much, I believe, will the work I have undertaken be successful. That motto is, *Be Practical.*

To attain this end, I have endeavoured, as much as possible, to to enlist the sympathies and secure the co-operation of practical farmers and horticulturists all over the country, for none are so competent, or so likely to take notice of the results of any treatment suggested, as those actually engaged in making their living in these pursuits. Many valuable discoveries have resulted from the observations of such men, the most remarkable, perhaps, of all, being the remedy lately found for that dread scourge, the Clover-seed Midge. Ontario, five years ago, produced a crop of clover seed worth $648,600.* Since that time this pest has made its appearance in great

* By the Census of 1881 we find that Canada produced in that year 324,317 bushels of Hay and Clover-seed; of this quantity at least half was clover seed, this would give 162,158 bushels. Clover seed ranges between $3 and $9 per bushel, but taking the value at only $4 per bushel we have $648,632.

numbers and its injuries have been so considerable that, instead of Canada exporting large quantities of this valuable seed, our farmers have now to import seed to sow their fields. I believe the honor is due to Mr. Jabel Robinson, ex-Master of the Dominion Grange, for discovering a means of checking its ravages. This consisted of the following treatment: Instead of cutting the first crop of clover at the end of June, and leaving the second crop for seed in the fall, he pastured the first crop until the beginning or middle of the month, and then left it to grow for the fall crop of seed. By this means not only were the grubs of the first brood (the eggs of which were deposited on the growing clover as soon as the heads formed) destroyed by the cattle eating them; but many of the perfect insects must have been destroyed by the trampling of the cattle at the time they were emerging from the ground. By leaving the clover standing in the fields till the end of June, a sufficient time elapsed for the insects to pass through the preparatory stages, and leaving the heads of clover, go into the ground and complete their transformations, to emerge again just as the second crop was coming into blossom. The female flies would then lay their eggs in the opening flowers, and thus the seed of the second crop would be destroyed.

Another remedy, of great interest to all of you, was discovered almost by accident, and was certainly contrary to what might have been expected. I refer to the use of Paris Green as a remedy against the Codling Moth. The perfect moth emerges from the chrysalis or dormant state in which it has passed the winter, just about the time the apple trees are in flower, and the female lays her eggs inside the opening blossoms. Here they remain for some days. After hatching, the small caterpillar eats its way into the young apple and destroys it. It has been discovered that if a very weak mixture of Paris Green and water be syringed over the trees just after the flowers have fallen sufficient of the poison will lodge inside the upturned calyces to destroy the young caterpillars when they hatch from the egg, and start to eat their way into the apple. Great care, however, must be taken not to apply the poison until after the flowers have passed their prime. No time is saved, because the eggs do not hatch until several days after they are laid, and serious injuries may result. Instances have been brought under my notice where an apple-grower, by applying Paris Green when the flowers were in perfection and filled with honey, killed all his own and his

neighbours' bees. Besides this, the stigma of all flowers being without epidermis is very sensitive, and these arsenical compounds falling upon this delicate part, might possibly injure the crop of apples as much as the Codling Moth, which it was desired to keep in check.

This remedy has also, just as unexpectedly, been found to be efficacious against the Plum Curculio.

Before I pass on to a description of the most useful insecticides, it may be well to say a few words as to the relations existing between insects and man, and as to those insects which we stigmatise as injurious.

The naturalist founds his studies upon the assumption that nothing in nature is useless, and everything that is, has some special function to perform or it would not exist. Vegetable and animal life are the two re-agents employed by nature to keep up the balance of creation, the one feeding upon or deriving its nutriment from the other. These two agents again are, to a certain extent, acted upon and kept in check by their own components parts. Whenever too many seeds of any one kind of plant spring up in the same place, they do not all mature for if they did, all would be sickly from want of light and air ; consequently, it is provided that the weaker should be kept down and choked to death to make room for their more robust companions. This is similarly the case in the animal world—as, for instance, with insects. When from special circumstances any injurious insect is abnormally multiplied, it is sure to be attacked and kept in check by some other kind, which itself may be a prey to another species. These beneficial insects may be grouped under two heads, those which do actual good, and those which prevent others from doing harm. As an example of the first group, mention may be made of those which act as scavengers. All substances which are deprived of the principle of animation must be regarded as nuisances, when considered with relation to the whole. In this relation stand a dead animal or dead tree, which are clearly encumbrances which it is desirable to have removed. The office of effecting this removal is chiefly assigned to insects. Were it not for these small creatures the world would soon become uninhabitable. Effete animal matter, in the slow processes of decomposition, without their accelerating agency, would soon taint the whole atmosphere with noisome gases. And again, were it not for the many borers and wood-destoying

insects, we could have none of those lovely forests which give so much beauty to our landscapes and are the source of so much wealth to the country. Let us consider for a few moments what would be the consequence were none of these insects to exist. A giant of the forest, injured by some storm or other cause, would die, and in course of time fall to the ground. Where it fell there it would remain, and nothing could grow from the space it covered. Time would roll on; tree after tree would fall beside the first, until the whole surface of the ground would be covered with trunks and limbs of fallen trees, and what was once a stately forest, with all its wealth of life, would be a vast wilderness, where nothing could grow. Now let us mark how different is the beneficent operation of nature under the present conditions. Scarcely has a tree shown signs of declining vigour than the insect hosts are at work. First come certain species, which detect any weak spot, there they lay their eggs, which in time, hatch, and eating their way into the tree, hurry on its decay. When it dies and falls to the ground it is at once pounced upon by the large wood-boring beetles, which deposit their eggs upon the bark. These hatch into grubs, armed with strong jaws, with which they soon bore into and through the trunk, thus exposing it to the influences of air and moisture. Fungi soon develop, and smaller beetles and other insects follow in the wake of the larger, and boring into the softened, decaying wood, use it as food or as material for their nests. The work of destruction goes on with astounding rapidity, and in an incredibly short time the giant which had taken hundreds of years to mature is reduced to powder, which serves to fertilize the soil and enables it to produce fresh trees to fill up the gap left by the one which has gone.

Among the insects which prevent other species from doing harm, particular mention must be made of those parasitic species, which are known by the names of Ichneumon Flies, and Tachina Flies. In these man finds his greatest protection from the countless hordes which deprive him of so much of his produce. The former of these belong to the same order as the bee and wasp, and may always be recognized, from being very active, and having two pairs of wings, which are caught together at their margins by miscroscopical hooks, and in many species possessing a slender ovipositor at the end of the body. Their mode of life is as follows: The female inserts an egg, by means of a long slender ovipositor beneath the skin of a caterpillar

or other soft-bodied insect. This hatches inside its victim and lives upon the juices of its body, and it is remarkable that it never injures any of the vital organs. When full grown it eats its way out, and spins a coccoon, either on the body of its victim, which represents a caterpillar of the Grape-vine Sphinx moth with the coccoons of a small parasite which attacks it, or attaches it to some object near at hand, or even sometimes it finishes its transformation inside the body of its host.

The Tachina Flies have only two wings, and belong to the same order as the House Fly, which they much resemble. The chief difference in their habits, from those of the Ichneumon Flies is that the egg is deposited on the outside of the skin of its victim and the young maggot eats its way into its host.

It is of course of paramount importance that every farmer should know the appearance of these beneficial insects, so that he may not indiscriminately destroy his friends with his enemies. This is not a very difficult matter, for the families of the different classes into which insects are divided, may generally be recognized as such with ease, and, as a rule, the different genera of any family have the same habits. As a general statement, not however for close application, the following will be found to be a useful guide when the habits of an insect are unknown. If it be slow and heavy in its movements it is probably injurious; if active and with well developed running powers, consider it beneficial until you have proved the contrary. The reason for this is easy to understand: Those insects which feed on vegetable matter are most likely to be injurious—that is, they destroy what we require for our own use. As vegetation is stationary they have no need for great activity. The predaceous species, on the other hand, require well-developed means for moving quickly, because they have to catch their prey before they can devour it.

Insects in a state of nature seldom appear to be injurious, from the fact that their food is distributed thinly among other vegetation. A large food supply is the main cause which regulates the amount of insect presence. When we cultivate large areas under any one crop we naturally attract those insects which feed upon it, and in this way insects which had previously been scarce, may suddenly increase in numbers so enormously as to become a serious hindrance to agriculture. In illustration of this, let us glance at the history of the Colorado Potato-beetle. This beetle was discovered about seventy-

five years ago by Thomas Say in the mountains of Colorado, where it fed upon *Solanum rostratum*, a plant belonging to the Nightshade family, to which also the Potato plant belongs. A peculiarity of the species was its extreme rarity, probably owing to the fact that its plant-food was not abundant and the individual plants widely separated. Many years after, as man civilized North America, in his march westward, he carried with him the Potato, which, being cultivated from the east, until the home of the beetle was reached, a bridge was thus formed over which it has swept eastward like a whirlwind, carrying devastation in its wake. I do not think, however, it will ever be again the scourge which it has been in the past, for a remedy has been discovered by which it can be effectively kept in check. As soon as it reached this Province, with most commendable zeal, Principal McKay, of Pictou, at once caused to be printed hand-bills, giving a figure of the insect in all its stages and the proper means of destroying it. These bills were distributed in every direction, and thus the farmers being prepared. its ravages were successfully checked. I imagine that the climate of this Province would not allow of its numbers increasing to the alarming extent in which they do in Western Canada; but should they do so, the sovereign remedy, "Paris Green," will always check them. The application of this substance to the Potato fields is now almost as much a part of the culture of this necessary tuber as manuring the soil.

This naturally brings us to a consideration of some of the most important insectides. As I have already said, these are of two kinds, those which act internally and those which act by contact. Of the former, the most important are:—

ARSENICAL COMPOUNDS.

No. 1. *Arseniate of Soda* must be mentioned first under this head. Prof. Charles V. Riley, the very eminent Entomologist of the United States, asserts that 50 grains of this substance and 200 grains of dextrine, dissolved in a gallon of water, will make a mixture which may be diluted at the rate of 1 ounce to 10 gallons of water, and furnishes one of the cheapest insecticides at command. For the manufacture of this poisonous salt the formula is; 1 lb. of arsenic and 1 lb. of sal soda boiled in 1 gallon of water, till the arsenic is dissolved, this mixture to be diluted at the rate of 1 quart to 40 gallons of water. The chief merits of arsenic are its cheapness and solubility. Its demerits are its tendency to burn the foliage of plants,

and its white colour, from which accidents might occur, by its being mistaken for some of the many harmless substances of a like appearance.

No. 2 *Paris Green* has certainly been more extensively used than any other compound. It is a combination of arsenic and copper, and when pure contains about 60 per cent. of arsenious acid. It has been extensively used as an insecticide since 1869, when its usefulness was discovered by Mr. George Liddle, jun., of Fairplay, Wis., and has since been brought into use throught the experiments and writings of Prof. Riley. It is used dry, with various substances as diluents. Flour and Plaster of Paris seems the most satisfactory, and may be used in the proportion of 1 part of the poison to 50 of the diluent for a dry application, and $\frac{1}{2}$ lb. to a barrel (40 gallons) of water; or in smaller quantity, $\frac{1}{2}$ oz. to 1 bucket of water for a wash or spraying solution. If the Paris Green is quite pure this may be found too strong for some foliage, so should be tried cautiously and at first over a small area. The liquid must be constantly stirred or the poison sinks to the bottom. If a little dextrine is added it will adhere better to foliage. Lately, as I have mentioned, it has been discovered that Paris Green and London Purple may be used with good effect against the Codling Moth and the Plum Curculio. In these applications the amount of poisou must be very small—not more than 1 tablespoonful to a barrel of water.

No 3. *London Purple.*—This substance is mainly an arseniate of lime. Prof. Riley speaks so highly of it as an insectitide that I shall refer to it at some length. In bulletin 6 of his department, 1885, a copy of which I place before you, he describes and illustrates an apparatus for distributing such poisonous mixtures as this over trees. It consists of a barrel on wheels, in which the poison is mixed and contained, and has a force pump attached, with an ingenious device for keeping the mixture stirred while the trees are being sprayed. Here are his instructions for preparing the poison:

Take of London Purple.....	$\frac{1}{2}$ lb.
Cheap Flour.....	3 quarts.
Water	40 gallons.

For mixing, use a large galvinized iron funnel of 13 quarts capacity having vertical sides, and with a fine sieve at the bottom. Place the flour in the funnel and wash it through the gauze into the barrel by pouring water upon it. It will then be diffused in the

water without appearing in lumps. The London Purple must then be washed through the sieve in the same manner until the barrel is filled. For smaller quantities ½ an oz. of London Purple may be used to 1 bucketful of water. Three-quarters of a pound is the maximum strength allowable, and should only be applied as an extremely fine mist, without drenching the foliage.

London Purple is used with diluents either wet or dry, in the same manner as Paris Green, and for most insects is equally effective, and has the advantage of being cheaper, of covering twice the ground, weight for weight, of being vastly more soluble, less poisonous, more adhesive and permanent in its effects, and being of decided colour, is much more visible on the foliage, so that the mistake of applying it twice on the same part of the tree, and thus injuring the foliage, is not likely to occur. Prof. Riley therefore thinks that when intelligently used it is in all ways preferable, and that its efficiency once established it will be preferred to all other arsenical remedies (Ann. Rep. 1884, p. 327).

Prof. Saunders, of London, Ontario, has not, however, the same confidence in this preparation. London purple is a waste product, which is produced in the manufacture of aniline dyes, and for this eason he says the amount of contained poison must be uncertain, and, therefore, its effects in experimenting cannot be relied on. He suggests that an artificially coloured mixture of arsenic and lime of known strength could be produced just as cheaply, and would be much more reliable than London Purple. Prof. Saunders is undoubtedly the first Economic Entomologist in Canada, and is the author of the valuable work entitled "Insects Injurious to Fruits." As I believe this work should be in the possession of every fruit grower in the country, I have brought a copy with me to show you, this I also place on the table for examination by any who wish to do so.

The most advantageous diluent for all these arsenious poisons is flour, which not only acts as an adhesive medium, but also prevents to some extent the corrosive injury of the poison on the leaves.

Of the remedies which act by contact, the first place has been claimed for the

KEROSENE EMULSIONS.

Certain insects, as the numberless species of scale insects, are protected from the effects of ordinary remedies by the nature of their bodies, and it became necessary to discover some substance which would destroy insects without injury to the plant.

Milk Emulsions.—Petroleum, which is a hydro-carbon, and more of the nature of a spirit than an oil, was known to be most injurious to insects, but was also known to be, in all its forms, very injurious to plants; the great difficulty in the way of making use of it was to discover some diluent, harmless to plants, with which it would assimilate. This difficulty, after much thought, was overcome by the discovery made in 1880 by Dr. W. S. Barnard, that it would mix with sour milk, and that this mixture could again be reduced with water. An emulsion resembling butter can be produced in a few minutes by churning with a force pump 2 parts of kerosine and 1 part of sour milk in a pail. The liquids should be about blood heat. This emulsion may then be mixed with 12 times its amount of water. It must be thoroughly mixed and then may be applied with a force-pump, spray-nozzle, or even with a strong garden syringe.

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

Kerosene.....	2 gallons,
Water.....	1 do
Common soap, or whale-oil soap.....	½ pound.

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

PYRETHRUM.

This insecticide owes its virtue to a volatile principle. Its effect upon some insects, particularly caterpillars, is most remarkable, a very small quantity paralyzing and, in time, killing them, when brought into contact with their bodies. It has been used with good results against the caterpillar of the imported White Cabbage Butterfly, and for keeping down the numbers of House Flies and Mosquitoes in dwelling houses, and for destroying the Green-fly on house-plants it is of the greatest value. For house pests, as the last named, it is generally used as a dry powder, and may be diluted with ten times its weight of flour; it should be puffed into the air by means of bellows or insect-guns; but it may also be used for many insects as a liquid solution, either made from an alcoholic extract, a tea made by pouring boiling water over it, and keeping it covered until cool, or by simply stirring the powder in water. The last of these methods will be found quite as efficient and much less trouble than the others. The active principle is readily imparted to water and half an ounce of it will be sufficient for a pailful of water. As this poison is perfectly harmless to vegetation, and comparatively so to the higher animals, it is available as a protection to many garden crops, as cabbages and other greens, upon which arsenical compounds cannot be used. It is manufactured by pulverizing the flowers of two or three species of Pyrethrum, beautiful plants, growing wild in the east of Europe and in Persia. The poison itself has long been known in commerce as Persian and Dalmatian Insect Powder.

HELLEBORE.

This is the powdered root of *Veratum album*, and may be used much in the same way as Pyrethrum, except that it does not exert the same remarkable influence over house pests. For insects which attack small fruits, however, as the Currant Saw-fly, it is a most valuable remedy. Not only does it kill by contact, but is also poisonous if eaten, in this particular differing from Pyrethrum. Both of these poisons owing their virulence to volatile principles, care should be taken to procure fresh samples, because if left exposed for any length of time they will lose their virtue. They should always be kept in tin canisters.

I have now drawn your attention to the most important insecticides

used to keep down our insect enemies. These, I hope, will serve as a basis upon which you can work yourselves, and find out the most convenient methods for applying them, according to circumstances. I shall always be much pleased to correspond with any of you upon those subjects, and give you the benefit of any knowlede I may possess. I am much pleased to notice here this evening Professor Hind, who, as you all know, has paid much attention to all matters connected with agriculture, and some years ago published a useful work upon the insects and diseases which attack the wheat plant.

Mr. Robert Starr is also here, I am glad to see. He probably knows as much about the insects which attacks your orchards as any man can, who does not make a special study of them.

Had I known that these gentlemen, and a few more I see before me present this evening, would have been here, I might have doubted the necessity of my coming down from Ottawa to address you. Gentlemen, I thank you for the attentive hearing you have given me.

JUDGE WEATHERBE moved, seconded by MR. BLANCHARD, that the thanks of the Association be tendered to Professor Fletcher for his very interesting and instructive address, and, that the same be accompanied by an expression of regret that the time at the disposal of the Professor was so short on account of the lateness of the hour of commencing.

The motion being put was carried unanimously by a standing vote.

The following resolution was then passed :—

"*Resolved*, That this Association realizing the importance of the subject is much gratified to learn that the Dominion Government have appointed an Entomologist in connection with the department of Agriculture, and that this Association is under deep obligations to the Minister of Agriculture for permitting the learned Professor Fletcher to attend our present meeting and give us his able assistance in our work."

Adjourned till 10 a.m., following morning.

MORNING SESSION.

WEDNESDAY, JANUARY 27TH, 1886.

SUBJECT OF INSPECTION, *Continued.*

The adjourned discussion on Mr. Whitman's paper and the accompanying question was resumed.

The SECRETARY.—The appointment of inspectors is a question that I never could satisfactorily solve. What does inspection mean? The inspector must be present when the apples are packed or he will be obliged to turn them out of the barrels afterward. The inspection to be of any value must be thorough. Last year we packed all our own fruit, but we found the expense a serious matter. We determined to buy only from men whom we could trust. While I feel sure many lots were well packed it is evident our confidence was misplaced somewhere. We shipped some 3000 or 4000 barrels under our own brand. What was the result? Why our agents in London wrote back finding fault saying there was a great lack of uniformity in packing, and some of the apples were no larger than walnuts; this report we afterwards corroborated by barrels in our cellars which we opened. There might be one advantage in having inspectors, that in cases of dispute, there would then be a recognized official whose duty it would be to decide.

MR. PARKER.—I think the system of appointing an inspector would be a failure. All difficulty can be overcome by the speculator inspecting his own apples and labelling their qualities on the barrels. That is the method pursued by me and I find it satisfactory.

MR. HARRIS.—A good course to follow is to buy them on the trees and pick them yourself. I know one man who sold his apples for $1.25 per barrel and then shook them from the tree; that is a sample of some pickers. I do not believe that inspection by regular officers will work satisfactorily.

MR. MILLER.—It seems to me that the purchaser should take nobody's picking, but should inspect them himself. I have heard of farmers who have been badly and dishonestly packing their apples, but I have never heard their names. The names should be mentioned so that we could see who they are and have the charge brought home to them.

MR. FISHER.—I think an inspector should be appointed in each and every ward in order that they might be available when required. The Dominion Statute can be amended so as to cover our case. The Statute says that a barrel shall be so many inches but it not complied with ; in fact I think it is impossible to make use of the barrel there named. A man should have his barrels stencilled with his name, quality of apples, etc., and a penalty inflicted for the omission to do so. No man will cheat when it does not pay him and we should see to it that he cannot make it pay.

MR. PARKER.—I don't agree with the last speaker. Suppose I purchase a car load of apples, I am obliged to call on the inspector and he must be paid for his work. He is like other people perhaps, easily bribed and marks them without inspecting, but simply on my statement. I believe the scheme proposed would prove a failure.

MR. FISHER.—I only ask that a sufficient number of inspectors be appointed. There is to be no compulsion about it, but they will be there if required. A speculator who attempts to bribe an inspector deserves to be skinned. All I ask is that this statute be amended so as to enable me when I buy apples to say to the farmer will not pay you to cheat me.

MR. WHITMAN.—I can not see why there should not be inspectors of apples as of other products. Let the inspector be appointed and sworn to do his duty and compel him to turn out every tenth barrel in the lot ;—even that would be a check. I am glad that there are those present who sympathize with me on this subject.

MR. PARKER.—Mr. Whitman's argument refutes itself. Suppose the inspector passes over the barrel with the boots in the centre. Still you have the inspector's mark and name.

JUDGE WEATHERBE.—An apple inspection law would be worth nothing at all on the ground of expense. The best plan in my opinion is to compel the owner to stamp the barrel with his name ; and I think there should be a penalty. You can amend the Act. You can bring a man up before a magistrate and have him fined for fraudulently packing the apples. If you appoint an inspector you can not question the quality of the apples if the inspector's stamp is upon the barrel. I do not think the scheme could be carried out.

The evil will cure itself—the grower will sell his apples on the trees to buyers in England.

