32ND ANNUAL REPORT

OF THE

Fruit Growers' Association

OF

NOVA SCOTIA

1896.

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

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FRUIT GROWERS' ASSOCIATION

OF

NOVA SCOTIA.

Patron

HON. M. B. DALY, LIEUTENANT-GOVERNOR.

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Nova Scotia Fruit Growers' Association,

1895 Jan. 1	Balance on hand	$ 537 59
	16 Life members	80 80
	4 Annual Subs	4 00
Feb 8	Deposit Receipt	1300 00
	Interest to date	5 55
11	Jack & Bell adv	10 00
	2 Life members 10	
	45 Annual members 45	55 00
Mch 30	Deposit Receipt	1000 00
	Int. to date	5 47
July 2	Deposit Receipt	750 00
	Int. to date	7 72
1896 Jan 6	Provincial Grant	305 00
		$4055 33

1896 Jan 20	Bal on hand	376 61
	" Hortl. School	219 31
	Deposit bearing interest	500 00
	Total funds	1095 92

Have audited Books and accounts given us and find them to agree. Also find vouchers for all amounts paid.

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

In acct. with G. W. Munro, Treasurer. **Cr.**

1895 Jan		Paid	J. W. Bigelow	$ 70 90
	12	"	S. P. Benjamin	55 41
		"	J. W. Bigelow	50 73
	26	"	E. E. Faville	31 71
Feb	4	"	Witter	5 00
		"	Postage	51
	8	"	Hort'l School	500 00
	8	"	Dep. Receipt	1000 00
		"	Dr. Sawyer	5 00
	11	"	Acct. Parker	64 12
		"	Salary "	100 00
	28	"	Acct. Higgins	35 25
Mar	30	"	Hort'l School	250 00
		"	Dep. Receipt	750 00
May	1	"	Acct. F. H. Eaton	142 00
	16	"	Davison Bros	3 50
Jan	11	"	Acct Oakes	37 67
July	2	"	Dep. Receipt	500 00
	31	"	Acct. Parker	17 65
		"	" "	17 61
		"	" Bigelow	17 66
Sep	18	"	N. S. Printing Co.	1 50
Dec	27	"	Woodworth	22 50
			Balance	376 61
				$4055 33

Horticultural School

1895 Feb 8	Transferred from F. G. A.	$ 500 00
	Dep. by J. W. Bigelow	107 00
Mar 30	Trans. from F. G. A.	250 00
	Dep. Archibald	5 00
	Sub. R. W. Starr	40 00
	" C. R. H. Starr	40 00
Apl 6	" J. W. Beckwith	5 00
26	Dep. J. W. Bigelow	120 00
May 23	Prov'l Grant	2000 00
	Dep. J. W. Bigelow	6 00
	Subs. G. W. Munro	5 00
	" R. E. Harris	5 00
Nov 11	Donation C. E. Starr	25 00
		$3108 00

In acct. with G. W. Munro, **Dr.**

1895 Feb 4	Paid E. E. Faville salary		$1350 00
May 15	" " " travelling expenses		100 00
	" " " accts		270 00
	" T Reeves		146 31
	" W. Coal Co.		58 83
	" L. Sleep		21 43
	" N. S. Nursery		36 18
	" Franklin		96 95
	" L. E. Duncanson		44 20
	" Town of Wolfville		69 77
	" Davison Bros		17 00
	" F. H. Eaton		41 50
Feb 12	" R. Prat		21 29
	" Eagles		6 60
	" McDonald		220 70
16	" D. A. Munro		47 26
	" R. W. Starr		50 60
	" C. R. H. Starr		51 50
	" Rockwell & Co.		16 60
Mar 2	" Gillmore		4 00
5	" L. V. Brown		38 57
	" J. W. Caldwell		4 78
	" J. W. Beckwith		9 00
16	" Rand		6 50
May 6	" Christie		25 00
June 4	" A. Athenæum		8 00
5	" A. C. Johnson		6 00
	" A. Cohoon		25 00
26	" J. W. Caldwell		4 18
July 5	" A. Brown		19 97
	" R. E. Harris		10 52
	" T. L. Harvey		4 00
10	" J. W. Balcom		6 75
	" W. McNab		3 00
	" J. Walker		8 00
Nov 14	" E. W. Wallace		24 00
20	" J. M. Payzant		2 00
	" Express agt		1 20
25	" J. Wakeham		2 00
1896 Jan 15	" Annand		9 00
			$2888 69
	Balance		219 31
			$3108 00

THIRTY-SECOND ANNUAL MEETING

(*Stenographic Report by W. H. Huggins.*)

Held in College Hall, Wolfville, Jan'y 22nd, 23rd and 24th, 1896.

The meeting was called to order at 7.30 o'clock—President Bigelow in the chair.

Rev. E. M. Kierstead, D. D. invoked the Divine blessing.

President Bigelow presented his annual address as follows :

To the members of Nova Scotia Fruit Growers' Association :

LADIES AND GENTLEMEN,—Again I am called upon to present the address on this the thirty-second annual meeting of the Association, and I must congratulate you on having had another successful year in this important and profitable industry, and when we consider that the fruit crop of Kings and Annapolis counties return to Nova Scotia a larger revenue from export than all the other farm products exported from the whole province, both people and governments should be stimulated in increasing the fruit industry in the whole province. Although the apple crop is not as abundant as last year the quality is superior and we will have this year over 200,000 barrels for export, besides 100,000 barrels for local markets and home consumption. The plum crop, which is becoming an important factor in the fruit industry, has this year yielded a good return, and small fruits were an average crop and brought remunerative prices. We may safely estimate the value to Nova Scotia of all fruits and berries at over $1,000,000. We have an object lesson this year which should forever silence all pessimists respecting the overproduction of fruit, while we can maintain its present excellence of quality. We have in the face of an adverse tariff of 20 per cent

marketed over 50,000 barrels of apples and a large quantity of small fruits in the United States at prices ranging from 25 to 50 per cent higher than similar fruits grown in the U. S. We had the same experience in England. While English grown Ribstons were selling at from 12s. to 15s. per bushel in Covent Garden market and very slow sale, Nova Scotia Ribstons sold readily at from 12s. to 15s. per barrel, proving conclusively that while we can produce superior fruit we have the world for a market and need not fear competition. Statistics of the world's fruit crop prove that if the fruit producing parts of Nova Scotia were a continuous productive orchard it would not be an important factor in the world's crop of apples. The U. S. government crop report gives the product of that country alone at 60,000,000 barrels. The states of New York, Pennsylvania and Ohio, produce, each, 6,000,000 barrels. Michigan, Illinois, Missouri and Indiana produce, each, over 3,000,000 barrels, while all of Canada, including Nova Scotia, produces 1,000,000 barrels. When Nova Scotia produces three million barrels we will then be only producing as much as one of the three states above named.

I think it is good policy for this Association to direct all its energies to exhibits of fruit in foreign markets and endeavor to thus obtain new markets. With this object we have this year forwarded to Berlin a large exhibit of our leading commercial varieties of apples, where Prof. Faville arranged for their exhibit at the International Fruit exhibit. I have not yet received the official report but a letter received from the secretary on Nov. 4th, soliciting consignments was published in the N. S. papers and we may expect a profitable market in Germany in future where our apples are considered of better quality and better packed than any of the product of Europe. A large quantity of N. S. apples were shipped from London to Germany in 1894 and sold readily at an average of $5 per barrel. I am pleased to report that the Horticultural School, which is now an important branch of your Association, is in a most flourishing condition and is becoming an important factor in promoting fruit culture in the province. A more extended report of this worthy institution will be presented by the Chairman of the Board, W. C. Archibald, and the Director, Prof. Faville, and in this connection I

will embody and endorse an extract of remarks made by our valued friend Prof. Craig :

"The Annapolis Valley stands alone in the fact that she possesses the only purely Horticultural School belonging to Canada and that this School is under the control of a body of men who have their work at heart and who are best qualified to guide it in the lines that will be of the greatest usefulness to the province and it was a great credit to the provincial government that they have seen the necessity of a school of this kind, and that it will have a marked influence in the future in directing the attention of the farmers and the farmers' sons to the benefits to be derived from a knowledge of the principles underlying the science of Horticulture."

While this Association is to be congratulated on the marked improvement and extension of fruit culture as an important and profitable industry, I would again urge the necessity of establishing local Fruit Growers' Associations in every county in the province, as we know fruit of some kind can be profitably grown in every county, and it should afford profitable employment to thousands more of our young men and women and add millions to the individual wealth of our inhabitants.

Among the many subjects of importance to your profession to be introduced at this session are :

(1) The establishment of a Chemical Cold Storage warehouse for the preservation of fruits and all perishable food products and the same for transportation by rail or steamboat.

(2) The necessity of having all railway freight from all the western counties for Halifax, delivered at Halifax by rail, instead of at Richmond.

(3) The most desirable package for fruit for shipment.

(4) The importance of combining fruit culture and dairying as the most profitable system of farming throughout the province.

(5) The necessity for an experiment fruit station supported by the Dominion Government in connection with the School of Horticulture, all of which will, I hope, have your serious consideration and vigorous support.

In conclusion I must urge upon you the necessity of appointing to this important and honorable office of President a younger and more energetic and influential man than the present incumbent.

NOTES ON THE YEAR.

W. C. ARCHIBALD, WOLFVILLE.

MR. PRESIDENT, FRUIT GROWERS AND FRIENDS,—Before this large assembly it is with diffidence I venture to treat this subject for your interest and profit, requiring as it does the closest association with the trees of the orchards to obtain the practical and valuable thought which will substantially advance the work. I will first ask you to consider for a moment the past season.

The two past years had prolonged seasons of drought and gave good crops of best fruit—perhaps hitherto unexcelled. The unfavorable conditions of drought are easily overcome by soil culture. The advantages of a dry season in a bearing orchard are less wood growth, less fungi, more sunshine, larger size, higher colored, firmer and more edible fruit. On the shallow, gravelly lands between Wolfville and Kentville stretching via the New Minas district the fruit is small and ripens somewhat prematurely. This may be measurably corrected by frequent stirring of the soil through May June and July, and a judicious use of fertilizers. At the same time I would commence cultivation as early in the season as the soil will permit.

SUBSOILING. The subsoiling of hard, dry soils is doubly imperative; that there be a sufficient body of loose soil to store moisture—as a sponge during the dry season. Conserve this moisture in the bearing orchard by stirring often two inches of the surface. In wettish lands draining is essential to give roots ample room and fair play to reach out for anchorage and food. In this country subsoiling is more economical in dry soils than irrigation and is equally valuable in wet or dry seasons and I think in either equally effective.

CLOSE PLANTING. I observe orchards thus set where the trees appreciably shade each other's trunks, ward off sun injury. Heading low is also helpful and the entire ground filled with roots gives the grower more leverage towards regular annual crops.

PRUNING FOR FRUIT. If we note the law of existence and growth while armed with that broad commission, "Go conquer the earth," we will bring the trees under control. During 10 years I

have only pruned about one hay wagon load of branches from my orchard. I have few deceased trunks or branches, or waste and loss in wood growth. I understand leaf buds and fruit buds grow side by side and are convertible to fruit blossoms by careful direction of the grower. Standard trees may be controlled as well as dwarfs. A treatment that interferes with the flow of sap in a tree directs its energies toward fruit buds. It requires about the same strength of trees to produce extended wood-branches as it does to produce buds, blossoms and fruit. If the wood germ in the bud is forced by nitrogenous manures it gains superior strength and the blossom bud is crowded out. Hence the intelligent use of fruit fertilizers will enable the fruit buds to take precedence over wood growth. If the ground is well filled with roots meeting roots from neighbor trees its wood producing ability is confined. I would add to this, bud pinching, nipping or cutting back previous growth, and invite or superinduce fruit buds. Heading in or heading back by shearing is not more costly or laborious than wood sawing. Young trees yield easily to this control and fruit equally well with older trees in proportion to size and kind. I prune in April, May and June, but think the latter month is perhaps the best. Trees pruned of their terminal buds do not rush upwards as the same trees pruned the first of August.

FERTILIZING BEARING TREES. Presumably all orchards are in fairly fertile condition—if not they should be. Then we may begin the season's fertilizing with chemicals about, on or after blooming. As the fire in the grate on a winter's night is kept ablaze in proportion to the degree of cold—so would I fertilize the bearing trees as the size of the fruit increases, and reasonably meet the demand of the trees in fruit-bearing, not forgetting that additional strength for producing blossom buds is upon the tree in July and August for annual fruiting. I believe this can best be met by frequent applications in small quantities and with different kinds of plant food usually applied in a soluble form. If using stable manure in the cultivated and bearing orchard I would apply in July and give shallow ploughings, when it would be most valuable as a mulch without obstructing the sun's heat and would convey needed moisture in the usual droughty time.