MR. FISHER.—The argument of the Judge is conclusive and I move that a committee of three be appointed to report this afternoon upon the most desirable course to adopt in the packing, inspection and exportation of apples. Passed.

Messrs. Miller, Fisher and Whitman were appointed the committee.

During the afternoon the above Committee made the following

REPORT.

We your Committee appointed to report upon the question of Inspection and Packing of Apples, after consideration of the subject, beg leave to report that,

In our opinion the alteration and amendment of the Dominion Statute, chapter 64, section 3, as hereinafter written would be the most available means of securing the object sought.

1. Amended by repealing the clause "With a lining hoop within the chimes," and adding after the word "nails" at the close of the said section the following words "with the name of the grower, variety and grade of fruit distinctly stencilled upon the head of every barrel. Grade to be expressed by Extra, Nos. 1, 2 and 3 respectively. Extra to be large and uniform in size of the respective varieties, well colored and perfectly developed. No. 1, average and uniform in size, fairly colored and without defect. No. 2, equal in all respects to No. 1, but smaller in size, and No. 3, to be small or large but not necessarily uniform in size or shape. All barrels to be solidly filled. A violation of the Statute to be punishable at the discretion of the court by a fine of from 25 cents to $5.00

MR. BLANCHARD.—I think it would be well to have some explanation of the terms used in the proposed amendment.

MR. FISHER.—It is essential that we should do something to stem this torrent of evil that is sweeping over the country. I see no reason why this matter should not be dealt with in the same manner as other commercial articles are treated. The Act now provides that all apples shall be packed in good, strong barrels of seasoned wood, etc. Now we all know that farmers owe hundreds of dollars to some one for the violation of this Act. I think we should put a number

one apple in a number one barrel, and a number two in a number two barrel and so on. I say that if something is not done in that direction this valley will soon lose its reputation.

A motion to adopt the report was then put and carried.

PLUM CULTURE.

Mr. Kimball then read the following paper :—

The Annapolis valley is one of the best soils and climates to grow plums on the American continent. The trees grow wild in the valley and on the mountains. They grow so easily, and bear so young—often a quarter bushel per tree the third year after planting—that it is astonishing that there is not one plum orchard in this beautiful valley where there ought to be hundreds. The plum like all fine fruits, attains its greatest perfection on heavy soil, though it will do well on gravelly and light soils if manured with plenty of wood ashes and salt and heavily mulched. The plum trees must be kept free from weeds, and no crop should grow under them. They want all the fertilizer the ground is capable of holding. When the trees are neglected, not cultivated or manured, they get diseased and soon die. By careful cultivation and top-dressing with wood ashes and salt and treating the diseases peculiar to the trees, they may be made to live long and bear large crops each year. The curculio is one of the pests that infest the trees. It is a small, dark-brown beetle that stings the fruit, causing it to drop off.

THE BEST TREATMENT,

not costing over ten cents per tree for the entire season, is to commence before sunrise as soon as the blossoms are falling, spread two sheets under each tree and give the tree a sudden jar by striking it a smart blow with the hand, or a club, wound with a cloth, so as not to injure the bark of the tree. The dormant insects will drop on the sheets, when they may be gathered, together with all fallen fruit and destroyed. This operation must be repeated every morning for two weeks. Another remedy is to take a number of small bottles, say a dozen for each tree, and fill them two thirds full of sweetened water and hang to the branches in different parts of the tree. Every day the bottles will be filled with dead beetles ; they can be re-filled and the operation repeated for two weeks. Either of the two methods will secure a good crop of plums.

that the tree is subject to is the black knot, which has so discouraged the planters that there are practically no orchards planted. This ought not to be so when the black knot can be so easily destroyed. It only wants time and patience to effectually banish it. Black knot, I think, is a disease of the sap, the same as cancer is a disease of the blood in the human body. By keeping the trees healthy with the right kind of food, ashes, and salt, and then with good clean cultivation and mulching, they will be almost free from this dreadful scourge. The main cause of black knot is the want of care in the treatment of the trees, by never feeding them, nor removing the weeds, brambles and grass that impoverish the soil. Not one farmer in a hundred ever cares for his plum trees. He just puts them in the ground and then lets them entirely alone. If he gave them the same care that he does his potato fields there would be but few cases of black knot. When the disease commences be sure to remove the diseased part or limb at once, and destroy it. B. C. Wilson, of Waverley, a successful fruit-grower, says, "that the black knot can be cured for the time by removing the diseased portion and washing the limb or trunk with coal tar." It is an axiom that a healthy person or tree is less liable to get diseased than an unhealthy one. So a rapid, healthy growing tree, with long joints like the Masters' plum tree, must be less liable to the attack of this disease than any other variety of plum tree. This tree had its origin in Kentville forty-five years ago, and is wholly free from black knot. It is a rapid grower, giving scions eight feet long in a single season, and is one of the best plums grown in the world.

PROFIT OF PLUMS.

Sharp & Shea, of New Brunswick, a year ago, from their small orchard, sold 1,000 bushels of plums for $4,000 at their own door, and last year 1,500 bushels for $6,000. A Canadian farmer raised from ninety trees of the Lombard variety, the third year from transplanting, forty-five bushels, and the fifth, ninety bushels. John A. Shaw and John Publicover, of Kentville, sold Masters' plums for six dollars a bushel. Fred. F. Mitchell, of Grand Pre, the fourth year from transplanting, raised from one Weaver plum tree, two and a quarter bushels, and sold them for $10.69. R. D. G. Harris, of

Canning, raised the fourth year, of the same variety, one and a quarter bushels, and sold them at five dollars per bushel. Robert Spurr, of Round Hill, from four trees of the same variety and planted the same time raised three bushels. John Daniels, of Windsor, J. P. Chipman, and Geo. Vaughan, of Kentville, raised three quarters of a bushel from each tree the fourth year. I might mention scores of others that have done equally as well with the same variety, Weaver plum. The price of plums this year has been extraordinary where all other fruits have been so cheap. The best of apples only [illegible] cents per bushel; cranberries three dollars per barrel; pears two to four dollars per barrel; while plums in all the markets in North America, have been from $10 to $15 dollars per barrel. At such prices they are beyond the reach of the poor. I have a letter from Professor James of the Canadian *Statesman*, saying that the trees are all dead in his county, and plums are a great luxury.

THERE IS NOT ONE PLUM ORCHARD IN NOVA SCOTIA.

We read in the *Western Chronicle* of January 13th, a letter from "Wanderer," of Citra, Fla., where a company will make a net profit from 100 acres, of $30,000 from 16,000 boxes. I will show you that a plum orchard of 100 acres here will double discount that orange grove :—

Cost of 100 acres	$ 2,000
Cost of 20,000 plum trees	10,000
Interest 4 years at 6 per cent	2,880
Ashes, salt, and mulch	5,000
Labor (10 men and teams)	13,870
Gathering and selling (45,000 bush.)	11,250
Total cost	$45,000

Take Fred. F. Mitchell's crop at the basis of $10.69 from one four year tree :—

20,000 trees	$213,800
Take cost out	45,000
Net profit 4 years	168,800

At the same rate Harris' plums would pay him $80,000 in the fourth year, and Spurr's, $30,000. From the above estimates we have a net profit of from $30,000 to $225,000 on an investment of $45,000, and still have the land and orchard left free from cost.

Supposing you say I have figured these estimates too high. I will divide them by 10, and we will have a net profit of from $3,000 to $22,500. We have now at our very doors an enterprise that will discount any orange grove or any other enterprise, whereby a capitalist can double his money in so short a time and help to make his country wealthy and prosperous. Who in Nova Scotia will engage in this sure enterprise and plant this spring 1886, an orchard of 100 acres of plum trees?

The SECRETARY.—I would take exception to the statement in the paper that farmers are not in the habit of cultivating the plum. I have black knot on my plum trees notwithstanding that I cultivate very highly.

MR. SMITH.—I had some fine, healthy trees, and last season the black knot appeared on them almost as large as the fruit itself. The soil was well cultivated.

MR. DAY.—The plum tree will thrive better under moderate cultivation than under high treatment. High cultivation increases the sap and the sap produces the disease.

R. W. STARR.—My experience is that salt is good. I know that neglect will produce the black knot as well as high culture. The ordinary barn-yard manure is not suitable.

MR. KIMBAL.—I say to cultivate enough to keep the grass and weeds away.

PROF. FLETCHER.—The black knot is a fungus and does not exhibit itself until it has long been in the tissues of the tree. The spore is carried in the air and falls on the trees. Wherever you find this evil it is essential to cut it out and burn it; you might as well leave it in the tree as place it on the ground for it develops as well off of the tree as in it. I am afraid that there is no plum tree wholly exempt from the attack of the disease though some are more liable than others. The absence of it in most cases is to be attributed to the freshness of the plant and the mode of cultivation. You can over cultivate a plum tree, and if you cultivate at the wrong time of year you get a good growth but the tree is injured. We should select those which are less liable to contract the disease.

The plum curculio is best got rid of by the jarring method. You must catch them before the sun rises as they are then sluggish and powerless. A sharp shock is much more effective than a dull stroke

from a club. Put a sharp spike into the tree, as large as your finger, which will not injure it, and strike that with a hammer. Allow your poultry full sway in the orchard and when you tap the tree they will quickly devour the falling insects. Paris Green, one table-spoonful to a barrel of water, is a useful application for the curculio of the plum and the codlin worm in the orchard generally. The codlin worm lays its egg in the flower and after a few days hatches and eats its way down into the fruit. By putting on the Paris Green just as the flowers are going out of perfection you will be in time to destroy the maggot. By putting a little coal tar in a fire under the trees the insect will be cleared away.

DR. WOODBURY.—My neighbor in New York had plum trees and he allowed his chickens to go in among them. In my garden there were no fowls. My neighbor had a good crop of plums and mine were a failure.

JUDGE WEATHERBE.—Does not a sudden change of climate affect insects?

PROF. FLETCHER.—I think so. I am told that the canker-worm was very destructive in Nova Scotia, and you had a sudden change of weather with frost and the result was the almost complete destruction of the worm. One very important element in the destruction of insects is the fact that there are other insects which attack and kill them.

PROF. HIND.—I have here a species of black knot which I am inclined to believe is a new form of the disease. I have heard it stated that the knot does not appear on the egg plum tree. The form which I have here appears in the extremity of the branches of the egg plum, and on all the smaller limbs, but I have not yet detected it on the larger limbs. It is interesting to know whether there is any remedy for it or not, as it appears on the trees in a form not hitherto known. Its vegetable form can be easily seen. Where there are tracts of burnt land we will find that the wild cherries grown there are covered with the black knot. From this we infer that potash can be of no use for application to the plum tree in preventing or curing the existing evil.

JUDGE WEATHERBE.—Too much importance can not be placed on what Prof. Fletcher has said. My neighbor has cut down infected limbs and left them on the ground; and as I understand that the

disease is propagated from such sources, and though a party would be liable, I think a penalty should be imposed and rigidly enforced.

PROF. FLETCHER.—The spores of the disease are developed to a much greater extent in that way than when left on the trees.

MR. DAY.—I would like to know the best varieties to plant. It is said that some plums are exempt from curculio and some exempt from the black knot. Mr. Andrew Johnson has a plum tree not affected by the disease and it is surrounded by other trees which are affected. It appears that the nature of the plum cannot be accurately ascertained. I thought it was the "Lombard" or something like that.

MR. BLANCHARD.—Enquiry has shown me that along the Gulf Shore of the St. Lawrence the black knot does not prevail, especially in the Island of Cape Breton. I imagine that state of affairs is owing to the salt of the atmosphere sweeping over the country.

PROF. FLETCHER.—I have never heard of a plum tree which was exempt from the curculio, but I have known certain kinds of wheat to possess inherent qualities exempting them from the attacks of the midge. The tree mentioned by Mr. Day may possess some such characteristic.

MR. DAY.—I don't know of anything peculiar about the tree.

PROF. FLETCHER.—At Ottawa trees on one side of the river are destroyed while there is no appearance of the disease on the other side. I think the absence of the black knot in Cape Breton is due to something in the soil rather than to climatic influence.

R. W. STARR.—The plum that Mr. Day speaks of I think will prove a valuable one. I cannot say how far it is curculio proof. The Sweet Water plum is not very susceptible to the curculio. The best plums appear to be the ones that the insect takes first. Those varieties which have a tough skin like the "Sweet Water" are comparatively free; but I believe the insect will change its habits and get any kind of fruit.

I have observed the black knot on the egg plum. I agree with Professor Hind that it is a new species of disease. I always cut it off, and where it cannot be cut off I cut out the infected part and paste up the spot with soft soap and sulphur.

JUDGE WEATHERBE.—They can raise better plums in Cape Breton than we can here and for them is an unlimited field, and I would not advise any man to go largely into plums when he can make $100 and upwards from an acre of apple trees.

MR. MASTERS.—The "Masters" plum is a good feeder and not susceptible to the black knot when kept by itself. It forms wood very quickly and bears well.

SECRETARY.—A gentleman living near me has found a good remedy for black knot in common fish pickle applied with an old broom.

MR. WHITMAN.—I cut off all the black knot, and then put salt around the roots. This has proved a success.

Adjourned till 2 o'clock, p.m.

AFTERNOON SESSION.

WEDNESDAY, JANUARY 27TH, 1886.

Business resumed at 2 o'clock, p.m.

The PRESIDENT here stated the Association had been receiving the reports of the Michigan Society in exchange for our own, and that arrangements were being made to preserve those reports in a library in order that they might be available at any time.

MR. COLEMAN.—I would like some information concerning an insect which attacks the scions of the "King of Tompkins." The leaves turn red and the trees dies. The insect is a small worm or borer and finally digs out and goes away.

MR. SMITH.—There is a little worm which attacks the bud; it is hatched just before the bud come out. I have not seen it on the King of Tompkins alone, but it attacks any and every variety. I pick it off and find no further trouble.

The SECRETARY here read a communication from his Hon. Lt. Governor Richey expressing his regret at being unable to be present on this occasion, and referred to a similar letter from the Hon. Provincial Secretary, who through illness was confined to his rooms.

FROST PROOF WAREHOUSE.

MR. MILLER moved seconded by MR. BLANCHARD,

That, "*Whereas*, in view of the very great risk which now attends the shipping of fruit and other perishable products during the winter months,

Resolved, That this Association wish to again express, most emphatically, the absolute necessity of having some protection in the

way of a frost proof building in connection with the railway at Halifax; and that we urge the Executive Committee to press the importance of this matter upon the railway authorities with a view to attaining this indispensable desideratum at no distant day."

MR. BLANCHARD.—At one time we thought this boon was granted, and we imagined that we saw the building in existence. After efforts were made by the Executive Committee, a leading member of the Dominion Government gave us the assurance that the necessary amount required to build the warehouse would be placed upon the estimates, but owing to the absence of that particular member there was no one to bring the matter before the Government and there is where the matter stands. I think the only way of getting our request is to agitate, and if the matter is energetically urged it will be obtained.

Afrer a few remarks by several gentlemen the resolution passed unanimously.

STUDY OF HORTICULTURE AND FRUIT GROWING.

PROFESSOR SMITH, of the Provincial Normal School, of Truro, then delivered the following address:—

The general and prevailing impression appears to be that I am employed simply to teach natural science and agriculture in the Normal School. I do, it is true, deal with some of the principles of natural science as taught at the Normal School, but a portion of my time is occupied in teaching students who attend there to study agriculture alone,—that is, who attend the School of Agriculture. This school has for its object not only the development of a better knowledge of the subject for farmers and their sons, but also the communication of that knowledge to young men who teach throughout the different parts of the Province. A man may be educated for almost anything, but it does not follow that his education will fit him for everything—a person educated for the legal profession is not educated for a farmer. The great difficulty seems to be the getting of an education that will enable its possessor to successfully pursue his adopted calling; this is the object of the School of Agriculture. Universities are not well patronized because the subject of agriculture, as taught in colleges, is one for which the farmers' son has not been previously prepared; but if we start our children in this study at the common schools they will be ready for the more advanced stages when the college career begins.

I intend to point out to you some of the main features of the subject as taught at the School of Agriculture, and to deliver a brief lecture such as I would give my class on an ordinary occasion.

Botany has not, until very lately, been considered of sufficient importance to be taught. It means something more than the division of the different varieties of plants; it includes the subject of the diseases that so fatally befall our fruit trees, the fungus known as the black knot, for instance. It embraces the whole life history of the plant itself. There exist in the air, water and soil, minute plants, so small that we are obliged to use a magnifying glass to examine them satisfactorily, and yet these very plants like the insects, are producing an inconceivable amount of destruction to our fruit. The trouble is not confined to the horticulturist alone, but extends through the whole sphere of husbandry. While there exists the black knot in plum and cherry trees, there is the ergot in the rye, and the rust and smut in the wheat and barley. We find that the diseases known as pear-blight and peach yellows are caused by some of these minute plant germs; and not only does the disease affect the plant but it is frequently transmitted to animals. Cattle are known to have been poisoned from eating potatoes affected with rot; whether the potato fungus was the cause of the poison or not I do not know, but probably it was.

I did not anticipate such a thorough discussion on the subject of black knot as has taken place here to-day; however, I would direct your attention to a few points. The germs of the disease are called conidia and are very small and light. They float about in the air and come in contact with the young and tender parts of the plants and settle there to grow and develop. During the first season they generally accomplished no more than the placing of their branches under the bark. These branches multiply and in course of development destroy some of the tissues of the tree, the limb swells and finally bursts open when we have the black knot in its first stage. An experienced eye can readily detect it. When it first bursts open it is not black, but rather a dark greenish color. The germs continue to reproduce from early spring till fall when little sacks are formed on the surface of the knot in the upright branches, and ripen and develop about February or March. Upon an examination of these minute sacks we see little eminences which hold small hair-like bodies; and these hair-like bodies develop the disease and are so

small that the wind will carry them a long distance thus spreading the disease far and near.

Then there is the sexual reproduction, but little seems to be known about this part of the subject. Though we know something about the disease itself yet we are almost entirely unacquainted with its life history. I would suggest that the infected part of the tree be singed with fire before it is cut off as by so doing you kill the germs and prevent them from being scattered by the wind when being lopped from the tree. When cutting go down two or three inches below the knot—this should be observed because the parasitic plant germs branch down toward the body of the tree in preparation for their next operation in bursting open the bark. By cutting off close to the fungus you leave a portion of the spreading conidia to develop the following season. The prevention of the disease is a matter of speculation only because of our limited knowledge of the life history of the disease itself.

The first experiment with potash was made at Houghton farm, where I was chemist last year, by one of our honoured Canadians who is now at McGill College. They had an experimental orchard containing different varieties of fruit trees which were manured crosswise, and it was found that pear blight and peach yellows did not exist where potassium chloride was applied. The conclusion arrived at was not that potassium chloride was a specific in the sense of being antagonistic to the growth of the blight, but simply that the soil not having sufficient potash to supply the trees rendered them liable to the disease. The ash of the trees did not possess a normal amount of potash. Is it not probable that our plum trees are abnormally developed and lacking in some essential constituents? If potassium chloride be destructive to the germs of the blight perhaps there is something which we can feed to our plum trees which will will render them proof against black knot. Unfortunately we know very little about this evil; there is a great deal more to be learned on the subject than has been written. If it be true, as I have heard it stated, that the indigenous plum tree is more susceptible to the disease than those lately imported, it tends to show that our trees are not in a healthy state, and that if they were put in a healthy condition they would probably resist these destroying elements. Having heard before I came to this Province that Nova Scotia fruit was the best in the world, I am anxious, though not a fruit grower

either by birth or education, to see that reputation sustained and improved. (Applause.)

MR. RAND.—A great deal of injury has been caused in some sections by plum rot and it appears to be increasing. The Marshal Gange and the Egg plum are most affected by it. I have put up plums in good condition and in a few days they were unfit for use. My soil is a gravelly one. I would like to ask if muriate of potassium is the same as chloride of potassium.

PROF. SMITH.—They are the same.

PROF. FLETCHER.—I would like to ask why it is that the remedy of potash has not been more generally used as a preventative.

PROF. SMITH.—There are not a dozen cases to my knowledge beyond a radius of fifty miles from Houghton College where potassium chloride has been used with success, and I can not see why it has not been more extensively used. It may be due to the fact farmers have not adopted the proper mode of application.

LADY FRIENDS.

MR. COLEMAN.—I observe with great pleasure that this Association is honoured with the presence of ladies, and I am glad to notice that their attendance has been increased by 100 per cent on that of last year. I wish to see the time when it will be the general custom for ladies to attend these meetings. (Applause.) As you all know I am a single man, but if I had a wife I would bring her here if it could be done peaceably. (Laughter.) I think we should encourage the ladies to come here as their presence would stimulate us to higher acts and nobler deeds.

The PRESIDENT here stated that ladies were eligible to membership.

EXHIBITIONS, THEIR DEVELOPMENT AND UTILITY.

DR. CHIPMAN here read the following paper.

Mr. President and Gentlemen,—When your Secretary invited me to write a paper to be read at this meeting of your Association, I felt some hesitancy in making the attempt, as I doubted my knowledge of, and ability to write upon, those subjects which are most interesting to your members, the majority of whom, I am well aware, are men of practical experience in fruit culture and *au fait* in

everything connected therewith. But, while I felt that I should occupy an humble position in your Association in this respect, I was unwilling to stand less than the peer of any of your members in my interest in the good work which has been and is being done by your flourishing Association for the people of this valley, the Province at large, and individually for the whole Dominion—,as the Provinces are now members of the body politic, and whatever will benefit one member must affect the whole beneficially.

I felt, also, that standing apart as I do from any personal or pecuniary interest in fruit culture, my paper would manifest my zeal in this cause and prove my earnest desire to be of use in any patriotic work. These latter considerations have induced me to inflict upon you this paper, the subject of which is a brief sketch of the Exhibitions which have been held by your Society, as well as those abroad to which your Association has sent exhibits of fruit, and at which the superior merits of Nova Scotia apples, have, in every instance, won a prize.