SPRAYING FRUIT TREES. Judicious spraying has given a conquering hand over most destructive insects and unsightly blighting fungi. The loss of strength to the trees by myriads of parasites fattening at our expense may well quicken our perceptions in the work of fruit growing. Quality not quantity of fruit is the safest and most profitable condition for the ideal orchardist. Our Experiment Stations are strongest to-day in this department and we are intensely desirous of being helped with carefully prepared and tried formulas to conquer these enemies.

PICKING AND PACKING FRUIT. The under-average growers are incapable at present of picking and packing their fruit. There must prevail a higher ideal of the condition of the fruit when opened at its destination. Ideal table fruit is handsomely formed, free of spots, attractive appearance and above all freed from great or minor bruises in picking or packing. A few years ago I raised a few barrels of highly colored gravensteins on young trees. I personally picked them from the trees and sorted into barrels as carefully as I would eggs. I asked a neighbor, who is a large fruit grower, to come into the orchard to head them for me. A lever was used under his direction. When that beautiful fruit was opened at Halifax, complaints were at once made that its value as show and table fruit was ruined by the bruising and nesting of the apples. Their food value was also greatly lessened. I afterwards saw the fruit and was astonished then, as now, that so many fruit growers have not learned how to prevent the enormous loss and waste in picking and packing fruit.

MARKETING AND PRICES. There is a steady, growing demand for perfect fruit in Canada, and our reputation must accompany its sale. The consumer is slowly but surely learning the higher value of fruit delivered as they conceive the condition in which it should reach them. Whether the market is at home or abroad the results are practically the same. The yearly consumption by the people is steadily running up. Our world markets are steadily broadening for better fruits.

TO-DAYS OUTLOOK. During the last 20 years industrial Canada as well as the world of nations has witnessed a drop in the general prices of their manufactures of 40 per cent. In agricultural

products such as wheat, barley, hay, cheese and eggs almost the same thing has happened and prices are very much lower now than then. But in apples the trend of prices, notwithstanding the rapid increase and volume of their product for 20 years past, has had a remarkably steady advance, and now, as far as we can see, is still advancing. With a province and a country abundantly conditioned for providing the highest types of fruits of their class,—what obstacle interposes to a thick setting orchard stretching from Windsor to Digby?

COLD STORAGE AND TRADE.

W. RAND, CANNING.

The ground will be fairly covered by the statement that a system of storage in both warehouse and ship has become essential to the carrying on of our trade in the measure of our ability to produce. Not for the sole reason, however, for the quantity produced, but also for that the methods of transportation are ever improving, and that competitors are ever on the alert to seize the advantage which they afford; that as man's wealth increases his wants multiply; that the revelations of science have increased the productive powers of labor a hundred or a thousand fold, and that these in turn laying bare fields of industry are calling into existence sources of wealth and lines of production which without their aid it would be impossible to carry on successfully. Acting in unison with this is the fact that individual or locality reaps its highest reward when, co-operating with its environments, it devotes itself to the production of these things to which nature has adapted it; this is the foundation: the instinct of all commerce and the commercial strength and prosperity of any country grows as this fundamental principle is adhered to. If natural surroundings have adapted us to the production of fruit, cheese, butter, meats and so forth, it is in the interests of all that every legitimate encouragement be given to their production, and that producers unite with those who propose to furnish superior methods of transportation for the perishable articles, in carrying it to a successful issue, both keeping in view the fact that one is dependent for success upon the other.

It is not necessary to state that Nova Scotia is admirably adapted to the production of any or all of these articles, yet in point of fact with the exception of the single article of apples their export from this province is a blank, and all because we have no facilities for cold storage, while such is erected at Montreal, Quebec, Toronto, thus giving them material advantages over us. To show where Nova Scotia stands in this trade, it may be stated that last year Canada sent to England $16,000,000 of her total import of $26,000,000 worth of cheese, while out of this Nova Scotia sent little or none. Out of an import of $65,000,000 worth of butter by England, Canada sent only $1,500,000 worth last year, or over two per cent, Nova Scotia sending none. England imports $10,000,000 worth of dressed meats yearly, and of this Canada contributes nothing. She imports forty to fifty millions of value in live animals, Nova Scotia sending none and Canada but a small proportion. It may be said here, however, that the reduced cost of shipping the dead meat and the present regulations in regard to compulsory slaughter on arrival would largely result in increasing the use of cold storage. Here then we have the products of the farm amounting to $24,000,000 which are annually imported by England as part of her food supplies exclusive of fruit, all of which articles can be produced in Nova Scotia.

On December 5th the S.S. Labrador took from Ontario farms the following as part of her cargo: 1867 cases of eggs, 2081 boxes of cheese, 9 bls. of honey, 11,000 bls. of apples, 10,000 head of frozen turkeys, leaving out the item of apples this ship contained more product for English consumption than Nova Scotia has exported to this market in five years together; yet the consuming power of this market is constantly increasing, as shown by the fact that in 1880 the export of sheep from Canada and the United States was 40,000, while last year it was 460,000. With splendid facilities and natural advantages for production, with direct steam communication with the great centres of population of England, with the shortest sea route, and with a demand constantly increasing, in activity, in the matter of the foreign export trade in our agricultural products, the demand for a cold storage service of the most modern type, is now most pressing. If Australia can successfully compete for

the trade of England, why cannot we? But Australia is not only competing, she is obtaining, which is amply proved by the fact that in the space of two weeks she had landed at English docks more butter than Canada exports in a whole year; yet her population is only one half of that of Canada and she is handicapped by a distance of 10,000 miles. The United States centres of trade recognizing the value of cold storage have erected not less than 60,000,000 cubic feet and are constantly adding to this capacity. In a similar condition is our trade with the West Indies. Man does not live by fish alone, but with this one article excepted little effort has been made to supply that market with the products of Nova Scotia. Here is a population of 4,000,000 producing little of manufactured goods or products of the temperate zones, who would consume a variety of our productions if any method of transportation were furnished which would preserve them in proper condition. Cold storage is the missing link of provincial trade, which, if furnished, would complete those facilities, so far as the material part extends, which would reach from the producer to the consumer, placing in the hands of the latter the best article in the best condition. For it is to no effect that every facility for production exists and that there is a demand for the product, if between the two there stands an impassable barrier.

DISCUSSION.

PROF. CRAIG.—Mr. President, ladies and gentlemen of the Nova Scotia Fruit Growers' Association: It is a source of great pleasure to me to be present with you at your annual conventions, and to look into the faces of many friends at these yearly meetings. On the subject on which I am called upon to speak to you to-night I must confess at the outset that my knowledge is not as complete and as thorough as I should like, nor of the character which I should like to impart to you. There is no doubt, and I am strengthened in this assertion by the remarks contained in the paper read by the gentleman last on the floor on this subject, that the results of refrigeration are directly interwoven with the health, comfort, prosperity, and convenience of the civilized world to-day; this is

a proposition I would like you to consider at the outset. The importance of the industry from this standpoint will be set forth more fully by gentlemen who will follow me, and I am going to confine my remarks, which will be brief, to the more technical side, a side whichwill be interesting to you as bearing upon principles underlying means of securing refrigeration.

As a general proposition refrigeration is secured by ice and mechanical means at present. Refrigeration, as we understand it, is simply arresting the process of decay, which in fruits or in vegetables or animal tissue goes on, if allowed to remain exposed to the ordinary temperatures, in the natural course of events by the agency of germs of fermentation, which goes on from the period of ripening to decay and final annihilation. Now another proposition we should consider is that cold storage buildings not put up and cooled upon correct principles, will, in the long run, prove a great disappointment as well as a source of loss; so that at the outset whether you intend putting up a cold storage building for the purpose of holding fruits at your own home, or whether it is erected by a joint stock company on a larger scale for the purpose of storing fruits for a district, it should be erected on correct principles. A foundation one is that cold air falls and heated air expands and rises.

The use of cold storage is rapidly extending. It is used in ventilating buildings for sanitary purposes. It is used on the other hand very largely in breweries in the manufacture of intoxicants, in the handling of fruit, and for holding nursery stock.

EFFECT ON THE TRADE OF A COUNTRY.

In 10 years, from 1880 to 1890, the importations into Great Britain increased from 400 carcasses of beef and mutton in 1880 to 3,500,000 in 1891, this is mainly due to the employment of cold as an agency for preserving these perishable meat products.

The exports of beef alone from the United States advanced from 50,000 tons to 100,000 tons in that period. As an instance of the means to which cold storage has been put, I might cite as an example Australian milk, which has been placed in the last few years upon the London market in good condition by freezing it in

solid blocks—and this product has been sold in the city of London for four cents a quart.

Then there is another interesting feature of the principles underlying cold storage, which has been taken advantage of by mining engineers. When tunnelling in quick sands the walls of the tunnel have been frozen by ice producing machinery, which makes them solid enough to retain their rigidity and resist the pressure from the outside, and thus enabling them to dig tunnels through certain soils which are difficult to manage otherwise.

Now of course the main proposition is that cold storage may be used to advantage in prolonging the market season for many of our perishable products, and in doing this, in prolonging the market season of our fruits, we increase the returns to the producer of the fruits by distributing the product over a longer period and maintaining a higher average price than if it were put on the market all at once, and as a side issue fruit being a healthful product the health of a nation may be considered to be improved by a generous supply of fruits the year round.

How long will cold storage preserve perishable products? This will depend on the product and the condition in which that article is put into cold storage. I will cite you some of my own observations and experience. Poultry at a temperature of 34 to 38 degrees can be kept in a condition just as good as when put in for a considerable length of time—and by being stored two or three weeks the flavor of beef is said by experts to be improved.

Butter can be kept from 3 to 8 months at that temperature and its strength will not increase with age. Eggs from 3 to 8 months—lard probably the same length of time.

In the case of apples taking the early winter varieties—from 5 to 10 months—pears from 2 to 3 months—grapes, and my experience has been with the Rogers varieties which are good keepers, 2 to 4 months. Strawberries from 2 to 4 weeks. Black raspberries the same length of time—cherries also the same length of time. The period for water melons, musk melons and peaches, 4 to 6 weeks.

Oranges, limes, figs and bananas are ordinarily kept from 2 to 3 months.

Vegetables, like green corn, is kept from 2 to 4 weeks as a maximum period. Squash 4 to 8 weeks. Potatoes almost indefinitely at a temperature of 35 degrees. When a lower temperature is maintained, say 34 degrees, the keeping season is correspondingly lengthened.

Of course its benefits with canned fruits and ice cream need not be mentioned. In a general way peaches, plums, and early pears lose their flavor more or less when kept in cold storage. And the Bartlett pear after being in cold storage for 2½ months is not as good, nor as fine in flavor as when put in. To my taste it will, however, compare very favourably with those fine looking specimens from California which come to us in such attractive packages, and which usually top the market.

PRINCIPLES INVOLVED.

Perfect cold storage depends upon the circulation of pure dry cold air. As air is exposed to heat it expands in volume and rises—when air is exposed to cold it contracts in bulk and falls—so the action of heat and cold on air gives us the principles of circulation. The capacity for absorbing moisture varies with the temperature of the air—it is greater at a high temperature than at a low one. You will have noticed that when water is cold and approaches the freezing point it expells the heat gathered at a higher temperature gives it off, and for this reason we add salt to ice so that it may expel the cold and absorb the heat. And when the ice is melted heat is again absorbed. Those are the principles upon which cold storage machinery of buildings is constructed.

Now in the ordinary ice house the ice is stored above—and this fact of the air being contracted and falling is kept in mind in the construction of the buildings. The ice is placed above in a storing chamber to cool the products below. Then a flue is arranged to draw off the warm air and let it out over the ice at the top, this cools and drops down through another flue and goes around again. So that with this system of circulation you are able to obtain a comparatively cool atmosphere—but you must arrange for an influx of cold air at the bottom.

Now a very simple method of obtaining cold storage for small

houses, and one which I have seen used a good deal and with a great deal of success, is simply by the ice and salt method—the easiest way to arrange that is, if you wish to put up a building to store 3 or 4 or 500 barrels of apples, is to arrange the ice house on one side of the storing chamber, place a set of galvanized iron tubes in the chamber on the side of the wall next to the ice house—have these open at the top and over the top have a trough arranged which you can fill with broken ice and salt. From the lower end of the tubes arrange a tube to draw off the water or melted ice. With this system you can keep the temperature near freezing point with very little expense.

A room 20 feet square would probably take 8 galvanized iron pipes each 10 inches in diameter arranged along one wall, the larger the tube the greater the surface you have to give off cold. I just throw out this hint as one that can be put into practice with comparative cheapness for home use. With regard to mechanical means I do not think I will touch at any length on these means as I know there are gentleman here who will follow me on this subject.

It may be interesting to you to know that the first machine manufactured and used in connection with the aqua ammonia process was made in France in 1848. In manufacturing low temperatures by the compression and absorption systems, a liquifiable gas is used as the vehicle by which to impart cold and carry off heat. Anhydrous ammonia, ammonia without water, is used. The gas is subjected to a great pressure, heated and then condensed into a liquid. Most gases may thus be condensed into a liquid by pressure and reduction of temperature. Now the liquid ammonia in a highly condensed form is allowed to escape through a valve into expansion coils, and thus escaping rapidly, it expands quickly and absorbs the heat in the atmosphere or immediately surrounding it—it expands to a great many times its volume and it reduces the temperature very rapidly and very effectually.