I shall call your attention first to the important place won by Exhibitions in the industrial world during the last quarter of a century. The Exhibition, or Exposition, has now become an established institution in almost every civilized country. All the great capital cities of the old world, and a number of the large cities in the new, have held a great World's Fair, where the products of every clime and people were gathered together and displayed to the best advantage for the exhibitors, and the instruction and pleasure of the thousands of visitors. London, Paris, Vienna, and Berlin across the water, and Philadelphia and New Orleans on this side, have spent years and millions in preparation for such an Exposition and the proper arrangement and display of the fruit of the whole earth, and the infinite variety of products from the hand and brain of the entire race, and have deemed the time and money well spent.

"Exhibitions on a smaller scale are being held annually all over the world. There are international, national, state, provincial, district, county, and society exhibitions; agricultural, horticultural, and floral shows, exhibitions great and small and of every kind, and the country which does not take part in them must go to the wall. They are the world's newspapers, in which each country may advertise her products, her improvements, and her people's enterprise and skill, and, like the newspaper of to-day, they are a product of this

nineteenth century, and their influence must be counted in the race for population and wealth. This Canada of ours, in particular, with her sparce population, her millions of acres of fertile land in the North-West waiting for settlers, and her millions of dollars spent in building her great national railway to consolidate her provinces and open up this great "lone land" to emigrants, MUST use these exhibitions, great and small, to show her resourses and attractions to the world, and turn the tide of emigration to her shores. OUR North-West (for it is ours by legal acquirement first, and again by the crushing of the Riel rebellion, in which Nova Scotians did their part) is well described as

"A COUNTRY OF MAGNIFICENT DISTANCES."

The Canada Pacific has laid its rails of steel 2895 miles from Montreal to the Pacific. It runs in this new country 1000 miles through forest from the Upper Ottawa to the Red River; then through a 1000 of alluvial; and then through five or six hundred of mountains. Those who are familiar with the climate and soil of the region predict the thousand miles of prairie will become the granary of the world, while the other provinces develop their strength in general agriculture, dairying, stock-raising, fruit-culture and manufacturing. All these branches of industry have been and can be stimulated by exhibitions at home and exhibits abroad. Our people are becoming alive to this fact. Canada has held a Dominion Exhibition, and the provinces have held more than one Provincial Exhibition, and Canadian and Nova Scotian exhibits, particularly of fruit, have been sent to all the great exhibitions, and these have a world-wide reputation. The whole Dominion is now engaged preparing exhibits on a grand scale for

THE INDIAN AND COLONIAL EXPOSITION

to be held in London next summer. Nova Scotia, within a few months, has held her Provincial Exhibition in our own county of Kings, and is busily at work for the Indian and Colonial. Your secretary has exposed such an exhibit of apples and small fruit as has never before gone across the Atlantic from this valley. We cannot estimate the importance of making a creditable show at the coming exhibition, which is the only exhibition held under a royal proclamation since the great International Fruit and Vegitable Show of 1862,

of which the Queen was patron, and the Duke of Buccleuch, president. That exhibition was conducted by the Royal Horticultural Society of London, and was the first show to which Nova Scotia exhibits were sent for competition. It was two years previous to this, however, that Nova Scotia fruit and vegetables were first sent to London. In 1860, the late Richard Starr, an honoured member of this Association from its inception until his death, less than a year ago, sent a barrel of apples to the Queen, another to the Prince of Wales, and a third to the Duke of Newcastle. The receipt of those apples in good order was duly acknowledged, and to Mr. Starr, therefore, belongs the honour of the pioneer shipment of Nova Scotia apples to England. In this connection I may be allowed to call the attention of your Association to the memory of another whose name is inseparably connected with the history of fruit culture in Nova Scotia. I refer to the late Honorable Charles R. Prescott, of Acacia Grove, Starr's Point, who was a contemporary and neighbor of Mr. Starr, their farms adjoining. To his example, his neighbor and many others owe their first incentive towards grafting and improving their orchards. He spared no trouble or expense to gratify his taste for horticulture, sending to all parts of the world for scions and trees, and he was always glad to share his experience and possessions with those who lived around him. He has well earned the title, which I heard given to him not long ago by the son of his old neighbor,

"FATHER OF POMOLOGY IN KINGS."

In addition to the shipment of apples by Mr. Starr, specimens of fruit and vegetables were sent to the great London Exhibition of 1860. Those specimens, however, were all dried or preserved, and could give but a poor idea of the size, color, flavor, and beauty of our apples in their fresh and natural state, yet they were much noticed and admired, and the favor with which this dried exhibit was received in England, encouraged certain gentlemen in Halifax, composing the Horticultural Show Society, to offer large prizes for the best products to be first exhibited in Halifax and afterwards sent to the great International Fruit and Vegetable Show to be held by the Royal Horticultural Society in London in the autumn of 1862. The success obtained at this exhibition, in competition with the world, exceeded all expectations, and firmly established the superiority of Nova Scotia apples at that early date. The silver

medal, the most honorable award given was won by our collection of apples, and seven bronze medals for grapes, potatoes, and other products. R. G. Haliburton, secretary of the Nova Scotia Board of Commissioners, exhibited sixty-three dishes of apples, which were accredited to the Horticultural Society of Halifax; Richard Starr, eighteen varieties, and D. H. Starr, fifteen varieties. The gentlemen composing the Nova Scotia Board of Commissioners were as follows: The Hon. Joseph Howe, A. McKinlay, the Hon. A. G. Archibald, the Hon. J. H. Anderson, the Hon. B. Wier, Robt. Morrow, J. M. Jones, P. C. Hill (mayor), Chas. Tupper, W. Cunard, J. A. Bell, John Tobin, James Thompson, S. Caldwell, A. M. Uniacke, Robt. G. Fraser, J. C. Campbell, Jos. R. Hea, Rev. A. Forrester, Prof. H. Howe, Ald. Jennings, R. G. Haliburton, J. Outram. As a sequel to this exhibit in London, a meeting of agriculturists from all parts of the Province was held in Halifax in March, 1863, and the Horticultural Association and International Show Society was organized. The name was shortly afterwards changed to "The Fruit Growers' Association," which the Society bears at the present time. The Association's first exhibition was held in Kentville, October, 1863. The government commissioners contributed $200 toward the expense, and prizes to the amount of $206 were awarded. A selection from the fruits was sent to the Royal Horticultral Society for which a silver medal was presented to the Association by the Secretary, Mr. Murray, to be competed for by the members. In the autumn of 1864, the government commissioners held a Provincial Exhibition in Kentville, and the Association took charge of the agricultural and horticultural department, receiving $400 towards the prize list. The late Dr. C. C. Hamilton, president of the Society, was the commissioner from the Association, and the Provincial commissioners were the Hon. Mr. Creighton and George Hamilton.

BUT THIS WAS NOT THE FIRST PROVINCIAL EXHIBITION

held. As long ago as 1844 a Provincial exhibition was held at Kentville, under the patronage of the Board of Agriculture and the auspices of the four agricultural societies. The Hon. John Morton was president, and C. W. H. Harris, secretary. The Board gave £50; the Cornwallis Society, £10; Kings County, £10; West Cornwallis, £10; Aylesford, £5, to the prize list, [Vide *Halifax Times*, July 14, 1844.] In 1865 an exhibition was held at Wolfville,

and another selection of fruit and vegetables was sent to the Royal Horticultural Society and this time Nova Scotia won a gold medal in competition with all the colonies of Great Britain, and a valuable collection of scions was also sent, as a further acknowledgment. In July, August, September and October, 1866, four monthly exhibitions were held in Wolfville, Berwick and Canard, and a collection of some forty varieties of apples was sent to the Massachusetts Horticultural Society for names and classification, and another large collection, packed in plaster and duplicated, was sent to the Paris Exposition in the care of the Provincial delegate, Dr. Honeyman. In 1867 the Annual Exhibition was held in Somerset. A Provincial Exhibition was held in Halifax in 1868 at which J. G. Byrne, of Kentville, won a prize of $100 and a gold medal given by the Fruit Growers Association for the best collection of apples from the whole Dominion. In this year the Society held its exhibition in Bridgetown. In 1869 a collection of fruit was sent to the Dominion Exhibition in Ontario. In 1870 the exhibition building was erected in Wolfville and the Annual Exhibition held there in the autumn. In 1871-2 exhibitions were held in Wolfville and a collection sent to Richmond, Virginia. In 1873 the Association rested from its labours and held no exhibition, the first omission since 1862. In the following year, however, (1874) their efforts were redoubled, and

A DELIGHTFUL SHOW OF FRUIT AND FLOWERS

was given in July in Annapolis. The annual exhibition was held in Wolfville in September, and, by request of the government, their aid was given to the Provincial Agricultural Exhibition held in Halifax in October. The annual exhibition was held in Annapolis in 1875, and 21 sorts of apples, 14 of pears, and 10 of plums, were sent to the show of the American Pomological Society in Chicago. Delegates also attended, and a silver medal was received for the contribution. Another collection was sent the same year to Birmingham, England. In 1876 the annual exhibition was held in Wolfville and a collection of fruit was sent to the Centennial at Philadelphia, for which a diploma and bronze medal were received. In 1877 the Association held its exhibition in connection with the Provincial Exhibition, and in 1878 in connection with the County Agricultural Exhibition in Kentville, and the annual exhibition in 1879 was also held in Kentville. In the year 1880 the Association sent a

collection of fruit to the exhibition in St. John, and received a diploma. It was also represented at the Provincial Agricultural Exhibition in Kentville, and held a winter show in Wolfville. In 1881 the Fruit Growers' Association united with the Dominion exhibition in Halifax and contributed $75 to the prize list. In 1882 delegates were sent to the different district exhibitions, and the annual exhibition was held in Halifax, in March 1883, during the session of the local house. A convention was convened and much enthusiasm excited. In this Messrs. Nothard & Lowe offered a prize of £5 stg. for the best lot of Ribstons Pippins, not less than 10 barrels, packing to be considered. The prize was awarded to Rev. F. J. H. Axford. In 1884 30 varieties of apples were sent to Sir Charles Tupper in England and placed by him in the great cattle show in Birmingham. The Secretary also sent a private collection to the great apple congress held by the R. H. S. at Chiswick. Ten thousand plates from 182 fruit growers were on exhibition, and among all those, the collection from Nova Scotia is called,

"AS FINE A LOT OF FRUIT AS WAS EVER STAGED AT AN EXHIBITION."

Last year a collection was sent to Edinburgh on very short notice by the energy of your Secretary, and other collections were sent to the Crystal Palace, winning for Nova Scotia two silver cups and a money prize. Our apples were also placed by Mr. Lowe at the Crystal Palace show in October, the Royal Horticultural Society's show at Health Exhibition, and at the subsequent show at the Crystal Palace in November. No exhibition was held by the Association in 1884-5, but its members contributed the greater part of the fruit exhibited in Kentville last autumn. Our record ends with 1885. The work accomplished and the success achieved by the Association during the past five-and-twenty years is simply wonderful. An exhibition has been held, or aid given to one by this Society every year since its organization. Fruit has been collected and sent to all the great shows with the single exception of the World's Fair in New Orleans, and want of funds was the cause of the omission in that case. A vast amount of practical information bearing on fruit and fruit-culture has been gathered from many sources, and placed within the reach of all our farmers. The influence of the Association has won from the government of the day many valuable concessions for facilitating the shipments of our apples. To their efforts are largely due the improved methods of picking and packing our apples, which enable our farmers

to place them in the London market the superior of any other apples in the world, and this brilliantly successful,

TRULY PATRIOTIC WORK

of the Fruit Growers' Association places it in the very foremost rank of the institutions of our Province, and should win for it universal favor and support. Now, sir, the history of exhibitions is the history of your Association. Its organization was due, in a great measure, to the success of the exhibit sent to London in 1862, and, ever since that date, exhibitions and exhibits have been the tools with which this Association has wrought out its wonderful progress and success. The history of this Society, therefore, demonstrates the utility of exhibitions, and there is need of no further arguments in proof thereof. With this meeting begins the history of 1886. There are great possibilities in this year. The Indian and Colonial Exhibition, of which the Prince of Wales is President, with one of Canada's farmer Governors-General, the Marquis of Lorne, President of the Canadian Department, will afford such an opportunity of placing the products of our country and people before the world, as has never been equalled. The mother country will gather into her City of London, the greatest city of ancient or modern times, the very centre and heart of the commercial and financial world, samples of the products of all her colonies, and show them to all the nations. Canada will be placed side by side with India, Australia, and the Isles of the Sea, and she must look well to her laurels, and show that she is indeed and in fact as well as in name, the "premier colony" of the British empire. Nor trouble nor expense should be spared in our representation at this coming exhibition, and grand results may be confidently looked for from it.

Mr. Fisher moved, seconded by Mr. Banks, that the sincere thanks of the Association be tendered to Dr. Chipman for his valuable paper. Passed unanimously.

THE COLONIAL AND INDIAN EXHIBITION.

R. W. Starr.—We should not lose sight of this matter. The Exhibition continues from the first of April to the first of November; therefore we can exhibit our apples, pears, and, possibly, our plums,

also our berries of the hardy varieties. A Canadian Restaurant is to be fitted out exclusively with Canadian produce, and I think that would be an excellent place to have our produce tested.

THE PRESIDENT.—Mr. Saunders, President of the Ontario Fruit Growers' Association, has been appointed by the Dominion Government to go over and take charge of Canadian fruit for one or two months.

MR. FISHER.—Is it not possible for this Association to send one of its members over about the time that Mr. Saunders returns?

THE PRESIDENT.—I think our circumstances require it. We have the fruit and we have the men.

MR. MILLER.—I think we ought to authorize the Executive Committee to ask the Dominion Government to send a member of this Association. I therefore move:

"That the Executive Committee secure, if possible, the appointment by the Dominion Government, of a man selected by this Association as alternate Dominion Commissioner at the Colonial and Indian Exhibition."

The SECRETARY.—I am informed that the Government are likely to make several appointments from time to time during the Exhibition. We should endorse the appointment of Mr. Saunders, and I would recommend Mr. Gibb of Quebec as a very suitable man, and also that we suggest one of our own members.

DR. CHIPMAN.—I have much pleasure in seconding the motion.

The motion was put and carried unanimously.

MR. FISHER.—I think we should select our man now. As our Secretary, Mr. C. R. H. Starr, is a person of good executive ability, I move that he be our representative, subject to the approval of the Dominion Government, at the Exhibition.

MR. MILLER.—I second the motion. Carried unanimously.

The SECRETARY.—I assure the Association that I appreciate the action just taken, and, should I be fortunate enough to receive the appointment by the authorities at Ottawa, I will use my best efforts to perform my duty. I realize the fact that the Commissioner, whoever he may be, will not find the position a mere sinecure.

The following letter from Mr. John Lowe, London, was now read :—

LONDON, *17th Dec., 1885.*

C. R. H. STARR, ESQ., *Secretary F. G. A.*

My dear Sir,—I have your letter asking me to give you some account of Class C. (for packing) at the late Show at Crystal Palace. All the barrels shewn were well packed, and the judges had, I believe, some difficulty in deciding who to award the prizes to. Your two barrels were the first to be put out of court, and I quite agree with the reason. The apples in this class were to be samples of packing for this market, and as yours were in paper—and it would be quite out of the question to pack all apples in paper—they were ruled out. The Blenheims shown were all rather bruised, but the Tomkins and Ribstons were all very fine indeed.

Now, as regards packing, I am still of the same opinion as ever, that a piece of paper top and bottom, and a very thin layer of excelsior, is the best way to pack. I regret to say, however, that we have had more slack packed barrels this season than we ever had, and I have had the remark made to me continually this season that Nova Scotian apples are not so well packed as they used to be. I must ask you most emphatically to bring before your Society this very important matter. In the lot we are now selling, ex *Australia*, there are numerous lots most disgracefully packed. In one sender's shipment I have not seen a single barrel well packed, and as there are Blenheims among them, and other soft kinds, you can imagine the state they are in. Another sender of some 200 barrels, and who has, no doubt, bought of various growers, has some good, well-packed apples, very fine indeed, and others very great rubbish,—but all marked exactly alike—No. 1 Tompkins, or No. 2 Ribstons, as the case may be. Now this sort of thing is bad policy. Possibly (to speak plain) a grower may think it a clever thing to serve buyers like this; but it tells against all in the long run, as it sets the buyers here against your apples. While on the subject of packing, I think it would be well to try papering Blenheims, they so seldom come sound. I think the experiment should be tried.

The Canadian apples are coming well packed again this season; of course they are very tightly packed—this is done by putting great pressure on the bottom of the barrel, so great that the bottom layers

are nearly always smashed; but this is overlooked by buyers, as the barrels are tight.

Another thing I wish to bring before your Society is, the size of Nova Scotian barrels. Cannot you all adopt Canadian barrels. A few senders use flat hoop barrels. This is a step in the right direction; but the Canadian sort would be better still. Buyers complain about the difference in size—and if we have a lot side by side the difference is very great. I should be glad if you would all give this your attention. It is a good plan to put a sort of lining hoop or two pieces round top and bottom of barrels to prevent the heads starting.

Nova Scotia is still first for Gravensteins, King Tomkins and Ribstons; but for Greenings, Baldwins, Spys and Spitz, you are simply not in it at all. Those we have had so far of the latter four kinds have been very poor stuff compared to those we are having from Montreal and Boston. Why will your people keep sending Talman Sweets, Bishop Pippins and apples of this class? They are *useless here*,—far better cut the trees down and plant something good in their place. Of course, if you consider these apples choice stuff, why grow them, but keep them in your local markets. In our Australian shipment we had about 100 barrels Bishop Pippins, and have had the greatest trouble to sell them at any price.

The multiplicity of marks is another matter I would like to go into, but I know it is dangerous ground. If, however, the dealers could send a greater bulk under one mark it would be better. By this I mean, suppose A. buys Ribstons of B., C., D. and E., and B's and D's are about same quality and C's and F's about the same, it would be better to mark them "A. No. 1 Ribstons" for B. and D., and "A. xx Ribstons" for C. and E. By this means we should have greater bulk under one mark, which suits wholesale buyers better; but if we are to have them all marked alike, irrespective of colour or size, then let's go on as at present.

In conclusion, I again ask you all to consider this packing matter mentioned in the first part of my letter, as most vital to the interests of your apples in this market. Possibly some of your members may feel rather annoyed at some of the remarks I have made; but you know I invariably speak plain.

Assuring your Society of my best attention at all times to their interests, and wishing you all a very happy and prosperous new year,

I remain. faithfully yours,

JOHN LOWE.

MR. R. W. STARR.—I have found apples to shrink more this year than ever before. Every barrel should be tested before being sent from the warehouse.

MR. MILLER.—What is the difference between a Nova Scotian barrel and a Canadian one?

MR. FISHER.—None whatever; the same law governs us all. After listening to the spirit of that letter, I think we deserve a chromo for recommending a repeal of the existing law. It is not sufficient that we should have a law made, but we should also insist upon it being observed.

The PRESIDENT.—Last year barrels were sent from our locality which were made according to the then existing law, viz., a 29-inch stave.

MR. MILLER.—It is important that the croes should be raised to make the chime as short as possible.

MR. DAY.—I cannot find a shipper who can pack apples so that his barrels will be full when they reach the other side. It is said that at Annapolis the shippers fill their barrels as full as possible and turn the head upside down, and then they shake them and allow them to stand in that position. They afterwards shake them down, fill them, and put a pressure on them.

The PRESIDENT.—We pack all our apples in that manner.

MR. DAY.—There are men who pick their apples only a fortnight before shipping, and when that is the custom the barrels will not be full.

MR. MILLER.—Apples will shrink considerably after being first packed, and it will take seven or eight barrels to fill up a hundred of shrunken ones. When that is done they reach the market in proper condition.

MR. DICKIE.—The coopers make the head too thick and that makes the barrel small. I find the best packers follow the course suggested by Mr. Day, but the apples are kept in one position all the time, never being turned over from the time of packing until they reach their destination. The Americans used hard-wood barrels.

The PRESIDENT.—I know that apples are stood in the warehouse resting on their bilge, but the barrel should always stand on its head.

Resolved, that the Secretary tender the thanks of the Association to Mr. Lowe for his instructive letter.

The following letter and resolution from Mr. Edwin Chase was then read :—

To the Fruit Growers' Association :

GENTLEMEN,—Permit me to call your attention to the fact that a large number of apples are grown by our fruit culturists which have not proved themselves worthy of a prominent place in our orchards.

When last autumn, collections were made for the Crystal Palace Exhibition, it was evident that not only the ninety varieties called for the largest exhibit that could be procured without difficulty, but that a much larger number could be obtained, if necessary ; and yet but a small proportion of these varieties could be called superior.

It is evident that there is more money in a certain number of barrels of first class apples than in the same number of inferior kinds. If we can raise the better sorts as easily as the former ones, it will be wise for us to confine our attention to the production of those, and then, by careful selection and good packing, retain for Nova Scotia the good name she has secured in the markets of the world for superior apples.

I beg leave to move the following resolution :

" That the Fruit Committee of this Association prepare a list of the varieties of apples raised in Nova Scotia with which they are acquainted, and suggest the extent to which, in their opinion, each should be grown by us."

EDWIN CHASE.

MR. MILLER.—Referring to the motion as contained in the letter from Mr. Chase, I think the letter received by this Association from Mr. Lowe gives the key-note. It would not be wise for us to cultivate any kind of fruit that would be inferior to that of other countries.

On motion of MR. MILLER the paper was allowed to stand over until the

REPORTS FROM VICE-PRESIDENTS

were read.

BRIDGEWATER, *January 8th, 1886.*

DEAR SIR,—I received your favors of 26th December. I have consulted Mr. William A. Hebb, our largest fruit-grower, and others engaged in the same good work, and am enabled to give you the following information.

A marked improvement has taken place during the last two or three years in obtaining good varieties, enlarging young orchards, pruning, and re-topping trees, and cultivating the ground. The best varieties of apples generally grown here are Nonpareil, Baldwin, Rhode Island Greening, Gravenstein, Northern Spy, and King of Tompkins. These thrive well with us, when properly attended to. The Bishop Pippin, as an early winter apple, also thrives well. Drap d'Or, Strawberry and William's Favorites, are grown in some orchards.