The expansion coils are placed in a tank containing brine and then, in this case, the brine is rapidly cooled. The cooled brine is driven through pipes lining the walls of the storing rooms and furnishes the cooling medium. After circulating through the expansion coils the ammonia is withdrawn, compressed and condensed,

when it is ready for use again. In the air machines which are used on board steamers, the air is compressed and dried when it is again expanded, producing intense cold. The air can be expanded in expansion coils placed in vats of brine, or it may be used directly in the rooms to be cooled.

RETARDING CELLARS AND HOUSES.

I have seen useful fruit cellars without any cooling arrangements at all constructed in the side of a hill, and which can be done cheaply. These can easily be constructed by excavating the soil so that the sill at the rear of the house is just about level with the ground, for a covering a single layer of boards and perhaps 8 or 10 inches of tightly packed straw—and on that another cover of matched boards –and it it was thought necessary two covers of boards with waterproof paper between might be added. A cellar of this kind, made by simply lining the walls with good strong lumber nailed to posts on the inside, with double doors, and having a driveway down the centre, being 100 feet long, could be constructed at a cost not exceeding $150—that is at the rate at which lumber can be purchased in Ottawa.

I would like to enlist the sympathy of the fruit growers with our work in this line carried on at the experimental farm. I mentioned very briefly last year my experience in storing fruits, the results, the effect on the quality, and the length of time they would keep. A shipment of the most perishable fruits was made to England this year. This shipment was made under disadvantageous circumstances. We were obliged to use compartments primarily constructed for carrying butter. These were insulated compartments with cold storage by the use of ice and salt. It was thought best to try and make the experiment even under these disadvantageous circumstances. A quantity of peaches, plums, pears, tomatoes, grapes and early apples were collected in the Niagara district, amounting to ten tons. The fruit was picked and packed under the best possible methods, and put into specially constructed cases and placed on board refrigerator cars at Hamilton and shipped to Montreal—the transportation company neglected to keep up an equable temperature and on arrival at Montreal the ice had given

out and the fruit was too warm. It was cooled there as much as possible and put on board the steamer without delay, but arrived in bad condition according to reports received. The peaches, plums and early pears had considerably decayed and were sold for very small figures. The apples, which were sent forward in bushel boxes, each specimen wrapped separately, sold at a little over a dollar net—the varieties being "Alexander," St. Lawrence, Duchess and Wealthy. The tomatoes came out in very fair condition and I have no reason to doubt that as tomatoes can be produced over a large area of Canada they can be shipped with profit to England. The failure of this venture has induced the government to take under consideration a scheme for carrying on this work more fully this year, and it is hoped the coming season that 8 or 10 shipments such as I have described will be sent forward, and will be thoroughly and systematically distributed to the best advantage in Great Britain. This will, I hope, not only demonstrate the feasibility of carrying our perishable fruits in good condition to Britain, but will create in the mind of the British consumer a knowledge of, and a desire for the delicate flavored fruits of Canada. (Applause).

Major Clark, of Halifax, was next introduced. He made a practical appeal for the establishment of cold storage at Halifax. Though we had, perhaps, lost much in our delay in establishing cold storage facilities, we at any rate now had the benefit of a choice of systems by the experiments which had been made by other countries. By mechanical power and anhydrous ammonia there was a possibility of arranging for rooms at any desired temperature, and at Halifax they would arrange for those temperatures that were found to be the best for the staple products of Nova Scotia. Our province conld by this system become one of the great exporting countries, not only in the products of the land, but also to a greater extent than heretofore from the prolific sea-farm surrounding us. But we must remember that to work up an export trade we must send abroad only goods of the very best quality honestly packed. Without this care cold storage would not avail us much.

MR. GEORGE E. BOAK, of Halifax, said: The securing of capital was one of the most serious questions the promoters of the scheme had to overcome. As they could not get the required capital in Halifax and had not time to canvass the whole province, they were now asking that the Provincial Government should give a guarantee of 4 per cent. on $100,000 for 5 years for the establishment of the buildings and plant, and asked the support of the association to assist in securing this guarantee, when the stock will be undoubtedly be a good and safe investment.

MR. HUGILL, agent of the Furness line of steamers, said that his line was very deeply interested in cold storage. They hoped to be able to take care of all the products the province had to ship to London and would put in the best type of refrigerating machines for this purpose. It was one of Linn's machines and would be capable of reducing temperature in their space to 12 deg. Fah. Our line is here to help increase the trade between the Province and England. We want to assist in the development of your resources so far as we possibly can, and we shall be prepared to extend our carrying facilities as fast as you are able to employ them.

A resolution favoring cold storage was then unanimously passed.

During the evening the Wolfville Brass Band was in attendance and rendered several selections. Prof. Adams favored the meeting with a concertina solo, which was imperatively encored. And Mr. Boak sang "Rocked in the Cradle of the Deep" in a very effective manner.

THURSDAY, JAN. 23rd.

JAPAN PLUMS.

PROF. CRAIG.—We are indebted to Japan for a great many things beautiful and useful, particularly to those of us who make horticulture our life work. Among some of our most beautiful ornamental shrubs are those which we have received from Japan—and in the last ten years in addition to our ornamental shrubs we have secured from the same source—this interesting land of the Orient—a great many varieties of exceedingly fine fruits, none of these are of

more value and service to the country than the Japan plums. We should consider them as representing a large family, and as all families are made up of individuals of more or less usefulness, so these Japan plums are made up of members of greater or less value to the horticulturist. It would, therefore, not be wise to receive as a good thing every species of plum coming from Japan; but on the other hand examine and inspect those which are poor and worthless. I think at the present time we have 35 or 40 distinct varieties of Japan plums. They have come to us principally by the way of California and the southern states, and their introduction dates back 20 years or perhaps a little more. To Luther Burbank, an enthusiastic fruit grower, who has the title of the "wizard of horticulture" in California, is due the honor of being instrumental in first introducing these plums into America—and he has also been successful in crossing them with American varieties, thus producing new varieties, made up of the Japan and the best European plums of to-day.

The character of the trees, as those of you who have noticed their habits in this vicinity know, is marked by a rapid and vigorous type of growth, strong heavy twigs with large healthy leaves. The foliage is not usually affected by fungous diseases. While the trees are not insured from the inroads of black knot, yet they are not attacked to any serious extent, though they have in some localities suffered considerably. I do not think it would be wise for us to consider them as having perfect immunity from diseases such as black knot or "shot hole fungus," but thus far they have not shown any predilection to be afflicted with this disease.

With regard to the fruit—most of the east European plums are very handsome in appearance, and this is particularly true of the Japan plums. As a rule they are symetrically round or oval in shape, of a beautiful crimson color, more or less covered, a rich, purplish blue bloom. In fact I know of no more beautiful fruit than a good specimen of "Burbank" plum. The flesh of this variety is juicy and of good quality. I would compare it in regard to quality with a well-ripened specimen of the Lombard plum. This matter of quality is a matter of taste, and people rate qualities in different ways. I would grade the Lombard with the Burbank, neither being first class but still fairly good. The firmness of the flesh of the

Japanese plums is one of their strongest points from a commercial standpoint. At the present time our home markets are filled with plums of good quality, but so soft in texture as to prevent them from being carried to distant markets. And it seems to me that the Japanese plums are going to fill a very important gap in the way of giving us a good export plum which will carry well even to foreign markets. From what I have seen of the Japanese plum we will have no difficulty in placing that plum on the British markets. I speak from observation and not from personal experience. We planted as many varieties as we could secure seven years ago, but our climate proved much too severe and it only took two or three winters to clear them all out. When the thermometer goes down to 25 they leave us. I have observed these plums at different points in the United States, in the state of New York, Connecticut and Massachusetts, and in other fruit growing portions of the Central States, as well as in the best fruit growing sections of Ontario. And I do not know of any place where they can be said to have passed the experimental stage, except in New York and Connecticut—but I know of many places where the plum growers are pinning their faith largely to these varieties and have planted or are arranging to plant them extensively. In the peach district of Ontario they are at present planting Japan plums largely. I think in the Annapolis Valley, where you can grow the European and better varieties of blue plums—better in comparison with our native varieties—that you can plant the Japanese plums with safety. In the planting of these plums I would not advise you to set out many varieties to begin with. I should confine myself at present to 3 or 4 varieties. I would recommend the "Burbank" and "Abundance"—and I may say in passing that "Abundance" is a synomyn of "Botan" and the "Willard." The "Willard" was brought under my notice by Mr. Willard, the nurseryman of New York. It is a small round plum, but it is about two weeks earlier than the Japanese varieties. I understand that during this year so far Mr. Willard has not so much faith in this variety as formerly, his advice at present being to go slow in the planting of the Willard. In many sections the Willard is being planted largely. To these three varieties I do not know that I would add any others—unless it would

be Red June. Besides these there are Kelsey, Ogon, Botankio, Hatankio and a great many other varieties with the musical names characteristic of Japanese plums. The four I have named are sufficient. These Japanese varieties as a rule blossom earlier than other kinds, and it might occur in some years that the blossoms will be injured by late frosts. Last year I obtained records of the blossoming period of plums as well as other large fruits, and I noticed that in almost every case the "Burbank" plum was the earliest of fruits to blossom. So there is some danger of this habit getting it into trouble during seasons characterized by visitations of late frosts. I mention this, not as an actual, but as a possible source of weakness. I would not advise rushing in and planting largely of these undoubtedly valuable plums, but would rather advise each grower to proceed cautiously and expand as his experience warrants.

I have seen the Japan plums grown with success, when crown and top grafted on the common American plum, it makes a good union. If the tree shows weakness it may be well to use the American stock for top grafting. I am growing a few of them at Ottawa in this way with a measure of success. There is no doubt that the hardy stock increases the hardiness of the top to some extent. I simply give you my experience with these varieties. I came to this meeting this morning to learn and I would like to get from the practical fruit growers of the valley as much personal experience as they can give me upon this interesting subject.

DISCUSSION.

MR. RALPH S. EATON said: Having 700 plum trees of the Japan family I have listened with a great deal of interest to the remarks of Prof. Craig. I like to be conservative in the planting of new varieties, and I have watched very carefully during the last few years all testimony regarding them. This testimony seems to be very pronounced in favor of the two varieties Abundance and Burbank. The Willard, of which Prof. Craig has spoken, is not recommended for orchard purposes by Mr. S. D. Willard of Geneva,

for whom it is named and who got scions first from California some six years ago.

A year ago last spring I planted 100 Burbanks which had been budded on peach stocks. They were one year old and averaged from 4½ to 5 feet in height. They made most satisfactory growth that season and were literally covered with fruit buds in the autumn. These trees were full of bloom last spring and the fruit set densely, but most all dropped before becoming as large as peas, a few trees developed some handsome fruit until almost mature, when they looked so tempting that little hands could not leave them alone. Trees so young will habitually drop their fruit the first season of bloom. Peach trees seem to have the same tendency I learn. Mr. Rufus Starr, of Starr's Point, obtained some well matured specimens of this variety—Burbank—last season, from a tree of the same age and was exceedingly pleased with their size, appearance, long-keeping qualities and flavor. My trees, now three summers from the bud, are again very full of fruit buds and judging from Mr. Willard's account of their habits I would anticipate something handsome in the way of quality and appearance of fruit next summer. I have never seen trees that I liked the style of so much. They are wonderfully vigorous and look as though they meant to go right to work. The Burbank is rather a sprangling grower, and it will need to be headed in to develop a dense, symmetrical top. Prof. Bailey, of Cornell University, said at a F. G. A. meeting two years ago in Western New York that "it was the handsomest tree fruit he ever saw," and Mr. Willard writes me this past autumn that "there is not a plum in Western New York that compares with it for heavy bearing qualities and I am planting more largely of it each year."

The Abundance tree is a more dense, upright grower. The fruit ripens nearly a fortnight earlier than Burbank, and with some this variety is more popular. I have heard so much in praise of these Japan plums that I have been looking for their weak points. A year ago it was thought in the United States that too early blooming was one of these and I watched the fruit buds very anxiously last spring. Though they seemed to swell earlier than some other varieties they were fully a week later than either Lombard or Moer's Arctic in coming into full bloom. In the last bulletin, 106, pub-

lished by Prof. Craig on Japan plums and which has just come to hand, I am pleased to notice further assurance on this point. He says:—"The fear expressed in a former bulletin that these plums may be found to bloom too early for safe cultivation in Western New York, has proved to be unfounded. Farther south, however, and even in Ohio and Indiana, the habitual early bloom of some varieties renders them unsafe. It is probable that the many large bodies of water in and around Western New York exert a considerable influence in retarding the fitful variations of early spring. I have not yet heard of any serious loss of Japanese plums through late spring frosts. There was an abundant crop of them in many parts of Western New York in 1893, notwithstanding the hard frosts of May." Our maritime position probably gives us a more uniform temperature than they have in New York near the lakes, and consequently our liability to take spring frosts would be much less.

Another point of great value to me to which Prof. Craig has alluded, is their long keeping qualities. Evidence from all quarters where they have been grown shows that they can be picked sometime before ripe, stand a two or three weeks trip to market and turn out with fine flavor and appearance.

DR. DEWITT said since the Japan plums were being extensively planted in Canada, he would like to know if they were self-pollenizers or not, if we were going to plant thousands of trees of the Burbank and Willard type, and their blossoms were not self-fertile, we might meet with disastrous consequences.

PROF. CRAIG.—As far as I know they are. I do not think that they have ever been set out in large blocks. It is an important question to consider in the planting of any fruits. I do not think it is advisible to set out a large block of any variety. In setting out plums they should be intermingled. As far as I am able to learn the "Burbank" and "Abundance" are able to set fruit of themselves. I examined the blossoms of the "Burbank" very closely and in every case they did set fruit they depended on their own pollen.

RALPH EATON.—Mr. Willard's statement agrees with Prof. Craig's. In my own planting I have alternated the "Abundance"

with the "Burbank" to make sure that each of them would have their blossoms fertilized. Mr. Willard wrote me that he would not recommend the "Willard"—it is the earliest plum ripening known—but he would not recommend it for orchard purposes.

Q. How about the possibility of shipping plums to the British market?

PROF. CRAIG.—I had special reference to the Japanese plums—they can be shipped with comparative ease. You should have no difficulty in placing every variety of these plums on the British market when the cold storage warehouse is erected in Halifax and also cold storage machinery placed on the steamers.

Q. How can you make the Bordeaux Mixture quickly?

PROF. CRAIG said he would advise fruit growers to have a stock solution on hand—make it up at the beginning of the season. If in a hurry you could use the Sulphate of Copper in a powdered form. To dissolve the sulphate he advised putting it into a bag and hang it at the top of the barrel—the copper sulphate as it dissolves falls down and takes down the water which is saturated with it.

Q. How often would you spray?

PROF. CRAIG.—I would give three good sprayings.

Q. Drenched or sprayed?

PROF. CRAIG.—Sprayed. All the foliage should be covered thoroughly.

Q. What nozzle do you recommend to use.

PROF. CRAIG.—The "Gem Nozzle" or the "McGowan Nozzle." The "McGowan" for orchard trees such as you have in Nova Scotia you will find the most suitable.

Q. Is plum culture likely to be overdone in N. S.

G. C. MILLER said that so far they had very little difficulty in the marketing of plums—but he could only see in canning or cold storage a way to provide a market for the immense quantity which would be produced in this country in the future.

DR. CHIPMAN.—Have you received remunerative prices and good markets?

G. C. MILLER said that the markets were limited. He said he got 100 bushels on 1-5 of an acre last year. He considered $1.00 a bushel a paying price, and if they continued to get even that price he did not think that they need be at all alarmed.

S. C. PARKER said that unless active measures are taken to prevent the black knot, it would prove to be very disastrous.

HENRY SHAW.—The greatest enemy we have is the black knot and the curculio. My idea is to handle the black knot by thorough cultivation. Lack of cultivation brings the black knot on. I have several varieties in my orchard and I have one special kind that has never been touched yet (dead ones). The best way to prevent it is by thorough and constant cultivation. Grow no crop in the plum orchard except plums. Gather up all the wormy plums on the ground in your orchards twice a week, and in one or two years the curculio would be stamped out without any trouble.

COLONEL SPURR said that for 35 years he had heard the cry that they would have no markets for their fruit. They have better markets to-day than they ever had before, notwithstanding the European market was heavy. He advocated extensive orcharding; that they would easily get markets; to get out of the nasty little rut they were in; and do all they possibly could for installing the cold storage facilities.

DISCUSSION.

THE NOVA SCOTIA APPLE BARREL.

W. H. CHASE.

Your secretary has asked me to open a discussion upon "The Nova Scotia apple barrel" with a short paper. I am very glad to know this important matter is to be brought before the Fruit Growers' Association and trust that all fruit growers will give it that consideration which it deserves.

As you all well know our production of apples is increasing by rapid strides during the past few years and the matter of packing has very considerably improved of late, yet in this respect there is very much room for improvement, and before passing on I would like to speak of the necessity of growers not gathering up the windfalls at the time of picking which is frequently done, and then in packing throwing out any that be bruised as a windfall even if apparently good and sound will not in most cases keep any length of time but turn black and decay, and they should not even be used on bottom to head with, as is also frequently done by good packers.

Now in reference to our barrel, we really have no law respecting a definite size to be used. There is a law on the Provincial Statutes, but this cannot be enforced as this matter comes under "The laws of trade and commerce" which legislation rests entirely with the Government at Ottawa.

Under existing circumstances we have barrels of various shapes and dimensions, some about as straight as cheese drums and holding about two bushels to a barrel made in conformity to the old Nova Scotia law, and those containing two and a half bushels. You can readily see where the small unsightly barrel is used and in many places to quite an extent, it has caused a very strong prejudice to arise against the Nova Scotia apple barrel, and frequently in foreign markets have I heard the remark. "Why don't you use a decent barrel, your fruit is good but buyers do not like your package."

Now what do we find in Ontario where they grow and ship apples in much larger quantities than we do, we find there that the ordinary flour barrel is their standard. The cost is only some two or three cents more than our barrel and transportation charges are the same, while in the English markets they command two to four shillings more than ours, largely on account of the size.

Thus far our shipment of apples to England have been almost entirely confined to London—and there they have become accustomed to our barrel and we do not suffer as severely as we would if compelled to ship to the larger markets of England. Larger because they are distributing centres—while London is not, the trade there being nearly entirely for that city—but as our production

increases, as it will in the near future we will be compelled to seek markets at Liverpool and other places—and in order to compete favorably there, we must have a package to conform to the requirement and customs of the trade.

Some varieties in particular of our apples are second to none of the same exported from other apple growing sections, why then should we be debarred from obtaining as good prices as they, by using an inferior barrel and one somewhat under the ordinary size.

It does occur to me that the time has arrived when we should move in this matter, and ask the Government at Ottawa to pass a law that barrels used for the shipment of apples should not be less than a stated regular size, and let the size be in conformity with the apple barrel now used in Ontario, which is also the same as used in nearly all parts of the United States. The growers would be largely benefitted by the change as the price obtained would be larger while all the expenses connected with the transportation and other incidental would remain the same—and mean simply a few more apples at the point of production.

I might add the experiment of shipping in boxes has been undertaken to quite an extent this season from Ontario to Liverpool, but it has not been at all favorable to shippers and prices obtained not as good as would have been if shipped in barrels—and while a limited business may be done with boxes, yet the barrel is the package for the volume of trade.

I think I have said quite sufficient to arouse an interest and provoke a full discussion of the subject on its true merits. I realize full well there will be a strong opposition to an increase in the size, yet I fully believe the grower will be largely benefited by it.

DISCUSSION.

Dr. A. P. Reid, said that he had sent Gravensteins to England in bushel boxes made expressly for the purpose, with a partition in the centre, each side contained a good half bushel imperial measure of a particular choice article of fruit. The railway to Halifax charged as much for each box as a barrel—he paid 33 cents per box freight. The returns from 5 boxes shipped to England was

2 s. and 6 d. for each box, and then the boxes had been looted on the way over.

WM. YOUNG, spoke of a conversation he had with a West India merchant in Halifax, in which the merchant expressed the opinion that our barrels were small for commercial purposes.

DR. DEWITT, read a letter from Peabody & Co. New York, in which they stated that the standard sized barrel used for flour is much preferred in their market—it contains 11 pecks—its inside measurement is: head 17 inches, bilge dia. 20 inches, height 26 inches between heads. This style is used by Fruit growers universally throughout the New England States with the exception of Maine.

MR. WHITMAN said we were laboring under great disadvantages in using the present barrel. The Ontario barrels were larger.

A. B. PARKER, advocated enforcing the penalty of the law upon any cooper manufacturing a barrel not in accordance.

GEO. THOMSON, suggested appointing a committee to take the matter in hand and read the Dominion act which is printed on page 106 of the Fruit Growers reports for 1892.

W. C. ARCHIBALD said our prices were less than the Ontario prices on account of the size of the barrel being smaller. It was desirable to have a barrel of a uniform size.

J. E. STARR. We should see that our barrels are made in conformity with the statute.

T. WHITMAN said that the size of the barrel used in Ontario was the same as throughout the States.

A. B. PARKER, said he was unloading since a car of flour lately and he saw no less than 11 different styles of barrels. So by using a flour barrel we do not secure unformity.

It was Resolved that W. H. Chase, President Bigelow, S. C. "Parker, Geo. Thompson, C.R.H. Starr, John Byrne and John E. "Starr be a committee to obtain information and report at the "spring meeting of this association. Resolution carried.

OUR COMPETITORS IN THE FRUIT MARKET.

B. STARRATT, Paradise, N. S.

It is one thing to produce an article, and another to convert it into cash, and it is the latter we are after. Our principal market is London, and in that great city we have to meet with world-wide competition,—France, Germany, Australia, Africa, the United States, Ontario, Quebec, and England itself. Now, in order to successfully compete with these countries, we must study their capabilities, methods and practices, and thereby be ready to meet them as far as possible on all points. It is always a fatal mistake to underrate our opponents. We should make ourselves thoroughly acquainted with their strong points, as well as their weak ones. England and the continent have a great advantage over us in the matter of freights. Their fruit can be placed on the market in a few hours from the time of picking, with less handling and bruising, and consequently in better condition. But their apples lack color and are not as popular as American and Canadian fruit, and are mostly out of the market by March. We must not make the mistake however of thinking that European apples will not keep. I have seen English Greenings in London markets in February in good condition, and French Reinettes, our Golden Russetts of Western New York, in March and April sound and good. These latter are dangerous competitors. They are grown in large quantities in France and arrive in the London markets after the Golden Russets are gone. They are identical with our Golden Russets, look like them, taste like them, and I am quite sure are the same apple. They are packed in boxes and half barrels. The boxes contain exactly 56 apples—two layers of 28 each—4 rows of apples. Of course they must be uniform in size to fill up the space. The boxes are lined with clean white paper, with a sheet of the same between the layers. The medium sized apples are packed in these boxes and the larger and smaller ones in the half barrels. The barrels hold a scant half bushel and the average price is 4-6 per box in the market. Every apple is perfect—not a spot nor defect. A dealer in London told me that sometimes he repacked our Golden Russets in the French empties, especially if they were decaying

and had to be picked over, which was often the case with that variety. We are likely to hear more from French apples. The French are paying more attention than formerly to apple culture and with their cheap labor, nearness to London and facilities for putting them into market fresh and in good condition, they are proving formidable competitors. Within a few years the Australian apple trade has assumed large proportions, and is likely (in the near future) to affect one variety of our product—the Nonpareil—very seriously. This of course does not apply so much to Kings as to Annapolis county, but with us it is proving a serious matter. The valuable point in the Nonpareil is its superior keeping qualities. Formerly it brought larger and paying prices when put on the market in London, late in the season, when all other varieties were exhausted. That seems now to be a thing of the past. Australian apples are taking their place. They arrive in London about the 10th of April, just meeting our Nonpareil shipments. They arrive fresh, are high colored, large size and handsome, and knock out our dull colored, rusty and rather dry and tasteless Nonpareils at the first round. The Australians are a pushing and progressive people, worthy descendents of the old English stock, and will form doughty antagonists for supremacy in the London markets for long keepers, which have formerly given us the most money. The United States are the heaviest exporters of apples to the English market. They produce enormous quantities of superior fruit, of which their surplus is shipped to England. Ontario and Quebec—the former province especially—also send large quantities to the same market. These two provinces and the United States are the sharpest competitors. Now in this sharp and fierce competition for the English market we must study our weak points as well as our advantages over our competitors. We must overcome and strengthen our weaknesses. We must realize and take the utmost advantage of all our strong positions. Now what are our strong points and what are our weak ones? This is a large subject—covers a great deal of ground. Can only be touched in an article of this description. Yet a few points may be indicated and thereby suggest thought and study to the hearer. There are three points that may be considered as prominent in the treatment of this subject, the quality of the fruit, the manner of

packing and facilities for shipping. I am not a pessimist by any means, but I think it is always wise to recognise and acknowledge all the obstacles which meet us, to fully realize their danger, and then to manfully and squarely face them and devise and execute the best possible means to overcome and defeat them. It is a popular notion in this province that our apples are superior to that of any other grown on the face of the globe. We may as well disabuse ourselves of that idea. Our apples are superior in one respect, that is keeping qualities, and that is a valuable feature. They are also crisp and hard, and that quality of crispness commends itself to the average Englishman. But our apples lack size, color and smoothness, and these are prominent and valuable points in apples. Of the 10 points in judging apples, size, color, flavor and freedom from defects are the four principal ones. This lack of size unfits our apples for the Liverpool market. We have only one apple growing in any quantity suitable for that market—the King—so we are restricted to London to which all—or nearly all our apples go and that is not the best English market. Liverpool is the great distributing point for apples. London has an immense local trade, but sends but few out compared with Liverpool. Nearly all the American apples go to the latter port.