This county is considered to be well adapted to the growing of fruit, but it is only of late years that much progress has been made. The specimens shown at our exhibitions, compare well with those seen at other Exhibitions within the Province.

The greatest difficulties our fruit growers have to contend with are occasioned by drouth and heavy storms. The latter especially have of late been a great hindrance to the gathering of the accustomed supply of fruit.

Plums are more than ever infested with black knot and curculio, and the supply of fruit is not equal to the demand. Pears are doing well and the cultivation of this fruit is on the increase. English varieties of Cherries, so far as they have been cultivated, seem to have done well, but there is much less of this fruit raised than is desirable All the smaller fruits are receiving more attention than ever before.

Quite a step in advance has been made of late towards raising a much larger supply of Cranberries and good results are hoped for. We have a great deal of land suitable for the growth of this berry and more of it will every year be used.

Grapes do very well and a large additional number of vines have been put out. Peaches are still raised to some extent and ripen, as do the grapes, in the open air, varieties might be obtained more suitable perhaps to the climate than those hitherto procured.

New orchards are being set out in many places, and there is a very large yearly increase in the number of trees brought in for transplanting. There are also several nurseries of young grafted trees, some of them containing many thousands.

Steps are now being taken to hold a County Exhibition next fall, and there is no doubt that there will be a good display of the different kinds of fruit raised in the County.

In the interests of the fruit growers replies to the following questions would be thankfully received:

What are the six best varieties of apples to cultivate for foreign markets, naming them in order of merit?

Is England the only market Nova Scotia can now depend on for her fruit, and is it likely that this market will be overstocked, and prices become very small—causing loss to shippers?

Are the late Russian varieties of apples worthy of cultivation in Nova Scotia—such as Winter Lowland and others?

It is thought that meetings under the auspices of the Association might be held with advantage at Lunenburg, Bridgewater and Mahone Bay during the winter.

Yours truly,

M. B. DesBrisay,

Vice-President for Lunenburg Co.

Weymouth, Digby Co., N. S., *Jan. 8th, 1886.*

C. R. H. Starr, Esq., *Sec'y Fruit Growers Association:*

Dear Sir,—In complying with the request of your Vice-President, Dr. Morse, I have to say that fruit growing in this county is comparatively in its infancy. The opinion has largely prevailed in the past that the only part of Nova Scotia in which fruit could be successfully raised was in the Annapolis valley, but of late years we have learned that such ideas are erroneous. Parts of this county now produce as fine fruit as can be grown anywhere. In fact all parts of the county not exposed to the sea winds, yield good crops when properly cultivated and taken care of. The chief fruit growing centres are Bear River, Weymouth, New Tusket, Corberrie, not that these localities possess natural facilities above other sections of the county, but from the fact that more attention has been given to the subject. Bear River has long been famed for cherries, and I suppose no part of the world can surpass it in natural adaptation to the raising of this luscious fruit. Its warm, fertile valleys, and sunny slopes produce, apples, pears, plums and grapes in abundance; very fair peaches are also grown there. Weymouth is second to Bear River in the matter of cherries. They require no cultivation here, producing good crops when set along the roadsides or in fence corners. Apples

do well here when properly cultivated, and some of the varieties yield abundantly. Plums do fairly well and are not so liable to "black knot" as in some sections of the Province. Some very fine pears are raised here, but comparatively little has been attempted in the cultivation of this fruit. New Tusket and Corberrie produce apples, plums, pears and grapes quite successfully. There is an increasing interest in fruit culture in this county, large numbers of young orchards have been set during the past few years which are growing nicely where attended to. Nothing has yet been done here in the cultivation of small fruits beyond a few bushes and plants set in gardens for private use. The chief drawback to success in fruit culture here is the lack of interest in the matter coupled with a lack of knowledge, these, of course, may be overcome in time. As to natural facilities, while we do not claim them to be equal to the Annapolis valley, I feel confident that fruit growing can be prosecuted here with profit.

The chief insects that infest our fruit trees are the borer and codlin moth. Plums are free from insects and not much troubled with "black knot." Pear-blight is rarely seen.

As to the advisability of the Association holding a meeting in this county, I am of opinion that such a meeting would be profitable as there is a growing interest in the matter, and should you decide to meet here I think Weymouth, being the most central situation in the county, would be likely to give the best meeting.

I am yours truly,

N. E. BUTLER.

P. S.—The varieties of apples most productive here are: Fall Jenetting, Bishop Pippin, Northern Spy, Baldwin, Gravenstein, Sweet Bough, Fameuse, Roxbury Russet, R. I. Greening, and Canada Red, &c.

Vice-President C. E. BROWN, ESQ., of Yarmouth, reports *re* their Exhibition, October 8th and 9th, as follows:

The Fruit display of 1885 gives evidence of an exceptionally fine season in the greater perfection of nearly all varieties, with an almost entire exemption from fungus spots in such kinds as are usually more or less disfigured with them. Fameuse, or Snow, were particularly good, both in collections and in dozens, being uniformly a solid, brilliant red, without spot or blemish. Several dozens of Chenango,

a very delicate, thin-skinned sort, were all good, of typical shape and coloring, while Gravenstein, Tompkins King, Oldenburg, Northern Spy, and others, were more highly coloured and more perfect in size and shape, as grown in this county, than we have ever had them before. St. Lawrence was again represented with a plate of brilliant, perfect specimens. A single dozen only of Ontario was shown, very even and above medium in size, but lacking in color, which may disqualify this as an export variety; it is, however, valuable as a long keeper, perfect specimens having been shown in July of this year, of good quality then. In seedlings grown in the county, not in prize list, nothing new appeared, the prizes going to Perry and to King Sweet. It may be that the superior quality and coloring of this season's display is owing in some measure to greater attention being given to cultivation, thinning and pruning. Trees require to be fed to grow large apples, and to be relieved of too abundant a crop by a removal of all the inferior fruit as early as possible; nor can high color be expected, except when the fruit is fully exposed to the sun by the removal of shading and superfluous wood. Exhibitors should rather attach "name wanted" to an unknown variety, than label it with a fictitious name, so either judges or visitors of experience might aid in identifying, and gradually all sorts, not local seedlings, would be known. Pears were so few in number and of so little merit that unless our inland growers come to the rescue, they should be dropped from the prize list. The plums shown were all good, but the date is too late for our most successful variety, the Bradshaw, which grows vigorously and bears abundant crops when trained to a wall with a favorable exposure. In grapes, the products of our cold graperies were fairly represented in fine bunches of Black Hamburg, Black Prince, Buckland Sweetwater, and White Frontignan. If shown for competition, exhibitors should observe what is asked for in the prize list and conform to some one or more of the sections, possibly the list should be more specific, although it appears definite enough. One plate of grapes, grown in the open air at the Forks, was shown, of good size and well colored, not quite ripe enough, however, to be delicious. As the number of cold graperies in and about town has been increased, there will be a formidable competition hereafter, and only careful exhibitors will take the prizes.

The following question contained in Judge DesBrisay's report and

relating to the matters referred to in the other reports was then considered :

"*What are the best six varieties of apples to cultivate for foreign markets, naming them in the order of merit?*"

MR. MILLER.—1st. I would say the Nonpareil. It is a good shipping apple. A Gravenstein headed with a Nonpareil scion gives a splendid tree which frequently bears every year. 2nd. Gravenstein It sells well in the English and American market. 3rd. Ribston Pippin. 4th. Tompkins' King. 5th. Blenheim. 6th. The Golden Russet. I think the Rhode Island Greening would sell better than the Baldwin, and I would not give the Northern Spy a place anywhere.

MR. R. W. STARR.—Those six are the ones I would choose, but I do not say that I would put them in the order in which they are placed by Mr. Miller. I would place the Gravenstein first for our home market, but if they are to grow for export across the Atlantic I don't know which should have first place. We have a market in Boston for our Gravensteins. I would put Nonpareil second. The Ribston is as good as any, but there are sections of the country where it does not do well. The Golden Russet does well in all light soils. It does not blow from the trees in autumn storms. Those six are the best bearers.

There is another apple which is in great demand in the Philadelphia market, that is the Bishop Pippin ; but it is of no value whatever in the English market. If I am rightly informed on this matter we have a good market for our Bishop Pippins and we need not graft them out. As long ago as 1854 I found them selling in Boston far ahead of the Baldwin. We will have to battle with the black spot on Bishop Pippins in the same way that we are now talking of the black knot in plum trees.

MR. BANKS.—I am told that the Gloria Mundi are thought highly of in England ; if so let them have them.

The PRESIDENT here referred to the motion embodied in MR. Chase's report that the Fruit Committee prepare a statement of as many different kinds of apples as they are thoroughly acquainted with, etc, etc. The President said : It is well known that an apple will grow in one part of the country but will fail in another. I

think we can answer Judge DesBrisay that England is not our only market, but that we have the United States as well.

The motion to place the matter in the hands of the Fruit Committee passed unanimously.

R. W. STARR.—I may say by passing that motion you have placed a heavy task on the Committee. We may describe twenty-five or thirty varieties, but beyond that I do not think it necessary to go.

MR. MILLER.—I do not think it would be wise to advocate too many varieties.

The PRESIDENT.—I suppose the Fruit Committee will recommend that a large number of the varieties be not grown.

MR. FISHER.—I move that the thanks of the Association be tendered to these Vice-Presidents for their interest in these matters. Passed.

The SECRETARY.—Can any person answer Judge DesBrisay's question whether or not there is such an apple as "Winter Lowland?"

A voice.—It remains to be proved.

The PRESIDENT.—No such name is given in the catalogues.

The SECRETARY.—I would urge that every member of this Association would bring in a new name for membership. An increased membership is absolutely necessary.

R. W. STARR.—If we could get up something conveying a knowledge of fruit growing and circulate it among the people we would soon induce them to become members of our Society. We should have a competent man to go around and give instructions. I received a communication from a man in Pictou to go and lecture there, I consented to go, not because I thought I could lecture, but because I took a lively interest in the subject.

MR. SMITH.—A committee might be appointed to collect plants and present them as premiums to each member who has paid his fee.

MR. MILLER.—We should hold our meetings where the people are anxious to have us.

MR. FISHER.—We should inaugurate a regular system of missionary work among the people. A man should be sent out to gather

in all who are in need of our assistance. I move that $100 be placed in the hands of the Executive Committee for that purpose.

Mr. Rand.—I second the motion. The young men ought to be gathered in; they will be amply repaid and do good to those around them.

Dr. Chipman.—I think that we should not spend any money in that direction, but that we should admit young men free of charge.

Mr. Ells.—As a fruit grower I have obtained much valuable information since I came in here and I wish to join the Association.

The motion was then put and carried.

On motion it was resolved that the Association meet at South Farmington in February next.

Meeting adjourned to the Railway Dining Room.

ANNUAL DINNER.

WEDNESDAY EVENING, JAN. 27TH, 1886.

The Association with their guests and friends assembled at the R. R. Restaurant at 7.30 p. m. to partake of an oyster supper prepared and served in good style. After the usual amount of consumption which characterizes similar occasions the meeting was called to order by President HART who intimated that Professor HIND would deliver an address on

EXPERIMENTAL ORCHARDS.

PROF. HIND responded by saying that he would introduce the subject but briefly. It had been stated by Judge Weatherbe at a previous meeting that this remarkable fruit belt covered about 400 square miles and was capable of producing an annual income of $30,000,000. Should that result ever be realized it would probably surprise many of us, nevertheless, it is a subject well worthy our most careful study and consideration, for when we examine into the number of bushels of apples raised in Nova Scotia, New Brunswick, Quebec and Ontario we find remarkable results.

Five years ago Nova Scotia produced very nearly one million bushels, the value of which at 60 cents per bushel would be over half a million dollars. New Brunswick produced about 211,000 bushels; and Quebec 200,000 bushels less than Nova Scotia—that is surprising because Quebec is nearly three times the size of England. Ontario produced in all about 11,000,000 bushels. In this valley we have 400 square miles of suitable soil, and when we find, as at present, only little spots here and there representing the orchards of to-day, we can form some conception of what will probably, with due attention paid to the cultivation of the apple, be accomplished within the next ten or twelve years. We have within our limits an extraordinary source of productive power and it only remains for us to utilize it to obtain glorious results. This valley, with its soil and climate particularly adapted to the development of this great and increasing industry, meets with no successful competitor on the continent of America.

The object before us is the proposition to establish a work that will produce the best effects. In Europe special classes of orchards have been established, in Germany more so than in England, for the sole purpose of determining the influence of the scion upon the stock on the one hand, and that of the stock upon the scion on the other. We have erroneously supposed that we could successfully graft any scion upon the first stock that came to hand. Taking our seed from any and every variety that may appear at the cider mill, we can not obtain satisfactory results. When we introduce thoroughbred animals into the country we are careful not only as to what we feed them upon, and our mode of treatment, but we also enquire into their pedigree; and the same principle ought to be adopted in regard to fruit culture in the selection of our stock.

Now I propose that this Society take a portion of land, say 15 or 20 acres, in two localities, one in the neighbourhood of Annapolis and the other at or near Kentville, and experiment upon the relation existing between the scion and the stock—the influence of one upon the other and *vice versa*. Should you wish to graft a particular kind of apple on a particular kind of stock the first inquiry to be made is, does the stock grow on limestone or sandy soil? after settling that point you must ascertain what scion will suit a stock grown on that particular soil and in what soil this new tree should be planted. Such are the problems that the Germans and French, who have succeeded in producing good fruit, have been studying; and there is no valid reason why the famous St. Valerie apple should not be introduced and successfully grown in Nova Scotia.

The second object of such an experimental orchard is to exhibit the effect of these relations; and the third and leading one is to afford facilities to fruit growers to improve their own industry. There is a reason why a certain tree always produces finer stock than do others, and if you can discover that reason why not do so. The mode of doing so is by the adoption of an experimental orchard.

I have thus briefly brought the principal objects of such a scheme to your attention and now I leave it entirely in the hands of the Executive Committee to request the Goverment to increase the grant by $200 or $300 for the purpose of making a beginning in this direction. (Applause.)

Mr. Day.—I would suggest that in order to get the best stock we should take those plants which grow vigorously and discard those of

an inferior appearance; in this way we would gradually get clear of the weaker and improve the healthy ones. The strong plants came from the best seed.

PROF. FLETCHER.—I would like to ask whether a free growing stock should have a free growing scion.

MR. DAY.—It is better to have a good stock than a poor one with a good scion.

MR. RAND.—The scion is often started on the root. Some apple trees have their roots all growing one way and they blow over, therefore it is well to see that the roots have an inclination to spread all around the base of the tree. Some varieties develop large and fibrous roots while others do not. There is no doubt but the scion affects the roots; a sour apple might affect a sweet stock. The very beginning is to select a properly developed root.

The PRESIDENT.—The Fruit Committee at the Exhibition last autumn had brought to their notice a red Gravenstein which they thought worthy of special mention. Perhaps some member of the Society may know something about it.

MR. BANKS.—With regard to that apple I may say that the tree was grafted in the stock about two feet from the ground and grew about two feet more before the branches were allowed to grow. About one foot from where they branched off there was a prong on which grew these red Gravensteins. I grafted from scions off of that limb into a white Crab and it produced the red Gravenstein as before. I have grafted some others but they have not yet borne any fruit.

MR. R. W. STARR.—I think it is only what horticulturists call a sport, and there are some instances when this "sport" has been propagated by means of grafting. I have experimented that way myself but have not been successful. I think my stock was not suitable.

If by actual experiment it were found that the seeds produced by certain varieties would give desired results, it would be very important that we should all devote some time and expense in that direction, and the seeds, thus produced, kept for the purpose of propagating the best stocks. If there is an agricultural college the fruit growers must be represented there.

MR. FISHER.—I think we do not require an experimental orchard. This Association consists of members scattered far and near

over the country who are interested and engaged in fruit culture. Their orchards are composed of all classes and conditions of soil. It appears to me that some general scheme should be devised to be followed up by the members of the Association and reports of their individual operations made at the annual meeting of the Society. In that way we would get information concerning experiments made on different soils and different modes of treatment, etc.

Notwithstanding that the mode of collecting seed from the cider mill has been condemned, I know of no other source from which a large supply can be had.

Mr. Smith.—I believe the wilder and poorer the apple is the better seedling stock it is.

Prof. Hind.—Mr. Smith will remember that 95 per cent of our most magnificent varieties were produced from selected seed. In ten years time we will see the income derived from this industry amount to about $3,000,000 annually.

The President.—Are we prepared to appoint a committee to select these two lots of land referred to, or shall we take it into consideration at some future meeting, or shall we request any members of the Association to work out the suggestions at home?

Mr. R. W. Starr.—I think we will have to leave the matter in the hands of the Executive.

A motion to place the matter in the hands of the Executive Committee was then passed unanimously.

PROFESSOR FLETCHER'S ADDRESS (Continued).

Mr. President and Gentlemen,—I have been requested, instead of responding to a toast, to give you some further remarks concerning the best methods of combating injurious insects. I thank you for the consideration you have shown me during my visit, and particularly for this further opportunity of carrying out the object with which I attended your meeting. I do not think I can occupy the time more profitably than by speaking on some of the other remedies which occasionally have to be resorted to instead of, or as well as, the insecticides concerning which I addressed you yesterday. You will remember I told you that insects pass through four stages of development before they reach maturity, and also that the stage in which they are most troublesome is generally the active larval stage

succeeding the egg state. Insects, in all stages, are sometimes spoken of as worms; but there are exact names which should be applied, and can easily be learnt—as, for instance, the eggs of flies hatch into long cylindrical bodies without any legs; these are *maggots*. The eggs of beetles produce long cylindrical bodies, with three pairs of legs near the head, these are *grubs;* a too well known example of these is the white grub, which attacks the roots of strawberry plants. The eggs of moths and butterflies hatch into *caterpillars*, which have, in addition to the three pairs of legs near the head, from two to five pairs of legs of a different form, which are called pro-legs. Examples of these are the Canker-worm and the Tent-caterpillar of the apple. It is not always possible to find a remedy for a certain insect when it is in its most injurious stage; but by studying its life-history we are frequently able to check it from devastating our crops, by making use of what are known as Preventive Remedies. We thus have for the protection of our crops against insects, Remedies and Preventives. These, again are each divided under two heads. Remedies consist either of the application of poisonous substances to the food-plant, which may be styled Automatic Remedies, or the different methods which may be termed, in a general way, "hand-picking" or Active Remedies. These methods all consist of seeking them out in their different states, and destroying them. We will glance briefly at some of these various methods, with reference to the different stages of the lives of insects.

1. *The egg.*—Much useful work may be done by turning up the leaves of plants and destroying the eggs. This may at first sight seem a very tedious operation, but it has been found useful in many instances.

During the early spring, when the farmer has more leisure than at any other time of the year, if he will walk through his orchard on a dull day the gummy egg-clusters of the Tent-caterpillars will be easily seen against the leaden sky, and by collecting these he may with ease rid his orchard of this pest. In like manner, the cocoons of the White-spot Tussock-moth may be collected and destroyed. The female moth of this species is almost wingless, and when she emerges from the chrysalis, she merely crawls outside her cocoon and lays her eggs all over it, and then dies. Here the eggs remain until the following spring, and therefore are at our mercy all through the winter.

The larva.—Caterpillars and grubs may also be destroyed in large numbers. Beating infested plants will generally dislodge any insects feeding upon them. Trees badly attacked by the Canker-worm have been quite cleared by beating them with long flexible rods. The caterpillars let themselves down, when disturbed, by means of a silken thread, and hang in mid-air. A few sweeps with a stick will break all the threads, and they will fall to the ground, where chickens will be the most useful allies in destroying them, or some of the devices for preventing insects from ascending the trunks of trees may be made use of. Besides chickens, pigs and sheep will be found most able assistants, by eating fallen apples, for destroying the caterpillars of the Codling Moth. In fact, up to this time this has been found to be one of the most effective remedies. It must be remembered, however, that if the trees are young and the bark smooth the trunks must be protected from sheep rubbing against them, because the oil from their fleeces would injure the trees, or they might be injured by the sheep nibbling the bark.

The removal of the nests of the Fall Web-worm, by cutting off the boughs upon which they are situated, and cutting off the twigs bearing the clusters of such social caterpillars as the Red-humped and Yellow-necked caterpillars of the apple, are, perhaps, the best known remedies for these insects. For the small clear-winged moth, the caterpillar of which bores in the stems of currant bushes, and the Two-spotted Raspberry-cane Borer, cutting out the injured branch is the only remedy.

The American Tent-caterpillar occasionally appears in vast numbers, and when the eggs have not been collected during the winter, the orchards must be carefully watched during May and June, and the caterpillars destroyed. This is easiest done by taking advantage of their peculiar habit of feeding at certain times in the day, and then returning to their "tent" or nest on the trunk of the tree to rest for several hours. These caterpillars are closely allied with the European processionary caterpillar, which has exactly the same habits as ours.

The Chrysalis.—This is the stage in which many insects pass the winter, and as they cannot move during this stage, they are very much more at our mercy, provided we know their life-histories and habits. Insects in a state of nature are very little affected by cold. Some chrysalids, although only protected by a few threads of silk, will pass the winter safely; but if this slight covering be in any

way interfered with they will perish if exposed to the elements. Owing to this, many species which pass the winter beneath the surface of the ground can be destroyed by late fall ploughing. This treatment has been very successfully practised with regard to the Canker-worm. Not only are the chrysalids thrown up to the surface, where they are eaten by birds and animals, but the cell which they had prepared as winter quarters being disturbed and broken, they are killed by the frost.

The Perfect Insect.—Many insects, when they have reached maturity, do not commit any harm, and unless we know their life histories we do not recognize them as the enemies which, under another form, in their preparatory stages, had decimated our crops. At the same time, it frequently happens that in this harmless state they may be destroyed much more easily than when in their hurtful form. Most moths and many beetles are greatly attracted by light, and this has been taken advantage of to destroy large numbers of our enemies.