The American and Ontario apples are large and highly colored, the Western States exceptionally so. I have not mentioned quality, because I remember quite well the unmistakable evidence of dissent which greeted my remark in this hall two years ago, when I dared to say that the country to the south of us produced apples equal if not better in flavor than our own. I am still of that opinion, but I do not want to jar the sensibilities of our friends too roughly on that point, and I am sure I am not going to quarrel with you, for I yield to no man in my admiration of our beautiful and productive valley: I would far rather have you boom and praise our products than descry them. With regard to packing, a great deal has been said and written on that subject. Great improvements have been made in that direction, but we have much to learn. I don't take much stock in the popular howl in certain quarters, about the dishonesty of our farmers in apple packing, and I take this occasion to publicly dissent from the statement of a gentleman

made at the meeting of the F. G. Association in Annapolis last winter, and I declare here and now that I believe our farmers are as honest as any other class of people. Our intentions are good, but our methods are wrong. Our mode of packing needs reforming.

In Ontario and many states of the Union apples are bought on the trees or after they are picked, by dealers, who provide their own barrels and pack the apples themselves, assisted by the grower and his men. Nothing but No. 1 are put up, packed by experts. They are uniform in size, no imperfect ones, and they open well in the market. Here in this province every grower packs his own apples, whether he is competent to do so or not, and in barrels of all sizes, most of them too small. Consequently, though we have a great many good apples, well and honestly packed, yet it is unavoidable that there must be many poor and totally unfit for shipment. The system of the buyer packing the apples himself, is better adapted to our condition than in Ontario and the States. There, many have large orchards, producing thousands of barrels and of but few varieties. Here in this province there are very few producing that quantity, many not 100 bbls., and perhaps a dozen varieties. In such cases it is impossible to put up good, marketable apples and particularly when No 2 are packed. All No 2 apples be rejected. It is the height of folly to pay freight on poor apples. Nothing but No 1 should be barreled and that means freedom from defects as well as size. Our barrels also should be of the same size as the Canadian barrels. We are short sighted in this respect. The freight is no more on a large barrel than a small one, and we would realize a much better price for the larger packages. Now with respect to our locality. Here we have an advantage. We are nearer to England than any of the American or Canadian producers. Ontario and the Western States are heavily handicapped in the matter of freights. There is a great deal of growling by our people against what they deem the excessive expenses, freight, etc. I think we have not much cause of complaint in that line. Our freights are not excessive, when we take into consideration that our apples are taken from our nearest station, carried to Halifax, transhipped there and ferried across the Atlantic for the com-

paratively small sum of 70 cents. This sum must be divided between the railway, the agents at Halitax who tranship them, and the steamship company. Of course improvements in transportation can and will be made, but Rome was not built in a day. Neither can we get all we want at once, but the service is being gradually improved. Our apples are carefully handled on the whole, and when we get cold storage—which is only a question of time—and a few other concessions, we will not have much to complain of.

In summing up this question, in weighing the favorable and unfavorable features of the case I find very much to encourage us. If we cultivate the best varieties of apples for our English clients put them up in a manner satisfactory to them, and ship them so as to arrive at the destination in good condition, sound and tight. I think we may compare with our competitors and secure a share at least of the trade. This business of shipping to England was practically unknown when I commenced buying and handling apples, a third of a century ago. Rapid strides have been made since then, but I predict that this business is just in its infancy. Our possibilities are great, encouraging, inspiring. We have only to use all the means placed at our disposal to meet all our competitors and a generous and glorious success will crown our efforts.

SOME REFLECTIONS ON THE CARE OF ORCHARDS

PROF. JOHN CRAIG. My first reflection is this, and it is the result of observations gathered in going to and fro in different parts of the Dominion, that our orchards are not sufficiently manured. We set a tree down in a fixed position; it has to take in rich food as is within reach of feeding we forget that the tree may not have sufficient food—and at the same time we go on and plant other crops on the same land, thus growing two crops on the same land without extra manuring. I have had charts prepared which will show you in a more convincing manner than I can tell the effect of growing

apple trees upon the soil and the relative amount of plant food which they extract from the soil. In doing so my remarks will be somewhat elementary in character to some of you and I may say that there is no place in the Dominion of Canada in which I feel it is so unnecessary to touch upon the elementary parts of agriculture and horticulture as in the Annapolis valley. The people here, too, have a remarkable faculty for extracting information. Sometimes when I leave one of these meetings I have very much the feeling of a sponge that has been tightly squeezed—what little information I have has been so thoroughly extracted.

ELEMENTS OF PLANT FOOD.

The three principal elements of plant food which fruit, as well as other crops, draw from the soil are Nitrogen, Phosphoric Acid and Potash. These are taken from the soil by different crops in varying quantities. This chart will illustrate to you the relative amounts of each drawn from the soil in growing wheat and apples.

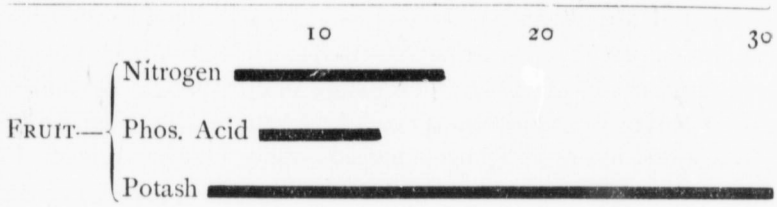
COMPARATIVE SOIL EXHAUSTION OCCURRING IN GROWING AN ACRE OF APPLES AND OF WHEAT FOR 20 YEARS

	LBS. NITROGEN.	LBS. PHOSPHORIC ACID.	LBS. POTASH.	VALUE.
Apples.....	498.60	38.25	728.55	$207.45
Leaves.....	456.75	106.00	441.00	
Straw	234.78	50.40	214.20	$128.23
Grain.....	424.80	160.20	109.80	

The above figures are taken from a recent Bulletin issued by Prof. J. P. Roberts of Cornell University Experiment Station N. Y.

The following comparative lines are based upon the results of analysis made by Mr. Shutt, Chief Chemist of Experimental Farm, from fruit and leaves gathered in our own orchard at the Experimental Farm at Ottawa. An examinnation of this illustrates and emphasizes the necessity when trees are coming into bearing of following the advice so often given, viz. that of applying plenty of potash.

COMPARATIVE AMOUNTS OF SOIL FERTILITY EXTRACTED BY FOLIAGE AND FRUIT OF APPLE TREES.



I was pleased with and quite concur in the remarks of Mr. Hubbard with regard to sheep pasturing as a mode of keeping up and increasing the fertility of the soil in orchards, in which it was impracticable to plow or cultivate.

REFLECTION NO. 2.—SPRAYING.

There is no question at the present time about the benefits of spraying. It is simply a question of how and when. I had the pleasure of giving you last year some of the results of the experimental work carried on in Ontario during the year previous under my own direction. The Provincial legislature was so pleased with these results that they made a grant of $3000 to carry on an extensive series of experiments covering the whole province. With this grant they established 30 stations at different points stretching from one side of the province to the other. They then placed the work in the hands of a competent and practical man Mr. A. H. Pettit, of Grinsby by whom it was thoroughly carried out. I had the pleasure of visiting with him a number of the orchards sprayed and of hearing his report at the last meeting of the Ontario Association. This report was an excellent one and convincing both as to the success of spraying for the prevention of fungus diseases and insects.

REQUISITES.

The first requisite is a good spraying pump; this can now be had in Canada. A convenient apparatus to use in crowded orch-

ards is to simply place the barrel containing the pump and mixtnre in a cart and a board across the top of the cart to brace the barrel making a floor at the same time. With this apparatus one man can drive and operate the pump while the other can hold the gas pipes to which are connected two nozzles. A piece of gas pipe or brass tubing attached to the rubber hose is a first rate thing to elevate the nozzles. The best nozzle to use is the McGowen nozzle. With an arrangement of this kind the man who holds the nozzles can stand on the platform as well as the man who drives and operates the pump handle.

W. C. Archibald. Are there any attachments which can be placed on the driving wheels of a waggon?

Prof. Craig. I have used several forms of power pump but I have found none as satisfactory as the power you get from your elbow. For vineyards or potato fields for large blocks of small fruits the power pumps are undoubtedly useful, but for general orchard work I have not found them very satisfactory.

Q. What would you think of the idea of having the Bordeaux Mixture soak as it were previously to putting it on—of having the stock solutions made up?

Prof Craig. That may now be considered one of the necessities of spraying—you should have your stock solution made up in the spring—do not wait until you need it—if you leave it you are sure to need it in a hurry—consequently the work may be imperfectly done.

Q. It might be a little difficult to arrange the quantity by mixing it previously?

Prof Craig. You mix it in the following proportions. Use one gallon of water to each pound of copper sulphate, water and lime in the same proportions. Having a known quantity of the copper solution in one barrel and the lime in another they may be kept covered for a long time and are always ready for use. I would just sum up briefly my reflections, that in order to make orchards a success, you must plant carefully, prune and cultivate judiciously, manure freely and after that in the words of a friend of mine, I would say "Let-us-spray."

MR. HARDWICKE.—In spraying for the canker worm what quantity of Paris Green would you use—we use 4 oz. for 40 gallons of water.

PROF CRAIG.—I would recommend the use of a larger quantity of Paris Green for the canker worm using lime to prevent its caustic effect.

Q. What quantity?

PROF. CRAIG.—I would use 4 ounces to a barrel of water, and with that you can use ½ pound of lime or 8 ounces of Paris green to 100 gallons. The lime prevents the caustic effect of the Paris green on the foliage. Without the lime, you might not find any injury resulting from the first application --but you probably will after the second and third—the caustic effects are in a measure cumulative.

Q. If the solution is too strong it will not only destroy the present crop but it will destroy the next year's crop as well.

PROF. CRAIG.—The canker worm will do that also. I would certainly spray in every case and take the chances. If you spray thoroughly and perseveringly you will be choosing the lesser of two evils, and will certainly destroy the canker worm.

RALPH EATON.—Would 4 oz. of Paris green be sufficient strength for all or any instance?

PROF. CRAIG.—You have to use your own judgment. If you had a very bad attack you might increase the amount of Paris green and also add more lime. One lb. to 160 gals. is as strong as you generally need apply it. This is a general rule.

Q. How low a temperature will the blossoms stand?

PROF. CRAIG.—I could not tell you—so much will depend upon environment and the condition of the tree?

Q.—Is there any record?

PROF. CRAIG.—The ability of each tree to stand cold depends upon its own individuality, resembling in this respect the animal kingdom.

Q.—Can you tell me anything about the results of the use of Leggett's dry powder gun?

PROF. CRAIG.—It is under certain circumstances a useful instrument. I do not think it can be satisfactorily used in orchards—especially when the trees are large. It is used in the southern cotton fields very effectually.

Q.—Say on small plum trees?

PROF. CRAIG.—Yes, on everything you can reach. I am myself in favor of applying fungicides and insecticides in a liquid form.

PROF. FAVILLE.—What do you find the best mixture to apply on bands that are attached to trees to trap insects—the cheapest and best?

PROF. CRAIG.—I cannot speak from experience on that matter. My knowledge in that line is entirely based upon the work and experience of fruit growers in this valley. I think the use of tarred or inked bands in trapping canker worm adults belongs exclusively to the Annapolis Valley. The serious attacks of the canker worm are also chiefly confined to this valley.

PROF. FAVILLE.—In the vicinity of Windsor they are trying castor oil and rosin—one pound of castor oil to 2 pounds of rosin.

W. C. ARCHIBALD.—In spraying for the curculio of the plum, we use powdered lime to give an incrustation over the fruit. What effect would that have on the apple blossom? What effect would the powdered particles of lime in solution have on the blossom?

PROF. CRAIG.—There is no doubt about it if you applied air slaked lime to the apple blossoms when the pistils were covered with the sugary secretion, which is intended to catch and hold the pollen grains,—if you applied a caustic substance like lime at that time you would undoubtedly injure them. This condition lasts only a day or two, however, and the difficulty could easily be gotten over by examining the blossom in order to avoid covering them at this particular time.

JOHNSON.—Have you had any experience in using Paris green without lime?

PROF. CRAIG.—Paris green is soluble in water only to a limited extent. The lime neutralizes the free arsenious acid. The addition of lime for this purpose is a recent recommendation. With

regard to copper sulphate I may say that you can use the sulphuric acid, the fungicidal principle of copper sulphate, alone, using ¼ per cent solution. I have used it, but not satisfactorily, as it burns the leaves in spots.

PROF. FAVILLE asked with reference to the sowing of green crops in orchards, but more particularly with reference to the cow pea and crimson clover.