The June-bug, sometimes called May-bug, which is the perfect condition of the White grub, is so plentiful sometimes as to be a great nuisance, from so many flying into houses at night. Vast numbers of these may be destroyed by suspending a light over an open pan, half filled with water, upon the top of which has been placed some petroleum. The beetles flying against the lantern fall into the pan beneath. In the same manner, it is claimed that Codling Moths will be attracted in such numbers as to make a thick coating over the surface of the water, and that if this trap be kept in use all the time the apple trees are in flower, and for a short time afterwards, the crop will be protected, to a large measure, against these insects. Another important means of keeping injurious insects within bounds, is beating or jarring trees while they are at rest. This remedy is the most reliable means of fighting the Plum Curculio. A stout iron spike should be driven into the tree where the branches start out from the trunk. A blow upon this with a metal hammer produces the sharp concussion necessary to make the Curculio loosen its hold of the tree and fall to the ground, where it can be destroyed. Beating foliage has a like effect for some insects, and many species will be found to have favourite kinds of trees upon which to rest. For instance, the June-bug will rest on the cherry and plum in preference to all other trees.

This brings us to the end of Active Remedies. But there is another large class which I have referred to as Preventive Remedies. These may be divided under two heads: 1st. Agricultural or Scientific Preventives; 2nd. Active Preventives.

It is an old and time-honoured saying that "prevention is better than cure," and this is perfectly true with regard to our present subject. Whatever success we may obtain by the use of insecticides and hand-picking, undoubtedly the remedies of the greatest use are those which prevent the attack from beginning at all.

First among agricultural preventives, of course, is high culture, by which a vigorous, healthy growth is promoted. Frequently, even after a severe attack has begun, by putting on some quick acting manure, the crop is picked up and forced on past the period when it is likely to be injured by insect pests. Mr. William Mitchell tells me he has been most successful with high culture, and thinks that by its means he can clear his orchards of the Oyster-shell Bark louse, and his fields from the Wireworm, in about three seasons.

A most necessary part of good agriculture which affects this subject, is a comprehension of the principles regulating the rotation of crops, by means of which any insect attracted to a locality by a certain crop being grown there, will not have the same plant to feed upon the next year.

It sometimes become necessary to change the time of planting a crop, so as to present it to its insect enemies at their regular time of appearing in a condition in which it cannot be injured, or even to give up the cultivation of a certain crop for a length of time altogether, so as to starve the insects out. For this latter remedy to be successful, great care must be taken to have all hedges, rubbish-heaps and fences kept clear from weeds and litter.

Occasionally the planting of a small strip of a more attractive food-plant, round the outside of a field, has had the effect of drawing off insects from the main crop.

Among the active preventives are embraced all such methods as placing mechanical contrivances on trees to prevent the ascent of the female insects, as the canker-worm moths which leaving the ground in autumn and spring ascend the trunks of trees and lay their eggs on the bark.

Traps in the shape of bands of straw may be used for catching the caterpillars and the codlin moth when they are seeking a place to complete their transformations.

Peach trees may be protected against the borer by mounding the earth up round the roots; and the flat-headeed and round-headed borers of the apple may be prevented from laying their eggs on apple trees by washing the trunks during June with an alkaline wash, made as follows: Make a cold saturated solution of washing soda with soft soap, until the soap is reduced to the consistency of paint. Apply during dry weather, and it will form a coating over the trunks of the tree not easily washed off by rain.

There is one more principle we work upon, namely, the fact that insects are either attracted or repelled by certain odours. You will have observed that the small maggot, which works such destruction by boring in the stems of young cabbages when they are first set out, seldom attacks them in the seed-bed; but immediately after they are set out they suffer severely. This is due to the fact that in the operation of transplanting, many of the root-fibres are broken, and the plants to some extent bruised. On this account more of the characteristic odour of the plant is emitted than when left undisturbed. This, added to the fact that the plant is checked in its growth by its removal, leaves it in a less vigorous state to withstand insect attacks. The most successful treatment, in my experience, has been to place some strongly odorous substance round the young plants immediately they are planted out. For this purpose gas-lime is the best; but as the supply of this is limited, sand saturated with petroleum may be used. Take a pailful of dry sand and pour into it a teacupful of petroleum. Mix all well together, until the sand is thoroughly permeated with the odour of the petroleum, then put a good spoonful round each young plant, not quite touching the stem. Where fresh gas-lime can be obtained it is a far better protection, but must not be allowed to touch the plant, because until it has been exposed to the air for some months it is very caustic, and will kill all plants or insects with which it comes in contact. A ring, about two inches from the young plants, I have found a perfect protection. The advantage of this substance, too, is that after exposure to the air for some time its caustic principle, sulphite of lime, is converted into the harmless sulphate of lime or plaster, a well-known and useful manure.

I have now, gentleman, given you what may be called some of the first elements of Economic Entomology. I trust that some of you who have not, previous to this time, paid much attention to the

matter, may be induced to do so in the future, and I beg to assure you that if I can be of any assistance, by giving advice or informing you what have been the results of experiments in any particular direction, I shall always have much pleasure in doing so. My address is "The Entomologist, Department of Agriculture, Ottawa." All letters can be sent to me *free*, and will be answered promptly and to the best of my ability.

Before I sit down, there are two points upon which I should like to say a word or two. With reference to the Experimental Farm, spoken of by Professor Hind, there can be no doubt in the world that such an institution would be of the utmost value to the Province. There are certain experiments which have to be tried—as, for instance, whether particular modes of culture, classes of manure and varieties of fruits and plants can be successfully adopted in any given locality. The expense and risk of failure of such experiments I consider should be borne by the Province at large, instead of coming upon the individual farmers, who have not the means nor time, as a rule, to run the risk of failure. In addition to these experiments, there are others of a more general nature, but of paramount importance to the whole Dominion. These, I cannot help thinking, should be carried on by the Federal Government. As examples of such general questions, I would mention two which have taken up much of our time during the present meetings, viz., the "Black Knot" and the peculiar disease which is so prevalent among your Gravenstein apple trees. The investigation of these diseases will require much study and many experiments before we can hope to remedy them, but from the fact that these fungous and bacterian diseases affect so largely the fruit crop in all parts of Canada, it is necessary that steps should at once be taken to try and find some means of putting a stop to their ravages. As most of you here to-night are much interested in these matters, you are probably aware that during the last session of the Dominion Parliament a sum of $20,000 was voted for this purpose. I feel confident that if such an institution is started, it will be both successful and popular.

The statement has been made this evening that you have difficulty in getting members to join your Association. I cannot help expressing surprise at this, for from the active part the Association has taken in developing the apple trade between Nova Scotia and Europe, and from the value of that trade to the whole Province, it becomes the

duty of every man, whether a fruit-grower, a resident of this fruitful valley, or not, to join and support with his subscription and sympathy such a useful organization ; and besides this he would get good value for his money. Why, Mr. President, the privilege of attending your meetings and listening to such discussions as we have heard to-day, on the "Black Knot," the packing of apples, and the best varieties to cultivate, is worth more than ten times the amount of the subscription. At your periodical meetings one meets the leading apples growers and merchants in the Province, and has an opportunity of hearing them express their views and exchange experiences, upon all the burning questions of the day.

I speak strongly, Sir, about these meetings, for I tell you I have enjoyed this meeting as I have seldom enjoyed a similar meeting before, and I trust I have begun friendships with some of your members which will last for many years. (Applause.)

Mr. Miller.—I was talking to a man concerning the Black Knot on plum trees. He said that he had some diseased trees and he bored two holes in them and poured in kerosene oil and left them to die or not, as might happen ; but to his astonishment, he says, there was a tremendous crop this year. Perhaps some knowledge might be obtained from an experiment in that direction. (Laughter.)

Hon. Mr. Longley was then called upon and said he had no expectation of being present at this dinner, but as the Hon. Provincial Secretary was confined to his house through illness, he (Mr. L.) did not wish the Government to be entirely unrepresented on such an important occasion.

He was delighted from what he had seen and heard to-night to recognize that the Association had been increasing its usefulness from year to year, and developing a higher range of intelligence among those engaged in the important industry of fruit culture. The Proceedings had indicated that there was a healthy search for information on the subject. Far be it from him to take up time and interfere with the discussion of the evening.

With regard to the relation between Agriculture and the Government of the country, he could speak only those words which they were accustomed to hear when such subjects were broached. The Government was subservient to the wishes of the people whom it represented, and would be obliged to accede to their just demands, but at the present time the Public Service was absorbing all that was

available. The Government would give $10,000 or $20,000, provided the people themselves agreed to pay it in the way of taxation.

The Government were already making special efforts to advance education. It was encouraging to know that the number of pupils attending school was larger in 1885 than in any previous year, and the work done in a more efficient manner; and the expenditure of the government in that behalf was larger than in any year in the history of Nova Scotia. The larger the attendance and the higher the grades of the teachers the greater the expenditure must be. It was something of which the people might well be proud, that this little Province was spending a larger sum of money for the encouragement of education than any other State of its size and proportion on the continent.

The Professor of Agriculture at Truro was a gentleman highly recommended by the institution from which he came—Cornell University, N. Y.; and so far as he had been able to ascertain, the Professor's labors had met with great success. Every teacher who received a certificate of competency from him was entitled to an additional grant. It is the duty of the Professor, during the summer vacation, to travel wherever he is asked to go and to give all possible information to farmers relating to the theory and practice of agriculture. This, at all events, was the first step in aid of technical education in relation to agricultural matters.

The time might possibly come when we should be able to sustain a Model Farm and Agricultural College within this Province; but we must look at these matters in a practical light. The Province of Ontario had an exceedingly fine Agricultural College at Guelph, but it was extremely expensive and the people had raised an out-cry against it. It was utterly impossible, at present, for Nova Scotia to undertake any such enterprise. He would say, however, that an economical and rational scheme for experimenting in the special department of fruit-growing, might possibly be made a success in Nova Scotia, and such an enterprise might command reasonable assistance from the government. (Applause). But the farmers themselves would have to undertake the matter in the same rational spirit that they would exercise in the control of their own personal affairs. He recognized, and the government recognized that the Association was doing a most important work, and they wished it every success; and he was sure that everything needed in the way of encouragement would be cheerfully given.

Sir Charles Tupper had informed the Government that the arrange-

ment made with him concerning Nova Scotia exhibits of mines, minerals, fruit and canned goods at the Colonial Exhibition would be carried out, and it was to be hoped that no difficulty would arise in connection with that matter. He advised the appointment of a special Commissioner to go over and take charge of the fruit sent, as it was particularly desirable that we should exhibit our products in such a form as would tend to our special benefit as a Province. (Applause.)

MR. DAY.—I agree with what Prof. Hind has placed before us. When I came to Wolfville and purchased an orchard, I was told by neighbors that it had not produced any fruit for eight years. Sometimes it would blossom, but the blossoms would fall off. We were told by a worthy member of this Association that he was considered pruning mad; and my friends in Wolfville think I am potash mad. In the spring I ploughed under a crop that was just growing up, then I sprinkled 30 lbs. of potash over the ground and sowed buckwheat, which I afterwards ploughed under also. The result was, I had 90 barrels of fruit from a third or half an acre that had not borne for so many years. I believe in potash—I believe in marsh mud—they are just what we want for our farms and orchards. A man told me that marsh mud was worth 25 cents a load, and that there had been marsh mud revivals all over the country. It is superior to any kind of barn yard manure load for load. A gentleman who made a compost of slaughter-house manure and applied it to his ground, informed me that he obtained far better results from the use of marsh mud applied to another portion of his farm. It is certainly a profitable fertilizer, but it may be used so extensively that the desired result will not be realized; and I am inclined to think that it will do better on light sandy soil than on heavy clay. Next to marsh mud I believe the following course should be adopted:—Make a compost of inshore dike mud or peat with a puncheon of lime, then put on some black earth, then pour over it 12 pounds of crude potash, dissolved in 2 or 3 casks of water and put it upon the ground the following year, about 25 loads to the acre. I have made some 300 loads of this fertilizer, and from what I can learn I believe it is just what is required. I am not prepared to go into consideration of all the different kinds of manures, but it is a known fact that nothing gives such satisfaction as potash.

In conclusion, Mr. Day read a lengthy abstract from the *Farmer's Journal* on the subject of potash, showing its different constituents and mode of application to the soil.

CO-OPERATION IN TRANSPORTATION.

PETER INNIS, ESQ., General Manager of W. A. R., said he would not take up time at that late hour. If he opened up the subject of charges made for conveying apples to market, there would be a great difference of opinion on it. No railway in Canada carried goods cheaper than the W. A. R.; that fact was proved by the action of the Chamber of Commerce in Halifax. So far as their rates on apples going to London were concerned, the charge was 15 cents per barrel, the Transportation Company charged one dollar, but 15 cents was all that the railway received.

Ample facilities for the shipping of fruit already existed, but when the revenue derived from apples would reach thirty millions of dollars per annum, then we could keep up a regular line of steamers, and the railway rates would probably be reduced. It was of no consequence whether the fruit goes from Annapolis or Halifax, as far as any discrimination in the matter of rates was concerned. He had looked at the subject not only from a commercial but also from a patriotic point of view. We saw that the growth of the country would result in an increase of the value of railway property. When crops were small and less shipping going on, the railway suffered as well as the farmer. At Annapolis 15,000 or 20,000 barrels were shipped 3 years ago,—last year not more than 8,000, and the present year not more than 3,000,—and all this, notwithstanding that the Acadia S. S. Company and private parties had built frost-proof warehouses for the express purpose of storing fruit, and yet our Halifax friends raised a cry when they saw a few barrels of apples going from Annapolis. His own idea was that Halifax was the proper place to take the fruit to, but there was a serious draw back, having no frost-proof warehouse at Halifax. It was really to the interest of the railway to take the apples to Halifax. In conclusion, he would say in so far as railway amalgamation was concerned, it was not the intention of the W. A. R. Company to extend their road beyond Annapolis.

On motion of MR. WEBSTER, seconded by the SECRETARY, a hearty vote of thanks was tendered to Professors Fletcher, Hind and Smith, for their kindness in attending the different meetings of the Association and imparting so much practical information.

Meeting adjourned at eleven o'clock by the singing of the National Anthem.

SPECIAL MEETING.

HELD AT SOUTH FARMINGTON, WILMOT, FEB. 19TH, 1886.

In the absence of the President—at the opening of the meeting—R. W. STARR, Vice-President for King's County, was called to the Chair.

The SECRETARY read business portion of the minutes of the Annual Meeting, which were approved, and in answer to enquiries, explained what had been done under the direction of the Nova Scotia Government in collecting and presenting fruits for the Colonial and Indian Exhibition.

A communication from the Secretary of the A. V. Small Fruit Growers Association, enclosing copy of resolution adopted at their last meeting, held at Berwick on the 18th February, as follows:

Whereas, the Fruit Growers Association of Nova Scotia passed a resolution to invite the Small Fruit Growers to amalgamate with the Society;

Therefore resolved, that we appoint a Committee to confer with said Society to ascertain their proposals for the terms of such union.

J. Killam, G. C. Miller, and C. J. Wolfe were appointed a Committee in compliance with the above.

MR. MCNEIL, President of the A. V. S. F. G. A., said:—In selecting their Committee they had chosen men who were not members of both Societies, although they had some difficulty in finding them.

It was suggested that we should follow the same principle.

Messrs. Blanchard, William Miller, and A. S. Fisher were appointed to confer with the above-named Committee:

THE COMMITTEE ON RAILWAY AND OCEAN FREIGHT

reported as follows:

Your Committee having examined into the matter of R. R. and Ocean Freights find, from all information at their disposal, the management of the W. & A. Railway Co. have done as well for the fruit growers as could be reasonably expected from a purely company's

road. Nevertheless the importance of this question is such that your Committee deem it advisable to continue their investigations more especially as regards Ocean Freights, and report more fully at some future meeting.

(Signed) J. R. HART,
A. S. FISHER,
C. R. H. STARR,
} *Committee.*

MR. FISHER said the Committee were endeavouring to collect information as to the facts.

The following paper from Mrs. E. C. Fellows, of London, England, (which, owing to the delay in the mail, did not come to hand in time for the annual meeting as was intended) was here read by the Secretary :

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

GENTLEMEN,—Your Secretary-Treasurer, Mr. C. R. H. Starr, has invited me on this the occasion of your Annual Meeting, to contribute a paper giving MY VIEWS OF NOVA SCOTIA GENERALLY, AND AS A FRUIT GROWING COUNTRY IN PARTICULAR, AS WELL AS OF NOVA SCOTIAN APPLES IN LONDON, HOW THEY COMPARE WITH THE APPLES OF OTHER COUNTRIES, ETC., or anything relating to the interests of the country that may occur to me.

Let me then assure you that if in any way I can benefit the fine country you inhabit, or give pleasure to a people who, during my fourteen months' residence in their midst, received me and mine with a kindness and sociability it would be impossible to forget, I shall be only too glad. At the same time, since my knowledge of your Province is but limited, and a mere visitor's opinions are so liable to error as to stand constantly in need of correction, I am inclined to doubt whether you will consider them at all worth listening to. However, I will do my best. At times indeed it happens that a pilgrim coming from afar, and, like Burn's "chiel," bent on "takin' notes," will hit upon something, maybe upon more than one something, which to others may prove not wholly unprofitable.

And first, let me say, I think it would be difficult, if not impossible, for any observant person to reside awhile in Nova Scotia without bearing away an abiding recollection of its varied beauties and manifold advantages, and henceforth holding it in affectionate

remembrance. To-day, in this huge hungry wilderness of brick and mortar, of freqnent leaden skies, of smoke-charged fogs, of ozone-less atmosphere, air which our latest prophet of evil, Dr. Cantlie, author "Degeneration amongst Londoners," says, has, in certain districts, probably had no real renewal for a century or more, it is pleasant to turn back a page in memory and, thinking afresh on Nova Scotia, see in my mind's eye—what? A fair peninsula of lake and forest and verdant glade, whose green slopes are never, as in mid-continent, withered by too monotonous sunshine into sandy-looking, tow-coloured deserts; swift streams which are a delight alike to artistic eyes and to the disciple of Isaac Walton, and rivers which do not, for months together, as in scorching Australia and elsewhere, present a summer appearance of dry ravines diversified with mud-holes; a land unvisited by tropical tempests or arctic blizzards, or by those far-reaching floods which devastate the Mississippi and other extensive valleys, or by the scarcely less far-reaching, rapidly-spreading bush or prairie fires which remind us, though anything but erroneously, of Uncle Sam's proverbial love for things, calamities seemingly included, on a vast scale; a land indeed where old age is still vigorous and centenarians are not unknown. Pleasing landscapes, I remember, whose familiar features are never, as in those most unquiet portions of the globe, Iceland, Java, Hawaii, Spain, Calabria, and elsewhere, suddenly and violently distorted, and at times wholly obliterated by earthquakes with all their dreadful accompaniments of huge encroaching and receeding sea waves, of yawning, sulphur-belching fissures, and vegetation-and-habitation destroying lava-streams. Certainly we will not hope to see a third Pliny arise to describe the destruction of Kentville as the second of that name described Pompeii. No, one associates no such horrors with Nova Scotia, where, maybe more vividly than all other scenes, one recalls a fruitful and beautiful valley especially associated, these many years past, with Longfellow's best known poem, and which to English eyes wonderfully resembles that portion of the "Old Home" we sometimes call "the Garden," namely Kent and Sussex, though more particularly the long Arun valley in the latter county. Which of the two valleys, Annapolis or Arun, is the more beautiful, it would be very hard to say. But lovely as they are, Kent and Sussex never show us autumnal hues like your splendid fall tints, and we may gaze long indeed at our star-lit skies, there or elsewhere, ere we behold auroras magnificent as those your unclouded heavens exhibit after dark.

The rich district watered by the Cornwallis and Annapolis rivers, one is not likely to forget, having in spring once seen it with its miles-long array of gorgeous-hued apple-blossoms, or, later, the beautiful display of rosy-cheeked fruit which fairly bows to earth the weighted tree, and whose delicious flavour, colour, and perfume our cooler English summers and cloudier skies seem capable of producing in inferior fashion only.

When—though merely for the moment—one ceases to think of the apples, there are the wonderful dyked meadows, so verdant and fertile, to be remembered, with their rich hay-crops and their capacity for raising cattle wherewith to feed hungry mankind. Would that every acre were multiplied a hundredfold! Then to what dimensions might not your meat-exportation trade grow, while we in Great Britain should scarcely need to look so far away for beef and mutton as the remoter North-West, United States, or yet less accessible South America and Australasia.

To turn, however, from a mere dream to things practical. Let not Nova Scotia's still but partially explored mineral wealth be left unnoticed! See how small your fair Province shows upon the map! Yet is she, or so a recent statistician tells us, thus far at least the third coal-producing country in the world. And, while enumerating her many virtues, it is well to mention that in some portions of the Province iron is found in close proximity to coal, a neighbourliness by no means universal elsewhere, and which should surely point to a brilliant destiny, to a time—let us hope not distant, though that must depend on Nova Scotians themselves—when perhaps that monster of encyclopædic knowledge the proverbial "every school-boy," beside whom one is apt to feel such a dunce, will, at future class-examinations and on other occasions, inform us that Nova Scotia is one of the countries pre-eminent as a manufacturing centre. Why not? The tide of empire, we are told flows westward; and empire can neither spring into existence nor be maintained without accompaniment of trade and consequent prosperity. Also it is inevitable that as the older countries get exhausted, the younger must take their place; and that this commercial inheritance does in turn come to us, that empire does really spread gradually westward, the experience of thousands of years has shown in the example of civilization's slow march from far-off China, Japan, and elsewhere to western Europe. Whether we shall catch this westerly wave of prosperity as it surges

into view, or remain apathetically apart from its influence must always rest with ourselves. Again I ask, why should not Nova Scotia attain pre-eminence? She has, we well know, lying stored beneath her citizens' feet ample means of becoming a great industrial power. And is it likely that if better and more energetic times dawn, her mineral wealth will not be brought in ever increasing quantities to the surface, there to be turned to account by Nova Scotian brains and sinews?

From coal and iron and other minerals and metals, one turns in thought to gold, by no means forgetting that big brick so recently exhibited and which was made to represent the auriferous "take" of 1885; and thence to the forests rich still in timber and anything but destitute of game; and involuntarily one wonders whether, in days primeval, there lived a transatlantic St. Patrick to charm away from your peninsula all venomous snakes, and so make wandering in the "pathless woods" the unalloyed pleasure that it is. From woods to lakes with their finny inhabitants is an easy mental transition; and thence what more natural than to pass to the sea? With your forests to build ships while the fashion of "wooden walls" yet lasts, with your iron to turn (among other purposes) to similar account when its day shall be more fully established, and with a people who once at least were so energetic as to produce a greater number of distinguished men than any other Province, and who also are so prone to take to sea-faring life that Nova Scotia has been declared to be, for size and population, the first maritime power in all the world, you ought not to fall behind in the race with the sister members of the Dominion, nor need you ever be cut off from communication with the rest of a world whom you should teach to estimate your worth. Nor so long as the sea, which all but surrounds you and which ameliorates your climate, teems, as to-day it does, with fish, should you ever dread the making acquaintance with famine.

Looking, moreover, at your admirable geographical position, which almost seems to suggest the idea that your Province was designedly planted to bar the watery way in the very face of vessels bound to and fro between Europe and interior Canada or the United States, it would appear as if part of your manifest destiny at least were to serve as calling port, or half-way-house, to both the old world and the new—a position of which too much could hardly be made. With us the sea has long rolled over the tongue of land, once much more than

tongue, along which aboriginal Britons walked dry shod to what to-day is France. But once the Straits of Dover had no existence, just as once too the Thames was tributary to the Rhine; and what are now the British Isles—set in a sea generally so shallow that a tall building, if placed upright at the bottom, would partly show above the waves--were joined to Europe in a style so wonderfully resembling that in which Nova Scotia is joined to North America, that one might almost look to see your Province play towards the rest of your continent the part which England plays to-day towards Europe. A witty Frenchman once said that, while most of the European capitals face towards the setting sun, standing in some instances almost at the edge of their country's western limit, London alone has had the foresight to plant herself to eastward with very evident intention to swallow up the trade, traffic, population and everything else it could win from its less astute, westerly-gazing rivals. We cannot say that Halifax is the only American or Canadian port which faces eastward, the better to follow London's greedy example and swallow up the overflow from other North American ports. Still, seeing as I have just pointed out, how boldly the Province of which she is the capital projects into the Atlantic, she certainly might make a very great deal more of herself than she actually does. Anyway, since healthy ambition is one of the noblest of virtues, when old Europe has grown hoary as yet older Asia has done before her, Nova Scotia, among other portions of the newer world, should not fail to fulfil that manifest destiny to which her position and resources clearly entitle her.

Your Province, I am sorry to say, is not half so well known to the outside world as it deserves to be. "Nova Scotia!" one person will exclaim. "oh, yes, an island, is it not, somewhere near America?" Or another, seemingly with Sable Island on the brain, will observe, "Let us see, wild horses, and sand, and icebergs, and shipwrecks, and that sort of thing!" Or a third will say, "Oh, yes, a horrid place where people are frozen to death three quarters of the year, and losing your nose and ears is quite a common experience!" While a fourth thinks it is a naval and military station somewhere, is not sure where, near Australia perhaps; anyway has heard of the place but never was there. It is evident, is it not, that as regards our knowledge of geography, the schoolmaster is very much abroad?

Now ought not a land that is so munificently endowed to be far

better known? To many of course, it is familiar enough, such for instance as in summer, the sunbaked dwellers in inland Canada and in the States, who flock thither to enjoy cool, fresh, invigorating air, and who, having once paid the visit, are said very willingly to repeat it. But how seldom from Europe does a visitor, much less a settler, find his way there! And yet a few days' voyage will take us to your doors. And we are going every day to the North-West and Manitoba, to the United States, Australasia, India, the Cape, anywhere but to the colony that is nearest, and to the climate and resources that most resemble our own. That the fault of this indifference lies wholly with us, I cannot think, although the apparent slight is certainly the result of ignorance on our part. Does it not rather rest with yourselves to make your Province known, to attract settlers, and above all, to make it worth their while to stop?

During my visit it struck me that Nova Scotia badly wanted three things:—Capital, new blood, and self-reliance. There is probably no country under the sun that would not be better for all three, which failing, stagnation is too often the result. Towards your shores, the new blood seems to flow but slowly. Rather is there, I am told, an ebb than a flow. And it is inevitable that with such ebb should be borne away the country's capital and the mature and youthful brains and sinews which produce that capital. Governmental hand-books, when they do not paint too glowing a picture of things, are admirable in their way, especially when, in addition to other valuable information, they contain trustworthy evidence from those emigrants who have already settled in the country. But hand-books on Nova Scotia are hardly, if ever, seen here. Handbooks recommending Manitoba, the North-West, Ontario, and distant British Columbia are plentiful enough; but for all she is heard of here, Nova Scotia might almost have no existence. Twice, I think, during the year just expired, I have seen a letter in the public press advising your Province as a field for emigration. About as frequently is one counselled to try antipodean Tasmania, that by all accounts, delightful but inveterately "Sleepy Hollow." This, as regards Nova Scotia, should not, and need not be. Governments, emigration-agents, and hand-book are useful too as a means of attracting public attention and as dictionaries of reference; but it rests much more with private enterprise to make the country which requires emigrants possessed of capital and energy really worth while settling in. Who

that knows Nova Scotia can doubt her capability to become a first-rate colony?

How well, when they are known, her products in the way of apples stand in the world's estimation, the *London Gardeners' Chronicle*, in part reprinted in the Halifax *Chronicle*, of December 14th last, has already told you. Which veracious narrative points an obvious moral. How often do we hear that to insert the thin edge of the wedge into something or somewhere is a most laudable operation! Seeing then that your apples are, as it were, paving the way to our mutual better acquaintance, we will consider them as the figurative wedge's thin end, to whose insertion we will gladly enough submit. Send it, or rather them, in ever increasing quantities, and we will undertake to eat them all as long as they continue to be good. But drive in the wedge up to the thicker end. In plainer words, why should you stop at apples? Delicious they are, and that their worth and nationality are winning recognition is proved by the fact of their ready sale, and that whereas half a dozen years ago all the apples which crossed the Atlantic were indiscriminately called "American," later they came to be divided into "American" and "Canadian," and now it is not uncommon to see the provincial name labelled above the toothsome crimson pile. "Fine Nova Scotian apples" was the notice lately read while passing a large city fruit-shop. Next day, when sending to purchase some, the news was that the stock was sold out. Which circumstance shows two thing: The folly of putting off till to-morrow that which you can do to-day, and a gratifying liveliness in the apple demand. The above too is doubtless not a solitary experience.

One pretty compliment upon the fruit was passed the other day, by correspondingly pretty lips. "They taste of bright sunshine." "Like cream; the nicest I ever ate," declared another fair damsel to whom eating Nova Scotian apples was a new sensation.

We all know that that man has been called a benefactor of his species who makes two blades of grass to grow where before only one blade flourished. And in pity for us hungry Britons, as well as in consideration for your own pockets through trade expansion, cannot you yet further extend your orchard and other food-yielding systems? I am well aware that your own needs are large, because it has been said that Nova Scotia herself can consume all she produces; and I know that your neighbor the other side of the boundary line is

willing to get through any surplus you can spare, although he has abundance of fruit and other resources of his own. But just now I am solely considering Nova Scotia as a food-producing country, helping to supply the motherland. You must know how, thanks to our open ports, we annually import from our opposite neighbour, France, to say nothing of other countries, millions of eggs and an enormous amount of poultry, butter, cereals, etc., whereby food here is rendered cheap and abundant, French peasant housewives, the thriftiest in the world, are found in pin-money, and that spirit of mutual dependence is fostered which, between foreign countries, is at once the best guarantee of peace and the surest mode of promoting reciprocal commerce. From those tiny oases, the Channel and Scilly Isles, we also draw goodly supplies of cereals which, owing to warmer situation, are ready for market earlier than similar produce grown in the larger British Isles. Time was when the journey even from France and these islets was slow enough, with no little chance of the perishable stuff losing its freshness. Time is, however, that we draw our supplies thence as fresh, or all but as fresh as from any other part. And now that steam is so rapidly annihilating space that our globe practically contracts to quite trifling dimensions, and that we think far less of a trip to the antipodes than our great-grandfathers did of coaching or posting from London, say to York, a regular preliminary of which tremendous undertaking was, it is said, the making of the intending traveller's "last testament," shall we not say time will be when it may be as easy for Nova Scotia to help feed Britain as our other neighbours find it. One good step towards that desirable end you have already taken, in the subsidizing of direct steam communication. The next will be to insure the highest rate of speed. The idea that Nova Scotia should take a more active part in supplying us with food has nothing absurd about it. If limited area be thought an objection, how is it that New Zealand, not so very much larger a Province, and far more remote, is already contributing handsomely to our meat markets?—thereby, perhaps, avoiding glut in her own.

In considering the brilliant future, whose realization assuredly lies in your hands, I have said nothing yet about your tariff. Nor, although it is a question on which I feel very strongly, will I enlarge upon it, because I am aware it is one on which much difference of opinion exists. Only there can be no harm in remarking that when weighing against one another the relative merits of Free-Trade and

Protection, it would be well to pay little heed to what the advocates on either side, myself included, say, but for each person to examine the question impartially for himself. And I will add that, so far as we are concerned ourselves, the Belgians, and a few more people who enjoy the nearest approach towards Free-Trade, which the nations have yet made, we and they find that commerce flourishes best where it is least fettered. Also, that hostile tariffs are a species of warfare, not so destructive to human life as ordinary war, but otherwise hardly less detrimental to public well-being

I have nothing to add except to apologise for the length of my paper; to plead for indulgence to ignorance, should any misstatements have inadvertently crept in; and once more to assure you of the pleasure it gives me to help, as far as lies within my limited power, to promote Nova Scotia's interests. That my crude suggestions can accomplish much, I have little hope; but if, in your abler and more experienced hands, they should develop into something practical, I shall feel that in listening to what I have written, you will not altogether have wasted your time.

E. C. FELLOWS.

LONDON, ENGLAND, January 7th, 1886. (Applause.)

It was unanimously resolved that the thanks of the Association be tendered to Mrs. Fellows for this most valuable paper.

The SECRETARY stated that he had taken the liberty of offering this paper to the Provincial Government, that they might make use of it in preparing the Hand Book of Nova Scotia, which they proposed distributing at the C. & I. Exhibition. Both the Secretary for Agriculture and the Deputy Provincial Secretary had expressed their admiration of the paper, and considered it was too valuable to be mutilated by taking extracts from it, but the limits of the proposed pamphlet would not permit its incorporation as a whole, and had suggested the propriety of having this letter published in a separate pamphlet. Mr. Crosskill, the Deputy Provincial Secretary, had said, "If this letter and a Nova Scotian apple could be placed in the hand of every visitor to the C. & I. Exhibition, our little Province would become better known and appreciated, as it deserves."

Resolved, that Mrs. Fellows' paper be placed in the hands of the Publication Committee to be incorporated in our Reports.

T. E. SMITH, of the Nova Scotia Nurseries, believed fruit culture in Nova Scotia was yet in its infancy.

E. PARKER —The demand for good fruit in our local markets was annually increasing, and there were yet great markets to be opened up abroad. While travelling recently from Liverpool to Wales passed through fine countries but no orchards. In Wales saw apples being handled in bulk like potatoes. Since his return had sent a few barrels to Cardiff, which had astonished the people in that good city, where he felt sure large sales could be made.

MR. MCNEIL, President Small Fruit Growers' Association.—If we could "see ourselves as others see us," but few of our young men would be leaving the Province. The fact is with all our fruit we do not yet grow one bushel per head of the population in the Maritime Provinces. In shipping abroad a great mistake was made in sending poor fruit. We should only ship the best in its natural state. Let all the poor stuff be evaporated; 20 or 30 bushels can be condensed into one barrel, and be kept for almost any length of time. We should have dried fruit to send to the North West in exchange for wheat, as they could never grow fruit successfully there.

T. E. SMITH.—Our local markets can be largely increased. In many places it is difficult to get an apple to eat.

MR. WALKER.—Every agriculturist and fruit grower in the country should become a member of this Association. It would be a benefit to all.

MR. PARKER.—We need not be afraid of over-stocking London with *good fruit*.

COUNCILLOR FITCH.—Had had a life long experience in growing orchards. He advocated cultivating well until the trees were about twenty years old. After that would top dress, letting the grass catch and hold the leaves. Advised sowing buckwheat and allowing it to rot on the ground. He believed, as a rule, orchards in Nova Scotia were better cared for than in the United States, and that we could grow apples at a less cost in Nova Scotia than perhaps any other country. Our farmers cannot turn their attention to anything more profitable than fruit-growing. The markets and demand would increase with the supply.

EDWARD PARKER endorsed Mr. Fitch's views.

T. E. SMITH, of the Nova Scotia Nurseries, could not agree with the last speaker. He believed in cultivating.

MR. WALKER had not cropped his orchard for years, but ploughed every autumn about three inches deep, turning under the grass.

R. W. STARR.—By ploughing every season there would be no difficulty about injuring the roots.

We must look for other markets in addition to those of London and Liverpool. Boston and New York would usually take our Gravensteins, and there was a good market in Philadelphia for Belleflowers when apples were not too plenty in the States.

PRESIDENT HART.—As a rule, our Baldwins are inferior to those of Ontario and the States, but our Gravensteins, Ribstons and Nonpariels are superior to any grown elsewhere.

MR. KELLEY.—There is an extensive market in Glasgow for apples, and all we require is direct steamers. He advised shipping only first class apples; let all the second be made into jam. A good business could be done in preserving fruit.

MR. WHITMAN had met a lady from London who had never seen an apple pie, which showed the people were not yet educated to using fruit. Our fruit was hardy. Send only the good stuff properly packed and there will be no difficulty; increase the orchards; the more apples we raise the greater will be our advantages.

The SECRETARY.—About the first of November last, at the request of Prof. Lawson, Secretary for Agriculture, I prepared a collection of 118 varieties of apples for Exhibition in Edinburgh. This exhibit had evidently attracted attention, and would no doubt greatly assist the introduction of Nova Scotia apples into that market. The following letter from Mr. Dunn (which was accompanied by a circular letter from the Hon. Secretary,) needs no explanation :—

To C. R. H. STARR, ESQ.,

Sec'y-Treasurer Fruit Growers' Assn., Nova Scotia :

DEAR SIR,—I have to acknowledge the receipt of your letter dated November 5, 1885, and the safe arrival of the splendid collection of Nova Scotia apples in good time for the Apple and Pear Congress held at Edinburgh. Everything was found exactly as your letter stated, and the other particulars were received from Professor Lawson in due time. Altogether the collection was *admirably got up, correctly named*, (so far at least as known to the best Pomologists in this country,) and arrived in perfect condition. I saw it unpacked and set up, and a better collection of apples was never set on an

exhibition table, after travelling the long distance it had done. Some of the specimens of kinds that we grow in Britain were *uncommonly fine*, notably so that favorite English apple "Blenheim Orange." Many others were of an extra fine description. * * * *

Yours faithfully,

MALCOLM DUNN,
Dalkeith Palace Garden,
Dalkeith, Scotland.

The PRESIDENT.—This letter is certainly most satisfactory. These exhibitions cannot fail to be of great advantage to Nova Scotia.

It has been, I think, pretty clearly demonstrated that it will pay well to grow apples at one dollar per barrel in this country.

MR. WALKER.—The auction sales re often ruinous, when the markets are well supplied.

MR. MILLER.—Forty years ago one dollar per barrel was the best could be done, the price had gradually increased to three and four dollars, but if we could get two dollars it was a big price. At the lowest price an acre of orcharding is good for $100 per year. Our Baldwins are not good enough, but Ribstons, Kings, Blenheims or Nonpariels have always brought good prices, no matter how full the markets were. In our orchard we have not ploughed for nine years, the grass and leaves keep the soil light.

A. B. PARKER.—Forest trees could hardly be compared with fruit trees, but the close planted orchards that are manured and not ploughed, are where the apples and the money comes from. Isolated trees will not do well unless cultivated.

Meeting adjourned till 7.30.

EVENING SESSION.

MR. MILLER.—We must continue planting orchards, there is no danger of growing too many apples. New markets will continue to open up.

PRESIDENT HART.—Experiments in England show the roots that gather sap for wood are those outside, for fruit, those close to the trunk. By applying manure near the trunk the wood growth would be checked and tree produce more fruit. One of the most important fertilizers is in the atmosphere. Nitrogen can best be utilized by

ploughing in clover. Potash was another important factor in growing good fruit. A lady in Annapolis was making second class fruit into jams and getting more orders than she could fill.

The farmers of Annapolis have not given proper attention to their orchards in the majority of cases.

COUNCILLLOR FITCH advised cutting the ends of the roots, which would check the growth of wood and set the tree bearing, would apply manure on the surface.

The SECRETARY read a letter from the Rev. Mr. Axford, now in England, who stated the result of his personal enquries led him to the conclusion that first class apples could be sold at a profit in Paris.

The following paper on the

CULTURE OF SMALL FRUITS FOR MARKET

by E. MORRIS, ESQ., of Font Hill, Ontario, was then read. (This paper was read before the Ontario F. G. A. at their winter meeting at Woodstock, and appears in their Report for last year, from which it is taken.)

To insure success the party should have a natural ability for the work ; he must be possesed of perseverance, also tact for the management of help, and for those men who possess these qualifications, and particularly those having a large family of boys and girls, between the ages of ten and twenty, that he wishes to give light and healthy out-of-door employment to, will certainly find the growing of small fruit the most interesting and remunerative in which he can engage.

The soil must be in all cases dry or made so by draining, and in a fair state of fertility.

In speaking of varieties and the manner of growing, and on soil worth, and only used for ordinary farm crops, we shall confine ourselves to those sorts best adapted to market purposes, and therefore, will only speak of a few varieties, leaving out many new sorts that are too expensive to buy and plant in a large way, some of which, in a short time, will be the leading sorts.

Of strawberries, we choose the following :—Wilson's Albany, James Vick, Crescent Seedling and Manchester, the two last are pistilate and require to be planted alternately (four rows of each) with one of the two sorts mentioned.

The following varieties frequently do well where soil and location are favourable, and might be tried in smaller quantities :—Charles Downing, Jersey Queen, Cumberland Triumph, and Captain Jack.

The ground should be thoroughly prepared by deep ploughing, followed by harrowing and cultivating until it is fine and mellow after which it should be well rolled ; this preparation will pack the soil so that a good ploughman can cut a straight furrow, leaving it clean and smooth on the land side for planting against ; these furrows should be three and a half feet apart, and plants set fifteen to eighteen inches. The planter holding the plant in position with the left hand, and drawing a little soil against it with the right, the furrow is filled about two-thirds with a hoe, and packed by tramping with the feet, filling up afterwards even with the top of the crown with loose soil. This planting should be done as early in the spring as the soil is dry enough to work properly. For small planting a hoe and spade may be used instead of the plough. In case of drought or late planting, the roots of the plants should be thoroughly puddled before setting.

The first season all blossoms should be cut off and no fruit allowed to set. The care consists principally in keeping the soil loose and moist by frequent cultivating between the rows, which, at the same time, throws the runners in, thus forming a matted row, the rows should be kept clean by weeding, with the aid of a hoe where it can be used.

As soon in the autumn, as the ground is sufficiently frozen to bear a wagon, the plantation should receive a light covering of straw, scattered over the plants very evenly and only heavy enough to not entirely hide them ; the following spring, as soon as growth commences, the straw should be raked between the rows and allowed to remain as a mulch until after bearing.

Raspberries, Red.—A deep loam or sandy soil should be selected. The Cuthbert, where hardy enough, is acknowledged by all to stand at the head of the list for medium to late, where the Cuthbert winter-kills, the Brandywine and Turner should be substituted. For early, the Hansell is promising.

Instead of planting in the common hedge row system, would recommend setting in hills three by four feet, ground previously marked that distance as for corn planting ; during cultivation work both ways for the first two seasons, using a cultivator, with knife to cut off all suckers, which is absolutely necessary to secure a good crop of fruit.

The second season, after planting, about one-third of a crop may be expected. The third year, after the ground is thoroughly culti-

vated both ways, the plants will be large enough so that the tops of each hill should be divided. Half the canes should be bent over in the rows, over-lapping those of half the next, which should be bent to meet, the tops are then tied in the centre. The hills should be tied in the direction of the wide rows, thus leaving nearly four feet clear for cultivation during the season. The advantages of this mode are: the plants are kept from being broken down by wind-storms, the fruit is kept up from the soil and is more convenient for picking, also, leaving the centre of the hill open so that the new growth will not be shaded, thus securing a more stocky and better growth for bearing the following season, reducing the expense of cultivation, as hardly any hoeing will be required. The old bearing canes should be cut short soon after bearing, which will allow the ground being cultivated both ways again.

Raspberries, Black.—Same soil as the red varieties, although, if there is a difference in your soil, would give the blacks the heavier soil, having in view a plot of ground the same size to plant the following year. It is not necessary to multiply varieties, when the two best will cover the whole season of ripening. Souhegan for early to medium, Gregg for medium to late; our preference is decidedly in favor of the former as being the most productive and hardy of all the black caps, having originated and succeeding well in the cold region of Mount Vernon, New Hampshire.

Mark the ground as for the reds, with the exception of having the hills three feet by six, instead of three feet by four; plant two or three tips in each hill, about six inches apart, in the form of a triangle. Cultivate both ways during the fore part of the season; pinching off all the tips of the young plants when they reach the length of from eight to twelve inches, causing them to branch, forming a low stocky head.