PROF. CRAIG.—We have tried crimson clover at Ottawa, but we find our climate too severe. The idea in growing this crop is to sow it immediately after cultivation ceases in the orchard, say about August 1st. It should be sown the first week in July to obtain the best results. In my experience alsike has given a much better cover than any other clover. With regard to the cow pea I have not used it as a cover crop. I have grown it among the vegetable plots as a bean. It is a plant belonging to the bean family from Japan. It grows from 3 to 4 feet high and makes a large amount of vines and leaves, it has a comparatively small amount of root to the amount of top. Its value as a cover crop would be chiefly owing to the amount of foliage it produced, this when ploughed under would contribute to the nitrogen and vegetable matters of the soil. It would be a good cover crop if it was sowed quite early. I would regard the cow pea just as favorably as an orchard cover crop for this locality as crimson clover. We have received many strongly favorable reports from Cornell University with respect to crimson clover.

HARDWICK.—What do you think of Paris green as a fungicide?

PROF. CRAIG.—Speaking in a general way it possesses for this purpose 25 per cent of the fungicidal properties which we find in bordeaux mixture. That is to say, you would not get more than one quarter the beneficial results from its use that you would get from the bordeaux mixture.

S. C. PARKER said that several of his neighbors had sowed crimson clover in the summer of '94—it was sown about the 12th July—it made a nice growth and grew better than red clover, but the winter exterminated it. Had sowed some about the first of August last, and it was looking nicely when winter set in and would

report next year as to its success.

M. G. DeWolfe.—I have been experimenting with it for 6 years. Can you make a bi-ennial out of it?

Prof. Craig.—An annual plant is one which dies after maturing its first crop of seed. This it usually does in one season It is possible to modify the nominal habit of an annual by sowing the seed so late in the autumn that seed will not be perfected. If the plant winters safely it will probably make another effort to produce flowers and seeds. In this way the growth is carried into the second year, although the plant is in reality an annual.

Prof. Craig closed his address by wishing the fruit growers of the province a year of great prosperity.

THURSDAY JAN. 23rd.

The Association was called to order at 2.30 o'clock. The Lieutenant Governor of Nova Scotia and a large number of members of the Legislature were present. The spacious College Hall was filled to its utmost capacity with an intelligent and appreciative audience. President Bigelow introduced Rev. E. M. Keirstead D. D. who welcomed the guests of the day in the following eloquent address:

Mr. President, Members of the Fruit Growers Association, Ladies and Gentlemen.—I am glad to hear the applause which you have just given, for I take it as an endorsement of the welcome to the distinguished men who grace our platform to-day. I may say that the President of the Fruit Growers Association explained a little more fully to me his embarassment when he asked me to undertake this task of addressing you. He is popular among us, and is the President of your association and Chief Magistrate of our town. Thus when it devolves on him to present an address of welcome to the Fruit Growers' Association, by giving such an address he would be welcoming himself, and with all the powers of metaphysical science no man can do a dual work of that kind. Therefore I have to speak as one outside of the pale of your organization, both for this town, and on behalf of this college, although I have no commission

from that body. It gives us delight to welcome His Honor the Lieutenant Governor of the Province of Nova Scotia to-day (cheers) and to know that he is accompanied by such a fine representation of the Legislature (applause) and we are pleased to recognize in that body one of our own graduates (applause). The time has not yet come when we do not rejoice to receive the representatives of our Gracious Sovereign, Her Majesty Queen Victoria (applause), and when in addition to that the men who represent her, spring as these do from amongst ourselves, and are men who have won such recognition from their fellow citizens as well as from the Queen the welcome becomes doubtly hearty on our part (applause). And I am persuaded that these gentlemen will find something interesting among us. I welcome them on behalf of the town. We do not claim it is a great city, but we rejoice in the fact that it possesses a beautiful situation. We rejoice in the men of enterprise who have grown up amongst us, we rejoice that it possesses a large number of leaders of thought in proportion to its population; and we rejoice in the great expectations which we cherish for our people; and when it comes to entertaining people, because we are situated in one of the most beautiful valleys and in one of the great fruit growing belts. We are not a great city; we do not claim to be. We have great expectations of growth, however. From the statements of our town finances we have hopes of an accumulated debt to a large amount, which will bring us into company with the great cities and corporate bodies (laughter and applause). Still further we have a standing army of one--and we give him the title of the Chief of Police (applause). And I would say to the visitors that this man is so beset for something to do that if he should intercept your progress through the town, they should be indulgent to him because the poor man has a hard task to justify the existence of his office amongst us (great applause). We are so moral in fact that the lawyers have very little to do, and the physicians grow ill almost in their efforts to find patients (laughter). To this town we welcome you with all our hearts.

Then I would say of the Fruit Growers' Association that this is the 32nd annual meeting of that body, I think that suggests a good deal. When a voluntary institution like this exists for 32 years you

may take it for granted either that it has reason to exist, or it is composed of men of unusual strength, or both. Now this Association has a large purpose to fill in the development of this country, and it is composed of men of enterprise, faith and steadfastness. This institution has sustained itself through all these years at a cost of considerable effort and sacrifice, and during the last 3 or 4 years it has exhibited faith and enterprise by seeking to establish, equip and maintain the only real school of horticulture, as Prof. Craig has told us, in Canada (applause).

We, as a University, are glad to meet any body of men who have, to any degree, the educational work of the land in their hands (applause). This University has always taken a broad view of education, valuing it as related to all the interests of the province. We, therefore, welcome these professors and teachers of agriculture who come from Ontario, New Brunswick and elsewhere. It is true that the public men of any country are the great part of the wealth of that country. As you think of any nation's history you see that its leading men have been its most valuable possession; and we accordingly have an interest in those among us who guide our thinking and control our affairs. May the number and power of them be increased. It is a heavy task that is imposed upon the people engaged in the industry of agriculture. They are to win from stern nature the substance of life for the nation. They are to win the food for increasing numbers of people and so to stimulate these thousands to develop the magnificent resources with which our country is endowed. We wish to see our people made happy and to give enough wealth to guarantee an independent existence. The question of finance occupies an important place in the world's thought. The interest of civilization is connected with the matter of property. To produce wealth is one of the indispensable conditions of the advance of a people. In this country agriculture is vitally connected with the development of wealth; and with the development of agriculture comes now the increasing power of horticulture. The President of this Society told us last evening that the Fruit Crop of Kings and Annapolis Counties brought to Nova Scotia last year larger returns than all the other exports of farm products from the province. That will show the place horticulture should

take in the development of the country. It shows that this valley is a large mine of wealth and that the aid of other provinces is needed to develop it. For there are difficulties in the way. The want of adequate capital is one. And even the capital in hand is, we regret to learn, to be drawn upon for military equipment. We learn that the sum of $800,000 has been placed in the estimates for weapons of war and no doubt further appropriations will be required for our defences.

No doubt this expenditure is needed. But it only makes more necessary our best exertions to win from the earth increased means of life. To obtain these resources all classes must labor and labor together. The law-makers and the laborers so-called have the same object and are engaged in the same service. There is a solidarity of human interests that makes each part of the popuiation an integral portion of the whole. The more we recognize this union the more we shall increase the confidence of our people and add to their power. If we can thus supply technical knowledge and stimulate enquiry; if we can have our people raised in Godly homes, under the influence of high culture and patriotic motives, we need have no fear for the future (applause). We must have every consideration and anxiety for the character and power of the great body of the nation:

"Ill fares the land, to hastening ills a prey,
"Where wealth accumulates and men decay;
"Princes and lords may flourish, or may fade,
"A breath can make them, as a breath has made;
"But a bold peasantry their country's pride,
"When once destroyed can never be supplied."

President Bigelow in a few well chosen remarks introduced His Honor the Lieutenant Governor who upon rising was greeted with long, loud and continued applause and said:

Mr. President, Ladies and Gentlemen. You have listened to some very complimentary words on the part of Professor Kierstead in welcoming me amongst others to this friendly gathering. I feel the more embarassed, because I feel that I cannot do justice to the very hearty way in which you have welcomed me to this Hall—the

words which the Professor has spoken of me as the chief of the executive of this country I apply entirely to the office and not to the individual. My embarassment has been still further increased by the words of your president who has been good enough to say that I have done the Fruit Growers Association an honor on this occasion—while I am your patron, and I am proud of the title—it is surely my duty as Lieutenant Governor to come amongst you once in a while—but not only as Lieutenant Governor and patron of your society, but personally it has been a pleasure and of much advantage to me to visit you at this time (applause). It is of course difficult to speak upon a subject with which one is not thoroughly acquainted. On this occasion I shall evade that difficulty by saying but little on the subject of fruit growing. My object in addressing this Association to-day is simply to say that if the office, which I have the honor to hold, can add prestige to your meetings, or can add any endorsement to your proceedings, then my object in being here is attained and my pleasure in being here is more intensely gratified (applause). It is true that there is an old saying that in union there is strength—in the union of the fruit growers of Nova Scotia, in the development of the resources of the country by means of fruit growing, there is a united bond, and we have had from Prof. Faville here to-day the assertion that it is spreading from one end of Nova Scotia to the other. I want to see a horticultural union of all our counties, and I think we are accomplishing it in this association—and I feel proud that the School of Horticulture has been established under the auspices of the Fruit Growers Association. Our legislators enjoy and I know they are impressed by these meetings. I am not speaking as a politician. I ceased to be one long ago—but I know there is an impression in our legislature, an idea, that the more we foster the agricultural and horticultural interests of this province the better we will be serving the people who send us there to make laws for their welfare. A large portion of our money goes to educate the people of our country—we educate the boy to go into the high school, and from the high school they enter our colleges—and I am sure we appreciate the hearty greeting extended to us from Acadia College, and we appreciate the welcome which this town of Wolfville has given us, and we are glad to know that you

only require one policeman who has nothing to do (applause). So much for education and so much for order.

Then the President has told us that one million dollars does not represent more than the annual value of the fruit of this province. We think there is something in it. It is said that we have here the only pure horticultural school in Canada—but we know that in Upper Canada the fruit growers associations there are valuable institutions—valuable papers are read before them, and those institutions have done much good. The publication of these reports is an important thing, they should not only be published but they should be disseminated more than they are, and I would suggest that you disseminate them far and wide throughout the length and breadth of the province. They send fruit growers reports down to us from the province of Ontario. and there are a great many extracts from those reports which I would like to read but which will come to you better from your practical men. This system of meeting and conferring with one another should be very encouraging to you.

I think ladies and gentlemen I have said enough to show you how little I know about fruit growing, but I cannot tell you how interested I am, and how grateful I am to you for asking me to be present—and I can assure you that I will lend any weight, influence or power that I legitimately may do with the government and people of this country to support your views and enhance your welfare.

I want to express one word of regret on the part of Mr. Fielding who is not present here to-day. I know he intended to be here but other business has compelled him to remain away. I feel myself regret at his absence for I know he would supplement anything I could say. I again thank you for your kind welcome and for the kind way in which you have received me (applause).

Mr. B. W. Chipman, Secretary of Agriculture, then spoke as follows:

Mr. President and Gentlemen of the Fruit Growers' Association, Ladies and Gentlemen:—You can scarcely imagine with what diffidence and embarrassment and how unfortunate it is for me, that almost my first public utterances upon this most important subject

Agriculture, should, through the kindness of your President, be made before some of the most advanced agriculturists in the Province, if not in the Dominion, and the locality as far as fruit growing is concerned, the very garden of Canada. I am also embarrassed in following as Secretary for Agriculture, so eminent a man as the late Prof. Lawson, an agriculturist by birth, education and practice, a scientist and a scholar. He grew with, or rather advanced agriculture grew with him, for a period extending over nearly thirty years. He had only a reputation to maintain, I have one to make, and if I can only in a measure fill the position or give satisfaction to the public I shall have accomplished much.

After so many years, of what I consider favorable opportunities, let us take a hurried glance at the past and then consider what are the prospects for the future. Some of us present have a fairly intelligent recollection of the progress made by the agriculturist for the last forty years and it is well to stop and ask ourselves the question, have we made such progress in agriculture as the opportunities at our disposal required and has our province kept pace with other provinces in the Dominion, having no superior natural advantages and resources? Having a clear recollection and fair knowledge of the progress made by a large portion of the farming population of this province during the time mentioned, I have no hesitation in saying we have not. In speaking thus plainly I do not include the fruit industry of the valley between Windsor and Annapolis. In this branch of industry the fruit growers in the last twenty-five years have made most rapid strides, and to look forward it would seem that fruit growing is only in its infancy. Who can prophesy the enormous quantity that will be produced during the next twenty-five years. I do not think that the fruit growers need anticipate alarm about prices; while the markets of the world are daily opening and enlarging, the belts for producing apples comparing in quality to those of the Annapolis Valley, so called, is not enlarging, only to a limited extent, compared to the increased demand. From the year 1850 to 1870, or thereabouts but few farmers in the whole Valley produced more than 100 barrels and the prices seldom reached $2.00 and not often more than $1.50 per barrel. I need not detain you by telling you what you know much better than I do

of the quantity now produced and the prices now obtained. It might be interesting just now to give you a quotation from an address delivered by Nova Scotia's greatest statesman, Joe. Howe. In closing the Provincial Exhibition in October, 1868, speaking of fruit he said : "There is one description of fruit which we rarely take into account, and hardly thank Providence for any more than we do for the air we breathe. A bountiful Creator covers our country with strawberries, raspberries, blueberries, and blackberries every season. The wild woods, barrens and pastures are full of them, and in a country where sugar is cheap the whole population use them freely all summer and preserve them for the winter. There is no such supply in the mother country, and if there were the masses of the people could not get them without committing a trespass.