The second year plot No. 2 should be set out and should receive the same treatment at the same age that we describe for No. 1. This year plot No. 1. can only be cultivated one way, and care must be taken to pinch off the tops of the young growth as soon as they show themselves over the growth of the previous year, as this is very important to success. The plantation should be gone over several times, and the pinching followed up. The fruit will turn out about one-third of a crop. The third season the branches should be cut in to an even length, early in the spring, leaving them about two to two and a half

feet from the main stem. The latter part of May or first of June, cultivate and thoroughly hoe, and if convenient, it will pay well to give a mulching of straw in the row. Leave the new growth this season without pinching, which will act beneficially in giving the fruit a little shade.

Early in the spring of the fourth year the entire tops should be cut off even with the ground, and two or three forks full of manure, with about a pint of unleached wood ashes scattered around each hill, the ashes may be increased to one quart, if no manure is used.

This season give the plot thorough cultivation, and do not neglect the pinching back with a view to getting a strong growth, with a low bushy top for bearing the following year. Cut down each plot every other year, in this manner you will keep your plantation vigorous and renewed, obtaining more fruit in one season than in two, by allowing them to bear every year while expense of cultivation and cutting out old canes is reduced to one half of that by practising the ordinary way, when black caps cease to be profitable after the fourth year.

Near canning factories, I would add Schaffer's Colossal to the list of profitable sorts for growing; this is not strictly a black cap, being a very dark red, although it should have the same treatment as just described for the black caps; however, I would advise planting one foot farther apart each way on account of their much stronger growth, and put but one or two plants in a hill.

Blackberries.—Soil sandy or sandy loam, which must be very dry naturally, for the most tender kinds. Quite a number of new varieties are now being put on the market, most of which are tender, while the fruit of those that are hardy is generally small in size. Perhaps the best two kinds for market purposes, of the old standard sorts, are Kittatinny, where the climate is mild enough to grow peaches, and Snyder for the colder sections. The best manner of planting the blackberry is in rows, eight feet apart, setting the plants from two to three feet in the row. The cultivation of the Kittatinny must be discontinued after the first or second week of July, to check the growth and harden up the wood for the coming winter The Snyder being so hardy may be given a richer growth, and cultivation continued later, and on account of this advantage in its favor it may prove more profitable even in mild sections than the Kittatinny. Care should be taken to pinch off tip ends of all new growth, when three feet high, to induce throwing out side branches, and the old

wood cut after the bearing season. The mistake is made by many of allowing the suckers of both blackberries and red raspberries to grow for sale or for planting out. This plan very much reduces the yield of fruit, and also enfeebles the plant for the following season's fruiting. Those wishing to grow their own plants should have small plots for that particular purpose.

Currants and Gooseberries are very profitable for some markets. Gooseberries, if allowed to remain on the bushes until after the raspberry season is over, come into market when there is no other fruit offered, and will then find a ready sale at good prices. They require a soil inclined to clay, and it should be very rich. Plant three by five feet and cultivate both ways. It is necessary to thin and cut out the old wood occasionally, in order to keep the plants renewed with good bearing wood.

Of the varieties of Gooseberries in common cultivation, would prefer Downing and Smith's Improved, and the White Smith in localities where it succeeds.

Of Currants on strong soil, Cherry or La Versallaise for red, White Grape or Imperial for white, and Lee's Prolific for black, while many consider Fertile d'Angers, Victoria or Prince Albert equally, or more profitable.

MR. MILLER.—Have not some of our native gooseberries proved valuable?

MR. SMITH, of the N. S. Nurseries, complained that his remarks concerning wild gooseberries had been misreported in the last issue of the Transactions of this Association.

In answer to Mr. McNeil, the SECRETARY said Mr. Sutton of Church St., Cornwallis, had originated some very fine gooseberries.

The PRESIDENT asked for information as to the matted row and hill system in the cultivation of strawberries.

MR. MCNEIL.—The matted row has proved the best.

PLUM CULTURE.

Then followed considerable discussion upon this subject. The general impression seemed to be that more plum trees should be planted, and if properly cared for would prove profitable.

CRANBERRIES.

A. S. FISHER.—The cranberry bogs of Aylesford will yet equal in value the dyked marshes of Cornwallis, or the old orchards of Annapolis. He estimated that 50 acres between Kingston and Kentville had been prepared and planted during the past season, and undoubtedly would, in a few years, be one of the leading industries of the country.

The PRESIDENT.—It is very necessary to have cranberry plantations situated where they can be flooded.

A. B. PARKER.—If this is necessary, but few acres will be successful. He believed the smoke from a bushel of burning chips at different points around the edge of the bog would often prove a protection from frost, the smoke would settle and form a blanket.

MR. FISHER.—Smoke has been tried at Aylesford, but not successfully. In Michigan they had erected extensive machinery for the purpose of flooding.

MR. PARKER.—Mr. Fisher defeated his own ends by making hot fires,—make smoke fires of wet chips or something that will burn slowly and make smoke.

The PRESIDENT referred to the work of the Association and the necessity for all fruit-growers to unite in membership, the advantages of such meetings as this for mutual instruction, the necessity for continued efforts to obtain a Frost-Proof Warehouse at Halifax, and better freight rates, etc.

MR. FITCH.—The farmers are more easily gulled than any other class, simply from the want of information easily obtained at such meetings as this. All farmers would find it to their advantage to attend.

MR. MILLER.—The history of the Association will be found to be closely identified with the introduction of our apples into the English market, and the correct nomenclature of our fruits is almost entirely due to this Association, who have frequently sent collections to the States and elsewhere, in order to have proper names confirmed.

The advantages to be obtained when this Association shall number its members by the thousand, can hardly be over-estimated.

At a late hour the meeting adjourned.

APPENDIX.

To the Executive Board of the N. S. Fruit Growers' Association:

GENTLEMEN,—Your Committee on Railway and Ocean Freights beg leave to submit the following correspondence with the Manager of the Windsor and Annapolis Railway, received since the meeting at South Farmington, when we reported progress; and recommend that it be published in the Transactions of the Association for the information of the members.

(Signed) J. R. HART, A. STANLEY FISHER, C. R. H. STARR, *Committe on Railway and Ocean Freights.*

BERWICK, *February 2nd, 1886.*

P. INNES, ESQ., *Manager of the W. & A. R. R.:*

DEAR SIR,—The Fruit Growers' Association having appointed their President, Secretary, and myself a committee on the matter of Freights on our fruit to England, and the two former having thrown the responsibility of obtaining the necessary information in the case upon me, I have concluded that the best and most reliable means of obtaining facts and figures, would be by applying to you. As you are aware, the fruit growing industry is rapidly coming to the front as the leading product of exportation, and consequently, the question of freights is of the greatest importance to the producers. You are also aware of the fact that the general opinion is that your company does not give as favourable terms as they should. It is also quite frequently said that there is an injurious combination with the steamers against the interest of the fruit growers of this valley. Now, my Dear Sir, believing, as I do, that the interests of your road and the producers are identical, that each must share alike either in prosperity or adversity, and that there should be a mutual good feeling, which can only be secured by a full and complete knowledge

of the facts that underlie and determine the relative positions of the producers and your road, I would ask you to kindly furnish me with facts and figures, to establish the position which you always assume in your remarks when you speak of this question publicly.

That your rates are as low or lower than any Company Road in Canada. That you give as low rates as is at all consistent with honesty towards your shareholders.

That your efforts have been to effect as good through rates as possible with the steamers.

That there is no combination between the steamers and road to injure the shippers, &c.

You probably understand the peculiarities of this matter very much better than I do or can.

What the Committee wish is to obtain the facts and present them to the people in such a manner as they can and will understand the whole matter.

If consistent with truth and honesty, we wish to make such a report as would allay hostility, prejudice and ill-feeling with all concerned.

If you feel disposed to assist with your knowledge and experience as well as the information you have at hand with regard to the rates of other Company roads, and kindred matters, you will confer a favour and I shall be much obliged.

I remain, sir,

Yours truly,

(Signed) A. Stanley Fisher.

Windsor and Annapolis Railway,
General Manager's Office,
Kentville, N. S., 27th February, 1886.

A. Stanley Fisher, Esq., Berwick :

Dear Sir,—I beg to formally acknowledge receipt of your letter of 2nd inst., intimating that the Fruit Growers' Association had appointed the President, Secretary and yourself a Committee on the matter of charges on Shipments of Apples to England, and asking certain assistance and information from me on points connected with the subject.

I deem it proper, at the outset, to clear the ground by referring to statements made at the quarterly meetings of the Association in April and July last, regarding the freight charges of this company. In the first place I have to express my surprise and regret at the inaction of your committee,—an inaction of which we have a right to complain, because, while the committee was appointed as long ago as April, 1885, the first intimation I had of these statements was from a garbled and unfair report in the *Morning Herald* of 27th January last, and the first approach your committee made to me on the subject was by your letter of 2nd inst. Meantime, these gross falsehoods regarding our charges were permitted to remain uninvestigated and uncontradicted, thereby fostering the popular prejudice, and confirming the common but erroneous impression that our rates are exorbitant.

In the next place, in justice to my company, you must permit me here and now to give an unqualified contradiction to the several assertions made at these meetings, without a particle of evidence, regarding our rates on apple shipments. I deal with the more prominent of them categorically thus :—

1. It is not true, as stated by the President, that the steamer rate from Halifax to London was 3/. per barrel.

2. It is not true, as stated by Mr. Banks, that of the through rate of $1 per barrel, the railway got 25 cents. The imposition with which he charitably charges us exists only in his imagination. Instead of getting "8 cents per barrel over and above regular rates" from Waterville to Halifax, we never received more than tariff rate.

3. It is not true, as stated by Ex-Deacon Parker, that the overcharge at Berwick Station alone during last season amounted to $150. There was not a single cent of overcharge made at Berwick Station. Mr. Parker should be more careful when he volunteers "to bear false witness against his neighbor." A similar slander regarding the business of an individual would render him amenable to law.

4. It is not true, as stated by Mr. Fisher, that the special rate would pay local rates from Tupperville. We received no special rate, whatever we may have given.

5. It is not true, as estimated by several members, that the railway was getting about 15 cents per barrel on the through rate over regular charges. The railway only received tariff rates, and not a cent more.

6. It is not true, as stated by Mr. Miller, that we charged more than local rates on through freight, and made such arrangements. I never heard of the "facts" of which he complains, and could not, therefore, very well refute them;—if he will communicate them to me, however, I will gladly either refute or reject them.

I do not refer to Mr. Blanchard's remarks, (which, however, admit of a perfectly satisfactory explanation,) as they are foreign to the question in hand.

I have to say that all the so-called "facts" stated at these meetings were mere surmises, and were not supported by evidence to justify them as credible surmises even. The real facts are as follows:—Prior to the season of 1884–85 the rate for apples from our Station to London *via* Halifax was roundly $1.25 per barrel. When the Furness Line came on the route, largely through my interest and representation, a reduction of the rate to $1.00 per barrel was effected. It was at one time contemplated that we should take a uniform proportion—not of 25 cents, but of 20 cents per barrel from all our Stations. Had this arrangement been carried out it is obvious no injustice whatever would be done to the shipper, as he would have had to pay $1.00 in any case, and it would be immaterial to him what the sub-division between the railway and the steamers might be. This arrangement was never acted on, however, and at no time, then or since, have we received more than tariff rates on apple shipments over the line—and I hereby undertake to refund the amount of overcharge that any shipper can show us to have received in excess of these rates. These are the facts,—and I think I have a right to request that as much publicity be given to this contradiction as was given to the original misrepresentation.

Coming now to deal with your communication, I must say I am at a loss to conceive why there should be such a continual—and I will add senseless—outcry about our rates. There is no mystery about them. They are not a "sealed book," but are publicly exhibited at every station, so that "whosoever runs may read." Nor do they require a special education to understand them,—the most elementary acquaintance with figures will enable any one to ascertain if he is being charged correctly. Moreover, our agents are always ready to furnish information on any point, in addition to which the Traffic Superintendant and myself are at all times accessible.

As regards the rates on apples, I submit the following table which shows in as plain and comprehensible a manner as I can put it :—

1. The rates which are, and have been in force on the Windsor and Annapolis Railway since December, 1877.

2. The rates which the Windsor and Annapolis Railway Company are authorized to charge by law ; and

* 3. The rates on all Railways in Canada, excluding those in Nova Scotia and Government Railways.

Comparative Table of Rates per Barrel on Apples :

Distance Carried.	W. & A. Railway, Tariff Rate.	W. & A. Railway, Allowed by law to charge.	Canadian Railways, Joint Tariff Rate.
10 Miles.	6½ cents.	7 cents.	7 cents.
30 "	9 "	13 "	13 "
50 "	12 "	17 "	17 "
70 "	15 "	20 "	20 "
90 "	18 "	23 "	24 "
100 "	21 "	25½ "	26 "
130 "	22½ "	28½ "	27 "

A reference to this table not only bears out everything I have publicly stated regarding our charges, but establishes several points conclusively and beyond cavil, viz. :—

1. That the Tariff Rates of the Windsor and Annapolis Railway are on an average *five cents per barrel less* than we are authorized to charge by law.

2. That the charge allowed by law, and adopted by other Canadian lines as the result of experience, must necessarily be fair and reasonable ; and, therefore, shippers would have had no ground of complaint whatever had we charged five cents per barrel more than we do.

3. We have *voluntarily* made this reduction of five cents per barrel notwithstanding that our proprietors do not receive, and have never received any return upon one-half of the capital invested in the railway.

4. Instead of our rates being exorbitant, or even high, *they are more than liberal*, inasmuch as the shippers reap the benefit of this

* The Canadian Railways which have adopted those rates are :

Grand Trunk Railway, Canadian Pacific Railway, North Shore Railway.
Ontario and Quebec Railway, Quebec Central Railway, Canada Atlantic Railway.
Midland Railway, South Eastern Railway, International Railway.
Northern and N. W. Railway, Erie and Huron Railway, Welland Railway.
Bay of Quinte Railway, Napanee & Tamworth Railway, Gananoque & R. Railway.
Michigan Central, in Canada. Central Vermont Railway, in Canada.

large reduction at the expense of the owners of the line. Instead, therefore, of being subjected to abuse and misrepresentation, as they are, my company deserve the best thanks and every encouragement at the hands of the shippers, and expecially of the Fruit Growers.

5. In view of these facts—which are really facts and not surmises—the question arises whether our rates have not been kept long enough at starvation level for the benefit of shippers, and whether, in the interests of, and in common honesty to our shareholders, they should not now be advanced to the limit allowed by law and adopted by other companies.

For my part I fail to see any good reason why they should not. What justification can I offer to my shareholders who receive no return on their money for charging some 25 per cent. less than we are entitled to do in order that the difference may go to swell the profits of the shippers? I would like your Association, as a body of practical business men, to answer this question in a practical, business like manner. If the case was their own, what would they do?

But I have something more to say regarding our tariff. It was prepared by me in 1876, and underwent a careful and thorough revision in 1883. It was considered so fair and reasonable, and so adapted to the circumstances and requirements of the country, that it was adopted by the Government for the Eastern Extension Railway, and by the Western Counties Railway Company for their line. But the singular result has happened that, while identical rates are charged, there is little complaint or outcry regarding those on these lines, while we are exposed to all manner of misrepresentation and obloquy. To this, because we are what is called a "foreign company," not amenable to partizan or local pressure, but endeavoring to conduct our business on ordinary commercial principles? Is it because we do not "discriminate" in favor of Halifax to the detriment of other points, but treat all alike "with strict impartiality, so that no locality, individuals or organizations shall be favored more than others"? Or, is it because some measure of success has attended our operations that a paltry jealousy is excited, it being forgotten that for thirteen years we ran a railroad without profit to the benefit of Nova Scotia, and that we are yet only earning sufficient to pay interest on one-half of our capital? Nova Scotia, and especially this district of it, will not admit of other than a conservative and cautious railway management. The country is comparatively poor, and possesses no

great resources or industries to support a railway, or that are capable of rapid development. During my fourteen years residence in the Province, I have seen several so-called "popular managements" both of railways and steamboats, and the result in every case has been total failure, involving the ruin of the proprietors, and conferring no lasting benefits on the public.

Leaving the question of rates, and referring to the alleged combination between us and the steamers to the injury of the shippers, I have to say that no such combination exists. For our part, we simply receive our tariff rates to Halifax, neither more nor less. We are in no wise interested in, or responsible for the steamer rates; and I have no doubt the steamship owners have a sufficiently good explanation to give regarding their charges. They, however, can speak for themselves. One thing I may say in respect of the uniform $1.00 per barrel rate, viz., that the steamers made concessions, and properly so, from the Annapolis district, in order to prevent apples being sent *via* Boston.

For the information of your Committee, I put myself in communication with steamship lines from other ports. I attach copy of my letter, and from the replies received I select that of Mr. Allan C. Smith, the representative of the Anchor Line at New York, as it gives all the information required in a clear and comprehensive manner, and contains several statements of interest to, and deserving the attention of the Fruit Growers' Association. I may here add that, whatever may be done in the future as regards the steamer rates, our rates are already so low—averaging only from 15 cents to 17 cents per barrel—that I can hold out no prospect of any further reduction on them.

In conclusion, I cordially reciprocate your desire that a mutual good feeling may be established, and hostility and prejudice allayed between all concerned. I should be delighted at such a result, but frankly confess I am not very sanguine of its attainment. After fourteen years' experience of Nova Scotia I have almost come to the conclusion that it is waste of time to attempt to eradicate misconception and misconstruction. During all that time I have preached and teached and proved that our rates are low and reasonable, and less than those charged by other companies in like circumstances. To-day the clamor is as virulent, and the misrepresentation as unfounded as when I began. No sooner is a false report refuted at one point than

it starts in life, as vigorous as ever, at another. The Fruit Growers' Association, in particular, notwithstanding the low rates and special facilities we have given by way of extra trains at additional expense, has been fruitful in propagating the enormous and unjustifiable impressions of which I complain. The Association claims to represent the more intelligent portion of the community. Well, if these things are done in the green tree, what may be expected in the dry?

I have written at this length and strongly on the subject, because of the utter injustice with which we have been treated. I am quite at one with you that the interests of the railway and of the producers are largely identical, and that each must share in the prosperity and adversity of the other. While we have departed so largely from the strict commercial principle, and made such substantial concessions, all I would ask in common fairness is that shippers should recognize the doctrine of "live and let live." I cannot turn the railway altogether into a charitable institution,—we too must live.

I am, dear sir,

Yours truly,

P. INNES,

General Manager.

[COPY.]

WINDSOR AND ANNAPOLIS RAILWAY,

GENERAL MANAGER'S OFFICE,

Kentville, 6th February, 1886.

DEAR SIR,—At the recent meeting of the Fruit Growers' Association of Nova Scotia, considerable discussion was had on the question of Rates for Apple Shipment to England, and the opinion was generally expressed that the rate *via* Halifax was so high, in comparison with the rates from other ports, as to be injurious to their market. A Committee was appointed to look into the matter, who have communicated with me on the subject. To enable me to give a satisfactory answer, I will esteem it a great favor if you will kindly inform me what this season's rates have been, viz. :—

1. The steamer rates from New York to London and Liverpool, and also the rates from Boston, Portland, and Montreal? If different steamship lines have different rates, it would be an advantage if you could quote them?

2. If steamer rates from Halifax are higher than from these ports, what are the reasons why they should be so ?

3. What are the average rail rates from shipping points to New York, and if you know, to Boston, Portland and Montreal ?

4. If through rates are quoted, what are these from principal shipping points to London and Liverpool *via* New York, Boston, Portland and Montreal ?

5. Any information bearing on the subject generally you may deem of importance ?

Most of the shipments from Nova Scotia this season have gone by another line from Halifax, the rate from any of our Stations to Halifax being $1.00 per barrel, of which our proportion will average about 16 cents. This rate is for quantities by one shipper of say 150 barrels and over. For small lots the rate is somewhat higher. In the previous season 70,000 barrels were shipped from our line to London,—this season, owing to a light crop, the shipments will only be about 40,000 barrels. The industry is a growing one, however, and a number of new orchards have been planted out and all gradually coming into bearing.

I trust you will excuse me for the trouble I am causing you, and I am, etc.

(Signed) P. Innes,
General Manager.

Office of the Anchor Line,
7 Bowling Green.
New York, 19th February, 1886.

P. Innes, Esq., Kentville, N. S. :

Dear Sir,—In reply to your letter of 6th February requesting information as to the present season's rates of freight on apples from various ports to England, I beg to advise you as follows :—

1st. The steamer rate hence to London by regular lines has been 3/- and 5 per cent per barrel until about the middle of January, since which the rate has been 2/6 and 5 per cent.

To Liverpool the rate by regular lines until about 1st January was 3/- and 5 per cent, since then 2/9 and 2/6 and 5 per cent. To London *via* Liverpool 1/9 extra, delivered.

The competition among the regular lines to Liverpool is stronger than to other ports, and some of the slower lines have to "cut" under in order to get a share.

To Glasgow, to which quite a lot of apples is shipped from here, (this season 148,000 barrels,) the rate has been 4/- and 5 per cent until 1st January, and since then 3/6 and 5 per cent.

From Boston to London very few apples are shipped direct.

From Boston to Liverpool the rate until the middle of January was 2/6 and 5 per cent per barrel, since then 2/3 and 2/-. The Liverpool steamers make a through rate to London adding 1/9 extra to the ocean.

From Portland to Liverpool the rate has been 2/6 and 5 per cent during the season.

2nd. You will see from the above that rates from New York are about the same as those from Halifax during the heaviest part of the season, and when you add the cost of forwarding to London *via* Liverpool (say 1/9) to the rates from Boston and Portland, it makes the through rates from these points to London 4/3 to 3/9 delivered.

It costs more to perform the service calling at Halifax, specially for a part cargo, in the way of extra port charges, detention and risk; and there are other disadvantages, such as the extra insurance premium on the United States cargo because of the calling at Halifax, which tell against the steamers freight No extra charges are incurred when apples are received at New York, Boston, or Portland, as the steamers are loading entire cargoes there.

3rd. The Hudson River Counties in this State, before the close of navigation, send their apples down by Barges, by which the charge ranges from 10 cents to 15 cents per barrel, according to distance, quantity, etc., say 90 to 130 miles up the River. After navigation closes they come by rail at about 15 cents to 20 cents per barrel. The cartage from Barges and railroads to steamer costs 5 cents per barrel extra. The rail rate from the northern part of New York State to New York, say Rochester and thereabout, 368 miles, is 25 cents per barrel in car lots; from Hamilton, Ontario, 44 cents, (489 miles.)

Most of the apples shipped from Boston come from Maine, New Hampshire, Vermont and Mass., but I do not know the rates paid from shipping points to seaboard.

4th. When through rates are quoted it is simply the regular rail and ocean rates combined.

Shippers here will only ship by the best steamers; they will not ship apples by "Tramps" at any rate of freight, and your apple shippers, I have no doubt, have found out that the difference of a few cents less freight per barrel does not begin to counterbalance the losses incurred through shipping by vessels that are not adapted for the safe transport of perishable cargoes.

The ocean rate from Halifax is as low as it can be done for to furnish any inducement for proper boats to call there. At less there would be nothing in it, and steamers would do better to load up at their United States loading port, which they can readily do.

There is more in patronizing the right kind of boats and getting the fruit landed in good order than in a few cents difference in rates of freight.

I shall be pleased to furnish you with any other information in my power.

Yours faithfully,

(Signed) ALLAN C. SMITH.

THE following letters appeared in the Halifax *Herald* during the last winter. And the Publication Committee consider them of sufficient interest to Fruit Growers to reproduce them here.

The writers are too well known to the members of the Association to require an introduction:

NOVA SCOTIA'S FRUIT INDUSTRY AS FOLLOWED BY THE PIONEER FRENCH ACADIANS, AND IMPROVED UPON BY THE COLONISTS OF NEW ENGLAND—APPLE TREES OVER ONE HUNDRED YEARS OLD STILL BEARING FRUIT—PRESENT CONDITION AND FUTURE PROSPECTS OF FRUIT GROWING.

STARR'S POINT, KINGS, *Jan. 23rd.*—Many years ago when the early French colonists first explored the valley from Port Royal to Grand Pre, they gave glowing accounts of the natural fertility of the soil and of the success which attended their first attempts at agriculture and horticulture. During the hundred amd fifty years which intervened between this period and the expulsion of the French Acadians in 1755, the cultivation of apples, pears and other fruits had become quite general in the different settlements in the valley; almost every cabin having its garden stocked with apple and pear

trees. By a census return of the district of Port Royal compiled at Paris in 1698 we have the first and only mention of fruit in these old documents. It gives the number of fruit trees in that district as 1584 and the number of families as 98—a little over 16 trees to each family. Beaubassin is credited with 30 families and 32 fruit trees; but Les Mines is not mentioned. Later on in 1701 we find the populations of the three settlements to be: Port Royal, 456, Beaubassin, 188, and Les Mines, 490 souls, and in 1731 we find in a note appended to the returns of that year, that "Les Mines (Grand Pre and Riviere au Canard) has 168 families who are rich; Beaubassin 150 families less prosperous than the preceeding; Cobequit 68, and Piqiquit 150 families not well off. And at Port Royal (where is the English garrison) 160 poor families." Now when we

CONSIDER THE WEALTH OF THE PEOPLE

and the evidences left behind them in the growing trees we may credit the inhabitants of the eastern end of the valley with quite as great progress in the culture of fruit as those of the west. In 1760 when the emigrants from New England colonies were settled on the lands vacated by the expelled Acadians, they wrote back to their friends home, glowing accounts of the fertility of the dyked marshes and uplands; and also of the singular adaptation of soil and climate to the production of the apple as proved by the vigorous growth and productiveness of the old French trees, still luxuriant amid the ruin and desolation of abandoned homes and deserted gardens. With the advent of the Anglo-Saxon race came improved methods of culture. New orchards were set, old ones enlarged, and as time passed on, and the struggle for the bare necessaries of life incidental to all new settlements, gave way to comparative affluence, the want of some of the luxuries enjoyed in their old homes was felt; and longing thoughts went back to the old orchards on the hill sides of New England, to the red cheeked apples remembered from boyhood's days as the "best in the orchard." Then it was that John Burbidge, Samuel Willoughby, Ahira Calkin, David Bent, ——— Gesner, and others, each working by himself, but inspired with the desire to improve the quality of those crude seedlings which were bearing so abundantly, introduced from New England, and in the case of John Burbidge probably from Old England young trees and scion of improved varieties of apples.

THE RESULTS OF THEIR LABOURS

are yet visible in the localities where they lived. Some of these old orchards, now in the second century of existence, are scattered up and down the valley, many individual trees among them being of very large size, still vigorous and bearing full crops of merchantable fruit. But the progress of growing apples as a commercial produce has been very slow. Want of markets, and above all the want of efficient means of transport, prevented any great advance in that direction. Prices were low. The markets of St. John and Halifax were easily glutted; the fruit itself carelessly harvested, badly packed, and then transported for long distances over wretched roads, or else closed up in the hold of a small schooner with potatoes and turnips, for two or perhaps four weeks, was apt to arrive in market in a condition better imagined than described. Such being the state of apple growing at that time, the labours of such men as the Hon. Charles R. Prescott in testing and planting new fruits to get the best varieties and best methods of culture, were looked upon by most farmers as the vagaries of

THOSE WHO HAD MONEY TO SPEND IN GRATIFYING A WHIM

or a hobby but without much chance of receiving any return for their expenditure. This condition of things was more observable in the counties of Hants and Kings than in Annapolis. There the natural facilities for transport afforded by the river, and their proximity to St. John, gave them an advantage that they were not slow to profit by; and thus their progress in apple culture was continuous, while the eastern portion of the valley was at a standstill, except among a few of the more progressive of the farmers. This would about represent the position of the fruit industry of this valley up to the middle of the present century. About this time there was an increased demand for good fruit in the Halifax market. The Ribston Pippin and the Gravenstein have been offered in small quantities and eagerly bought up with anxious inquiries for more. The Nova Scotia railway was now being built and soon was finished to Windsor and Truro. This at once furnished a means of transportation for the fruit of Hants and eastern Kings. Small schooners loading at Wolfville, Port Williams, Canard and Canning, would run up to Windsor and discharge into cars to be run to Halifax or Truro the same day. With

this system of transportation came the absolute necessity of better barrels and better packing, thus gaining one step in advance almost unintentionally. Farmers seemed to

SUDDENLY BECOME AWARE THAT THERE WAS MONEY IN APPLES

and new orchards were being planted. The demand for trees continuing to increase, large quantities were imported and local nurseries started to supply the want. Old orchards neglected for years, were pruned, cultivated and regrafted into better sorts. About this time came the great International Exhibition of London in 1861, and through the energy and perseverence of a few gentlemen in Halifax backed up by the government of the day, a fair representation of our fruit was made up and sent over for exhibition. These specimens appear to have taken the Londoners quite by storm, to judge from the accounts published in the papers of the day, which were flattering to our fruits. The success of this effort led to the organization of the Fruit Grower's Association and International Show Society of Nova Scotia in the spring of 1863, and since that year the history of that society and the record of the advance in fruit culture in the province are indentical. The amount and value of the information collected and disseminated to the fruit growers of the province through their shows, meetings, and reports, cannot be counted in dollars; neither can the labours of such men as Hamilton and Longley, who gave of their time and talents ungrudgingly until they passed over to join the great majority, be paid for in coin.

THE INCREASE OF ORCHARDING

during the decade of 1871–81 is something remarkable when viewed in the light of the previous increase, Annapolis having raised her average about one-third, while Kings has nearly doubled hers. In 1871 the average of the two counties was 5,152; and in 1881 it was 8,508. In the province the number of acres in 1871 is returned as 13,614; and in 1881 as 21,624, and if the present rate of planting is continued we may look for a much larger rate of increase in the current decade. At the present time there is but little fruit raised for export outside the counties of Annapolis, Kings, and Hants; but from the acreage planted in the counties of Digby, Lunenburg, Pictou and Cumberland, we may soon look for a surplus from those

sources that will swell our already rapidly increasing supply to very much larger dimensions. Other places in the province will also most assuredly become successful fruit growing centres, for there is no legitimate reason why the valleys of the Shubenacadie, the Stewiacke and the Upper Musquodoboit should not be famed for certain varieties of apples suitable to the soil, as Annapolis and Granville are for the Nonpariel, Aylesford for the Bishop Pippin, and Cornwallis for the Gravenstein. All that is required is the proper amount of knowledge, care, and attention, on the part of the farmers. Nature has done much for the localities named. If man would do his share, he would find certain return in hard dollars, as well as the gratification of a pleasant occupation, and a heritage for his children. But the time is not very far distant when

ALL THE AVAILABLE FRUIT LANDS IN THE PROVINCE WILL BE SOUGHT

out and brought into a proper state of cultivation preparatory to planting some of the best sorts of commercial apples suitable for the English market. I make this statement with a full assurance that it will be eventually fulfilled, and the reasons are these: 1st. Nova Scotia is the nearest point of land to England on this continent, thus making a short sea voyage that with a very short land carriage should give us a great advantage in freights and in time, which is an advantage in handling fruit. 2nd. The well known fact that Nova Scotia apples as a rule have better keeping qualities than the same apples grown anywhere else on this continent, so that if properly handled, the risk of loss by decay and overripeness is reduced to the minimum. This, with the fact that some of our longest keeping sorts, as Nonpareil, Ben Davis, and some other Russet varieties, can be shipped with safety in April or May, after all competition from other sources is over. There is another fact that can be advanced in favour of fruit growing in Nova Scotia, and that is that the crop is comparatively a sure one, and there is seldom a failure that is due to climatic or other influences for which there is no remedy. Taking these things into consideration, we may claim that the Nova Scotia fruit-grower can pack for market and ship f. o. b. at Halifax with a better margin than the grower in Michigan or Western New York can at New York, or the Ontario grower at Montreal, so that in the event of an excessive crop in

the United States we should still have some advantage. It will be asked,

WHERE IS THE MARKET

for this immense quantity of apples to be found? Well, London is supposed to have a population equal to or exceeding that of the whole Dominion, and will consume an immense quantity of apples if they can be furnished cheap and good. Liverpool, Manchester, Glasgow, Edinborough, and other large cities will take large quantities to supply their wants on the same terms, so that it must be our study to get rates of transportation and other expenses down to the lowest figures, and look for the profits in the increased sales. At the same time we must be careful to sustain the character and reputation of our fruit. We must plant and graft only such varieties as will grow to full perfection, and also possess as many of the necessary qualifications of first-class commercial fruit as possible. These are: good, even size, smooth, round form, bright, handsome, or Russet color, firm crisp flesh good flavor, and good carrying and keeping qualities; add to these a strong-growing, healthy tree, that will bear a moderate crop every year, and you have the perfect variety of apple for commercial purposes. Among the great variety of apples grown in Nova Scotia, we may perhaps select eight or ten that will answer the requirements best in the different seasons. First, Gravenstein for October and November shipments; second, Ribston, Blenheim and King of Tompkins, for December and January, Baldwin and Golden Russet for February, and Nonpareil and other long-keepers for March and April. Of this list the Baldwin has probably the most faults for Nova Scotia growers, but it retains its place, under protest as it were, until such time as a better apple for the season shall be found and proved.

THERE ARE NEW SORTS COMING UP

every year. Nurserymen are always on the lookout for novelties and are not always as particular about testing them as they should be. Sometimes the most highly recommended sorts, sold at an advanced price, turn out perfectly worthless. To all who intend to plant for profit I would say, select but few kinds and take them from those that are most generally recommended, and proved. Leave costly experiments to experts and amateurs. It may be asked why our fruit has not been sent into the London markets at any time since 1861, if it was so well liked there. We have not far to go for an answer. It is the same old story—want of cheap and speedy trans-

portation. In the past years sailing vessels have been tried again and again, but the result has always been unsatisfactory to the shippers—cargoes arriving in bad order from long passages and want of ventilation; and steamer freghts have been so high as to be prohibitory when added to first cost of apples. During the last four or five years a great advance has been made in that respect, and now apples can be sent from this valley to London at a uniform rate of $1 per barrel, through freight. In a few years when our newly planted orchards get into full bearing and the export is doubled, we must look for a reduction on freights that will bring this class of goods nearer an equality with flour and other produce. But first of all a local want must be supplied, and that right speedily. There is absolutely no provision made at the terminus of the I. C. R. at Halifax for the shipment of such perishable articles as fruit and vegetables during winter. There is no warehouse to protect a single car of apples from frost on its arrival; and yet it is supposed that when the steamer arrives the cargo is all ready waiting for her. They have a large and splendidly equipped grain elevator, but the port of Halifax only exported $199,000 worth of grain in the past fiscal year; while during the same time, in spite of the great risk and want of proper accommodation, there was $226,600 worth of fruit and vegetables shipped, most all of it during the winter months. Now the whole of this came over the railways, in addition to the amount consumed in the city, and it was all subject to the risk of damage by frost on arrival. This should not be and must be remedied in some way, before another seasons work comes on. I have been asked what

THE DRAWBACKS TO FRUIT CULTURE

are. Some of them I have mentioned already. There are others. Insect plagues are common enough to cause some anxiety and loss, but they can be destroyed, and the careful man will see that they are. Some others may be classed as diseases. These are not so well understood, but our knowledge of them is increasing and probably before the matter has become serious, a remedy will have been obtained. My letter has grown longer than I intended; but I must say a few words more. We have made great progress in the growing of fruit during the past fifteen years. The acreage of orcharding has been more than doubled, but it takes ten years before any great return can be received from a newly planted orchard; and so we are only now commencing to perceive the increase in crop. Planting is still going

on all over the Province. Fifteen years more will bring us to the end of the century. Will the acreage be doubled again in that time? I think so; for the apple crop to-day pays better than any other grown in the Province.

R. W. STARR.

FRUIT GROWING IN ANNAPOLIS—ITS PAST, PRESENT, AND FUTURE DESCRIBED.

PARADISE, *December 25.*—Apples are universally used in temperate climates and have been from the earliest times. There is a tradition that old mother Eve took one without leave and contrary to orders; perhaps that is the reason why apples set the teeth of her descendants on edge. If this supposition is correct we have been pretty well punished for her surreptitious enjoyment of that first apple. Mythology is full of allusions to the apple. Loki, the evil spirit of northern mythology, deprived the gods of the apple, and in consequence they became old. This goes to show that the use of fruit is conducive to longevity. Some unbelieving souls may doubt this, but every loyal subject of Her Majesty in Annapolis County is a firm believer in this statement.

APPLES WERE FIRST INTRODUCED INTO ANNAPOLIS FROM FRANCE

about 1633. Pierre Martin, who settled at Belle Isle, in Granville, was the first to set out apple trees to any extent, and it is claimed that some of the old French trees are still living and bearing fruit. Certainly some of the pear and apple trees in that section of the county show unmistakable signs of old age. The settlers who came over from Massachusetts in 1760, and were granted lands and abandoned farms of the expelled French, extending from Moselle to Nictaux, found many apple and pear trees in the gardens where once stood the houses of the former occupants. A great impetus was then given to fruit culture. These men from Medford, Malden, Waltham, Lexington and other towns surrounding Boston, with their

ADVANCED IDEAS AND SUPERIOR KNOWLEDGE

of farming and fruit raising and with a keen appreciation of the rich and fertile lands with which they had been possessed by the government, lands forming a marked contrast to the stony sterile fields

which they had left at home, soon began to plant orchards, and thus lay the foundation of wealth and prosperity, the fruits of which, in some instances, are being gathered and enjoyed to this day by their descendants. This is notably the case in the fine large old orchard of Stephen E. Bent of Bentville, County Councillor, and descendant of David Bent, one of the three Commissioners sent out in 1758 by the Governor of the Province of Massachusetts, to examine and report upon the abandoned French farms. This farm in some seasons produces 1,000 barrels of merchantable apples. Some of these old trees are of immense size and produce a great quantity of apples.

A MARVELLOUS ADVANCE

has been made within the last thirty years. About that time American tree peddlers began to infest the country, and though they are a fraud and a deception in many cases, yet on the whole they have been a benefit to the country. Many of the trees which they sold proved untrue to name and produced worthless fruit; yet they introduced some new and valuable varieties, and incited the farmers to increased activity, and the setting out of new orchards, and with the improved cultivation of the old ones, grafting out the old and worthless sorts, and replacing with improved and well tried kinds. At that time

APPLES WERE PUT UP IN OLD FLOUR BARRELS

and sold for about $1 per barrel. The principal grafted varieties were Nonpareil and Greenings, but a larger proportion of the fruit was of the natural sorts and fit only for cider, of which a large quantity was made. Cider mills and cider making were great institutions in those days; they ranked with husking parties and apple bees, all mostly abandoned in these modern times. Very little cider is made. Advanced farmers raise nothing but grafted fruit, the small, wormy and bruised apples are fed to the cattle, in the belief that it pays better than to make into cider. Cider usually sells for $2 per barrel. The barrel costs 50 cents., 50 cents more for making, leaving $1 for the juice, a pretty small balance. Formerly

FARMERS HAD A WEAKNESS

for sifting out and grafting a great variety of kinds. Greenings, Vandeveres, Spitzenbergs, Pound Sweets, Bough Apples, Concord Pearmains, Mammoth Russets, Bishop Pippins, and many other

kinds, some of which were entirely worthless, but now the poorer sorts are being gradually weeded out, and Nonpareils, Golden Russets, Ribstons, Gravensteins, Kings and Baldwins are the prevailing and fashionable kinds. The Nonpareil is the standard apple in this county, supposed to have been brought here originally by the early French settlers. It has outlived all opposition and all new and aspiring competitors and to-day stands at

THE HEAD OF THE LIST.

All things considered, it is the most valuable apple grown in the county. It is a hardy tree, though rather a slow grower, does not require so high cultivation as some others, does fairly well on grass ground, and bears a fair average yearly crop, unlike the Baldwin which bears only on alternate years. The crop for this year promised well, but the September gale was most disastrous to the apples, blowing off in some exposed localities one-quarter of the fruit—one of my neighbours picked up 160 barrels after the gale; besides injuring what remained by bruises and discolorations. Last year's crop was a fairly good one, there being shipped from this county about 90,000 barrels. Of these 40,000 barrels were sent to London and 700 barrels to Liverpool.

THIS YEAR

there is quite a falling off, particularly in Nonpareils. Bishop Pippins, however, are a good crop and exceptionally fine. Vandeveres, which were almost an entire failure last season, are very good this year, being large and well colored. Assuming that these 90,000 barrels averaged $1.50 per barrel, and this I think is a reasonable estimate, that would make $135,000 to be distributed in the county, which would be $34 for every family, or $6 for each man, woman, and child in the county. Of the fifteen sub-districts which comprise the county, six grow very few apples, nearly all being grown in the other nine, namely, Wilmot, Middleton, Clarence, Bridgetown, Belleisle, New Caledonia, Annapolis Royal, Carleton and Nictaux, and as a matter of fact, a large proportion of the area included in these districts does not produce apples, only a narrow strip along the valley and protected by the sheltering mountains, so that really only a small part of the inhabitants are actually engaged in fruit culture. My article is growing too long, but

IT IS AN INTERESTING SUBJECT,

a subject in which we Annapolitans are much interested, financially and otherwise. The culture of apples is an interesting and a profitable calling. I claim that $1 per barrel, clear of the barrel, pays better than any other branch of agriculture in this county. Our climate and soil is particularly adapted to the growth of the apple. It is true that apple trees do not mature as quickly with us as on some parts of the Pacific coast, where trees come into bearing in four years. Neither can we grow as handsome fruit as Ontario and some of the Western States. Nor can we compete with Boston and New York shippers, being heavily handicapped in the matter of ocean freights, yet it is only a question of time, when this noble old County of Annapolis with its wealth of marshes and orchards will hold its own against all comers.

BENJ. STARRATT.

CONTENTS.

	PAGE.
Officers for 1886	3
Members	5
Financial Statement	7
Proceedings of April Meeting	8
Beautifying our Home Surroundings, by Mr. P. R. Jones	9
Small Fruit Culture, Discussion	15
Proceedings of July Meeting	19
Railway and Ocean Freights, Discussion	19
Crystal Palace Co. Prize List	23
Proceedings of Annual Meeting	25
President's Address	25
Secretary's Report	29
Fruit for the Colonial and Indian Exhibition	30
Prize winners at Crystal Palace Show	31
The Law concerning Apple Barrels	34
The Rationale of Manuring and Pruning an Apple Orchard, by Prof. Hind	34
Questions and Answers	53
Inspection and Packing Apples by Alfred Whitman, Esq	56
Insects injurious to Fruit Trees, by Professor Fletcher	60
Report of Committee on Inspection and Packing	79
Plum Culture, by Mr. Kimball	80
The Study of Horticulture and Fruit Growing, by Prof. Smith	87
Exhibitions—their development and utility, by Dr. Chipman	90
The Colonial and Indian Exhibition	97
Letter *re* Packing Apples for London Markets, by Mr. Lowe	99
Reports from Vice-Presidents	102
Experimental Orchards, by Prof. Hind	110
Prof. Fletcher's Address Continued	113
Hon. J. W. Longley's Address	120
Co-operation on Transportation	123
Proceedings of Special Meeting at South Farmington	124
Report progress Committee on Ocean and R. R. Freights	124
My views of Nova Scotia, by Mrs. E. C. Fellows	125
Nova Scotia Apples on Exhibition in Edinburgh	135
Culture of Small Fruits for Market, by E. Morris, Esq	137

APPENDIX:

Correspondence *re* Ocean and Railway Freights	143
Nova Scotia Fruit Industry, by R. W. Starr	153
Fruit Growing in Annapolis County, by Benj. Starratt	160