The fine varieties of fruit that have been exhibited, came out of the Western Valley. We wish they could be shown to the world, but if they were how very inadequate would be the idea conveyed of the beauty, fertility and social life of the region from where they came. I may be prejudiced and partial, who is not in speaking of his country, but I have rambled about the world a good deal, and go where I will I always come back with the same conviction that there is no body of farmers living on this continent living in a region of more natural beauty and fertility than those who dwell between the Ardoise Hills and Digby Gut." If the late Mr. Howe could speak in such beautiful language of the fruit valley in 1868, we can well imagine from his eloquent tongue what a eulogy he could pay to the fruit growers of the present day.

Mr. Chipman then spoke at some further length, giving a general view of the stock and agricultural interests of the Province. His address was listened to with much attention and greatly appreciated.

Hon. Isidore LeBlanc.—Mr. President, Ladies and Gentlemen :—His Honor, the Lieutenant Governor, in addressing you said that he was very much embarrassed in addressing such a large and intelligent audience—but gentlemen how am I going to get out of this difficulty—I feel I have more cause to be embarrassed than His Honor, especially coming from that fishy county of Cape Bre-

ton (laughter). It is true that the Island of Cape Breton is a fishing country but we have the mining there, which is of very great importance to this province. The mining industry of the Island of Cape Breton is a great source of revenue to this province (hear hear). It is the principal means of making up the revenue of this province. We have also shipping and considerable farming.

Mr. LeBlanc went on and spoke at considerable length on the magnificent resources of the province, and the bright future we have before us. His remarks were received with attention and applause.

MR. MCGILLIVRAY, M. P. P.—Mr. President I did not expect to be called upon to address you to-day. An invitation was extended to the legislature to be present here to-day. I esteem it an honor to be present with you. It is also an indication of the interest taken in agriculture by the people of this portion of the province. Years ago the late John Young was the founder of the agricultural societies—and I need not tell you that these societies have done good—they have branched out and have been of paramount benefit to this important industry. You have formed yourselves into the Fruit Growers Association. This is an age of federation. Under certain legislation of the past winter all the various agricultural societies of the province were united. We had the honor in Antigonish to have had the first meeting of the farmers association, and I hope a great deal of good will result from it and that the autonomy of the other institutions will not be destroyed. I remarked coming down here in the train that fruit could not be grown in other parts of the province as well as here, but since coming here I am very glad to learn that there are other parts of the province which can and do produce good fruit. Prof. Faville has declared that fruit can be grown elsewhere if the people will only learn how to grow it—I must thank you for the cordial invitation extended to us—and I appreciate the eloquent remarks of Professor Kierstead who welcomed us here to-day. I think we owe him our sincere thanks for the manner in which he has so gracefully extended that cordial invitation to the visitors to-day—and also to the worthy president for the kindness shown to us. I was brought up on a farm but devoted myself afterwards to the study of law—but the law is a

jealous jade and will not allow one to divide his attentions and so I had to content myself with law, and incidentally politics as well. I again thank you for your cordial welcome (applause).

MR. SINCLAIR, M. P. P., said he was very happy in coming from the county of Guysboro to have an opportunity of visiting their beautiful town, in seeing their beautiful college and looking into the faces of the people and getting this warm welcome. Those of us who are Scotchmen know what a Scotch welcome is—a welcome of our Rabbie Burns—there is nothing better than a Scotch welcome —and you are able to give us such a hearty welcome. We are all interested in the great work of this valley, in this garden of Nova Scotia, and we are in hopes that this good work will spread over the province of Nova Scotia, and that the whole province will be a garden as well as the Annapolis Valley. I have taken a great deal of interest in the work of the Horticultural School, and I wish you success in your work in that school. It has been said that one of the great difficulties of this province is that the farmers do not stay at home—and that when they gather their crop they do not know where they are going to sell it. I heard a story in the train the other day. A gentlemen met a farmer somewhere and asked him his business. "I am a farmer," he replied. "Why are you a farmer?" "My father was a farmer and my grandfather was a farmer." Then he said, "what do you raise on your farm?" The farmer replied "I raise hay, oats and potatoes etc." "Why do you raise hay, oats and potatoes?" "My father raised hay, oats and potatoes and my grandfather before him." "What religion are you?" asked the gentleman. "I am a Baptist." "And why are you a Baptist?" "Well" replied the farmer, "my father was a Baptist, and my grandfather was Baptist." "Are you married?" "No, I am a bachelor." "And why are you a bachelor?" "My father was"— (Laughter and applause.) The farmers have got the idea that they cannot make progress unless they follow in the ruts of their fathers. We have gone backward. We have actually gone backward in our farming districts. We had 63,000 men and boys in 1880. In 1890 we had only 53,000. That is deplorable. It strikes me

that can be remedied and it strikes me that the farmers can do a good deal to remedy it. We can make our farms more attractive. I like the idea of hanging up the old flag. I like to see the pictures of men of distinction hanging around this room ; it is an inspiration to our young men. We must instil into the minds of our young men that we have a fine country and I would remind you of a poem of the Hon. Joseph Howe who was coming home to Nova Scotia in the winter season. When the land was sighted—the country looked cold and bleak and covered with snow—and the spruce bushes covered with snow looked like pyramids along the shore—there were a lot of passengess on board who were depreciating the country and who said to Howe "you have a hard country" but he replied to them in the following beautiful words :—

COMING HOME

Mantled in snow, my native land,
I hail thee from the sea ;
Cheerless to others looks the strand,
But Oh ! how dear to me.

My fellow-voyagers gaze and shrink,
As blows the breeze from shore,
With raptured pulse the sea I drink –
The Northern breeze once more.

They, thinking of their Southern homes,
And of the trellised vine,
Wonder from icy shores there comes
Excited thought like mine.

As land-marks, they, thy headlands view,
Right glad to pass them by ;
To me they're pictured, stern, but true,
That charm and cheer the eye.

They cannot see the scenes beyond,
Of happy household mirth,
When skaters on the glittering pond,
The children round the hearth.

They cannot hear the merry cheer
Of coasters on the steep ;
They do not know how soundly here,
The free and happy sleep

They cannot hear the peasant's axe
Sharp ringing through the groves,
Nor see the blazing fire he piles
To gladden those he loves.

The sleighs go through the crowded street,
Like swallows on the wing;
Beneath the furs warm fingers meet;
Hark! how the sleigh-bells ring.

There's not a sound that cleaves the air
But music has for me;
Nightly the warm hearts beating there
Have blest me on the sea.

The stately piles of old renown
With reverent thought I've trod,
Where noble hearts have laid them down
With History and with God.

The crowded mart, the busy throng
The gay and brilliant halls;
The tramp of steeds, the voice of song,
The many pictured walls,

Are all behind; but, all before,
My native land I view;
A blessing on her sea girt shore,
Where toil the good and true.

Mr. Wickwire M. P. P.– Mr. President ladies and gentlemen. It affords me very great pleasure to be here as well as the honor to know that I am the representative of a county which is now known the world over as one of the leading horticultural countries in the world. It will be my pleasure and duty while I am honoured with a seat in the House of Assembly to do everything in my power to advance the interests of the agriculturists and horticulturists of this province. I was very glad to learn of the proceedings of the farmers parliament held at Kentville the other day—and I am glad to know that the people are devoting themselves to obtaining facilities which will enable them to place their products in the best markets of the world. The movement in the matter of cold storage has my sympathy and I will do whatever I can to further that enterprise—and if I may be allowed to offer a suggestion it would be

well for the gentlemen who have the matter in hand to see it, that proper facilities are obtained for taking the products away from the port of Halifax. It would be futile to build a large and extensive warehouse at Halifax and then find a steamship company unwilling to comply with the interests of the people of this province in carrying the produce forward in a proper state.

Mr. Hemeon M. P. P.—Returned the thanks of the legislature for the magnificent welcome given them on the occasion—also for the reception which had been given them in the town.

Mr. Hemeon spoke at length about the good work of the farmers parliament, horticultural school and the different agricultural societies throughout the province—and that by tilling the soil it would conduce to our substantial needs, solid comfort, and sure wealth, in this little province down by the sea.

T. R. Black, M. P. P., said that he had listened with a great deal of pleasure to the various remarks which had been made. He believed that some of the best men of this country had been brought up on a farm, and that should be an encouragement to the farmers boys of this country. With respect to this beautiful valley he had been so much impressed with it that he had paid three visits to it lately spending days and nights in it. The future of agriculture in this province seemed to him to be exceedingly hopeful. A few years ago they had been laboring in an insolated condition with the old central board of agriculture—but to-day we have experimental farms in different sections of the country—the one at Nappan this province was reaping very much benefit from. That there was also a provincial school at Truro—and they also had a farmers' association—and they also had this organization, the Fruit Growers' Association of Nova Scotia, which had done good work in the past and which had very bright prospects for the future. That we had one of the finest countries in the world for agricultural purposes and that under our feet was untold wealth—that around about us there is the most valuable fisheries—and with a combination of these resources it should make us a happy and prosperous people if we properly use them (applause).

G. C. LAURENCE (Vice President of the N. S. Farmers' Association.) Mr. President ladies and gentlemen, at this late hour of the day when our friends from Halifax have only a few minutes to spare before their departure in the train I will only say a few words and express my thanks for the kind reception here. I am here as your humble servant as a member of the executive committee of the Farmers' Association—having had the occasion to visit your country for the purpose of attending the convention at Kentville. I beg now to thank the people of Wolfville for their courtesy and for the manner in which they have received us, and express to you the sincere thanks of the Farmers' Association for the hearty welcome which we have had and the kind address which has been so ably delivered by the learned Professor Kierstead in welcoming us here (applause).

OUR DAUGHTERS' DOWER.

MRS. A. H. JOHNSON, WOLFVILLE.

One of the most serious drawbacks with which the agricultural districts have to deal is the tendency of our young people to leave home. Their restless youth cannot endure the monotonus ebb and flow of daily existence on the farm, and they go forth eagerly to plunge into the foaming, surging surf of city life, whose sparkling, gay-crested waves of pleasure and excitement are so dear to the young, and with which we in the country have nothing to compete. Meanwhile our lands are suffering for lack of proper cultivation, or are abandoned; while they who should be lords of the soil are vassals or insignificant ciphers swelling the sum total of a city's thousands.

Fortunate indeed for us if that city rests under the folds of the glorious old red flag, but woe to us, that so many serve in a country where their well-earned bread and butter has had of late to be washed down with that very much mixed drink known as the "Monroe doctrine."

It is one of our gravest problems to remedy this evil, as from every source the young matron, Canada, is calling her children home, and everywhere we tillers of the soil are striving to cope with the question heard on every side; how shall we win our sons back

to the soil and keep them there? As far as it goes this is as it should be, but why not state the whole question? why limit it or stop short of the whole problem? How shall we keep our boys and girls on the farm? is the proper rendering, for we want, need, and must have our boys, our robust, well built, clean lived, strong limbed, athletic boys—our girls, healthy, clever, quick-witted and adaptative, with their heritage of good Saxon ancestry—we want both of them, and as orchardists until we have both our girls and boys engaged in the pursuit, we cannot make fruit growing the industry that, please God, we mean to make it, the most profitable and prominent industry of this little gem of the Atlantic provinces, until an orchard in Nova Scotia is the simile for bonanza, as a silver mine in Nevada is to-day its reverse.

The first half of this problem the far-sighted fruit grower of to-day has grasped the solution and many whom I address have now apportioned to their sons some fair hillside or ideal orchard slope—well drained, warm and fertile, to be their very own, to stock with trees, to plant and cultivate under the father's skilful supervision, that while the trees are growing his knowledge of his profession may keep pace with his love for it and his country.

Fortunate boy! but what of your girl, what are you doing for her? Presumably she has shared alike with her brothers in the good things of life, you have doubtless given both the best education you could, if possible a college course, but if not, let us hope she has not been sent to gain a smattering of useless accomplishment at some finishing school, that most unnecessary of all institutions, whose epitaph I trust is about written in the word finis. Your daughter's life lies before her as does her brother's, help her also to make it one worthy herself, you and the advanced age in which she is to live; and to this end I suggest to you Fruit Growers of Nova Scotia the solution of the other half of the enigma. Help your daughter to start an orchard too, give her a portion of land as well as her brother. You all have more land than you need, many of you would be richer men if you had less. Give, then, of your broad acres, a fraction to your daughter now. She does not need a large area, nor does she wish to lessen her brother's prosperity—from one acre to five is the utmost limit of her requirement.

Now as I am speaking to Nova Scotian Fruit Growers, most of whom I know personally, I know too, your generous natures too well, to imagine that you would demean yourselves by giving her a piece of that cold, wet, barren, back pasture, which even the rabbits make fun of as they scud disdainfully across—land on which no self-respecting cow, however industrious, could gather a square meal a day unless she were fitted out with a bicycle—certainly not—you will give her an acre or so of the same lot as you give the boy, you will teach her how and what to plant, the way to prune and cultivate it—unless she has been so fortunate as to have already learned this at the Horticultural School. You may consider it a sure thing that inside a given time, the girl will develop as good an orchard as the boy—her varieties will be selected with as keen an eye to the commercial point of view as she gives now to the purchase of her gloves or bonnets—she will prune those trees with the symmetric precision that she trims her dresses, and her practised eye will detect the slightest deviation from the straight rows as quickly as she notices if her hat is on straight, and all will thrive, as thrive it must under her womanly care and petting, for trees, like men, thrive best for a little petting. She will take pride in it, will work early and late, and the caterpillar, canker worm or other insect depredator who establishes an emigration office in her orchard, will not find the climate such as he can conscientiously recommend to new comers. Of course I do not pretend to say she will plow or harrow that land herself, but what of that, some of our leading horticulturists never ploughed a furrow, and if they did it would be as crooked as a rail fence, or the course of the professional politician. But she can and probably will wheedle the hired man after working hours to harness old Bess to the cultivator to destroy some presuming weeds or to stir the land in the dry season, and the man will do it willingly for he knows it means two large pieces of pie for dinner, strawberry short-cake for tea, and a drink of raspberry syrup between times.

A girl who has a real live business like this on her hands doesn't waste her good sense envying Miss. Million the three hundred dresses that formed her trousseau when she married the Duke—she does not scan the papers for the particulars of Miss Silly Highflyer's elopement, she studies the market reports instead, informs her-

self on the question of supply and demand and is interested in the quotations of real estate. Is she not a real estate owner herself, and does she not intend to raise the value of real estate in her own locality by making her orchard the handsomest one in the neighborhood. Those trees shall bear the best fruit, the small fruit shall come in the earliest, and she will do it too, only give her the chance! And why should she not? She has inherited from you, energy, industry, far-sightedness and pluck, and from her mother that prudence, skill, economy, patience and deft-handedness, without the assistance of which you would never have arrived at your present prosperity, clever and shrewd though you are. Do not assume that I would rob the boys for her sake, there is no need of that. She will stimulate them, there will be between them that spirit of friendly emulation associated with good comradeship that makes life better worth the living, they will exchange experiences, and she will teach them a point or two in fruit culture well worth the knowing.

You will be surprised to see how soon a paying crop will reward those busy hands and how soon she will furnish her own pocket money and later on let me whisper, that if you want to borrow a little money, she will make a far better creditor than the Bank and you would do better to pay her the seven per cent. And some day not soon perhaps, but some day it may happen, that you and she may take a rather important drive together, the turn-out is hers, carriage and harness, she has bought, and you know you are proud of her as she skillfully handles the ribbons that guide that spirited piece of horse flesh, Brown Bess' colt, (you gave it to her if she would raise it.) You are going to the polls to vote together for the first time, and as she trips in to place her ticket in the box, you know she will vote the right ticket, a square, straight, honest vote for the right man, for have you not trained her in politics as you did in horticulture and you have always voted straight and for the right man.

But I must be honest and if I present you with the favorable side of the picture I must also show you the adverse aspect, the possession of a daughter who is a skilled horticulturist and real estate owner is not without its disadvantages. There is the fuel question,

it will require an extra fire in the parlor in the evening, for the base burner will not heat that room when the door is shut, although what you lose here you may save in light, you must set more hitching posts in the street front, one is not enough, and the hinges on the front gate will need renewal twice a summer, but you need not fear, when she marries it will be to a man worthy of her enlarged experience, enlightened vision, and her broadened sphere will prevent her from taking that worthless young man that you have been uneasy about. You may trust that girl, her mother's own daughter whom she so strongly resembles, and as you see her standing in her white dress under the apple trees, with the summer sunlight falling around her, your heart with a quick throb, grows young again, and you recall that summer afternoon twenty or more years ago, when her mother stood and looked at you as that daughter does to-day, ah, I see you remember, and has she not received this dower of good sense that showed her mother that you were the right man for her to take. And in the afternoon of life, when you enjoy you well-earned rest, you may, if you have been a wise man, see on the hillside a strip of land, studded with trees, whose blended coloring seems like some jewelled fabric woven in the lavish loom of nature, the pattern of which is traced in fruit, whose burnished golden globes gleam in the autumnal sunshine, whose creamy white and transparent yellow pendents are opals, topaz, and amber, whose crimson fruit garlands are rubies and garnets of priceless worth, and the clusters of purple, white and blue are the amethysts, pearls and sapphires that in their emerald setting and gorgeous irridescence constitute your daughter's dower.

THE RELATION OF SCIENCE TO PRACTICAL HORTICULTURE.

BY D. E. HIGGINS, WOLFVILLE.

This is emphatically the age of science. Modern science has so interlaced itself with almost every calling of humanity, as to quite alter the aspect of life today, as compared with that of a few years ago. In the midst of such revolutions, we naturally are led to ask, what is "The relation of science to practical horticulture?" The

purpose of the present paper is not to impart instruction to those whose lives have been spent in observing the development of this relation but rather to recall a few facts bearing upon this subject, which may have escaped the minds of some. It may assist us in our search for an answer to the above enquiry, to ask ourselves another question. Since science is the study of nature, we may ask—"what is the relation of nature to horticulture?" No occupation or profession is more closely connected with nature and its workings, perhaps, than horticulture. From the first movings in the germ to the perfecting of the fragrant flower, the luscious fruit, or the stately oak nature works and works alone. Man must adapt himself to nature's methods, and so adjust the surroundings that nature may "work her perfect work."

In view of these facts, with which all are familiar, how evident is the dependence of horticulture upon nature, and hence upon science, for he who undertakes to conform to nature, must know her ways of working.

Again, horticulture itself is a science, and as such, must stand with other sciences in relations of mutual inter-dependence. "To know everything about something, we must know something about everything." Special sciences are not independent. The Astronomer must be a mathematician, a chemist, a physicist. So also with the profession represented here, the recognized importance of which is evidenced by the ever widening influence of this society existing for the purpose of perfecting the horticultural science. Horticulture is so knit with other sciences, such as Botany, Chemistry, Entomology etc. as to be quite inseparable from them. Each being the counterpart of the other, either would be incomplete by itself. Thus, the relation of science in general to practical horticulture is evident.

Established science, let it be noted just here, properly includes both theory and practice, for theory which has not been confirmed by practice cannot lay claim to this title. For example, the theorist may assume that since certain clover roots have the power of taking up nitrogen from the air, they will therefore serve a valuable purpose in the nitrification of the soil, but his theory falls far short of science until experience has pronounced upon it. Experience also

may be divorced from theory, its natural companion, and seek to be independent; and this it has sometimes done.

The Babylonians, many centuries before the beginning of the christian era, had learned from experience, that certain varieties of the date palm were unfruitful unless set in proximity with other varieties. Thus while Grecian art and Roman power were yet unsung one so-called modern method of mixing of varieties was known and practiced in fruit-culture. Here however, experience struggled alone. The *cause* for nature behaving herself in this way was not diligently sought for and found. And what was the result of this lack of scientific method? Year after year and century after century, passed away into the great volume of history while this little fragment of an all important truth lingered undeveloped, until at length it was lost sight of and forgotten. And the truth continues hidden until the 17th century of our own era, when science brings it again to light and reveals the functions of the stamens and pistils of flowers. Since that time progress has been steady, though slow at first on account of the fact that the attention of scientists was not directed very eagerly to matters concerning the interests of agriculturists until our own century. Since scientific investigations and methods have been applied to this subject the arts of cross fertilization and hybridizing have advanced apace and today we have got back to the Babylonian idea of mixing varieties in fruit orchards. This time however, the practice is founded upon sound reason, and this evening we willingly give honor to those scientists whose patient labors have brought it about.

The same may be said of grafting. Here also, experience had to await the age of science. When grafting was first done is not known; probably in remote antiquity. It was not, however, until the beginning of the present century that root grafting was known and practised. Very early experience revealed the partial truth but failed to make it general in its application.

Again let us ask ourselves what is our indebtedness to science in the matter of fertilizers. Perhaps at first sight it does not seem very great. The Romans, and some other ancient people found that ashes were good fertilizers. Stable manures also have, for years, been the stand-by with the farmer, and both these form a

large part of the materials used today. Are we then at a stand-still in the matter? Not so. Formerly these substances were applied indiscriminately for all purposes. To-day science asks *why* are they valuable? It analyzes the plant and thus knowing of what it is composed, sees at once what will be necessary to produce another similar to it. It seeks by analysis to know if these essentials are present in earth or air, in available forms and in sufficient quantities to supply the demand of the plant. Thus the feeding of the different species of economic plants is based upon an established principle. In practice, of course, the problem becomes one of great complexity, for the solution of which, mere theory alone is inadequate. On the other hand, experience toiled on alone for centuries and failed to arrive at some of the most simple truths which science has demonstrated in this direction.

In general, it may be said that experience is a good teacher, but as many of the veterans in fruit growing present to-night, tell us tuition at this school is high, and the course is a long one. Nevertheless it is requisite to success in any undertaking and the question is not between experience and theory, but whether the former should be considered in itself sufficient or whether it should be based upon science. The leaders in horticultural lines together with those of medicine, electricity etc. recognizing this intimate relation between their profession and science, have sought to develop the two side by side. Consequently we have to-day a variety of means for establishing the art of fruit growing, as practiced by the people generally, upon a more scientific basis than hitherto it has possessed. Perhaps the most general and the most widely diffused of these agencies are the horticultural newspaper and periodical. These, like all other valuable things are useful only in their proper places, and should not be substituted for other sources of knowledge, and thus make the sum total of one's education. A physician whose technical training has been confined to the pages of a medical journal, would hardly be said to have given himself the most approved preparation for his work. The education of the press in any vocation, is necessarily fragmentary rather than systematic, and presupposes a system in the mind of the reader into which these valuable bits of knowledge may be placed in order. Let no one suppose

for a moment, that we are underating the value of the press, which probably has done more than any other agency in circulating valuable information relative to fruit growing. This system, however, which, as we said, the press presupposes, must be derived from some other source. For illustration, take the matter of soil-draining. It cannot be expected that so large a question as this can receive adequate treatment in a newspaper article. Only some special phase can be presented, and it may be that even this is the result of somebody's experience under peculiar circumstances, and therefore, presents only a partial truth. It is necessary that some more elaborate and systematic treatise on the subject should precede the newspaper even in order that the latter may be of most benefit to its readers. Reliable books, then, from the pen of those who are recognized authorities in these different spheres, fill an important place in horticultural science.

However, the fountain-head and source of this ever-widening stream, is the "Agricultural College," without which we could not have the trained men to approach the problems which face us. That the Nova Scotia fruit growers have recognized the importance of this institution, is evidenced by the aggressive horticultural school established under their patronage, and under the vigorous direction of Prof. Faville.

Next to the college and school, the *experiment station* renders invaluable service to the cause by applying "scientific principles and methods" to the problems of horticulture.

But these need only be mentioned; their effects are apparent to all.

If, then, the conclusions reached regarding "the true relation of science to horticulture" be correct, and if the agencies mentioned for realizing the full benefit of this relation, be as important in fact as they have seemed from the standpoint of the speaker, what manner of man should the fruit grower be? *Evidently* he should be a man of scientific education whose methods of thought, study and action, are founded upon scientific principles. The advancing age *demands* that he shall be this or nothing, and the young man who contemplating the pursuit of this industry neglects to avail himself of every opportunity to become master of his profession, above all, the

young man who neglects the advantages so generously offered in the Nova Scotia School of Horticulture is failing to recognize what the founders of the school have learned by experience, and is, we believe, making the grand mistake of his professional career, which will prove the prolific source of many another.

SOME GLEANINGS FROM HORTICULTURE.

FIFTY, SEVENTY-FIVE AND TWO HUNDRED AND FIFTY YEARS AGO COMPARED WITH THE PRESENT.

DR. DE WITT, WOLFVILLE.

Mr. President, Ladies and Gentlemen :—At the commencement of the new year one is apt to look back upon the past and reflect upon his shortcomings and failings. As these reflections bring to him mortification and chagrins, it is well if he resolves to do differently in the future. While it is unprofitable and unwise to grow despondent and indifferent on account of frequent failures and weaknesses it is nevertheless wise and prudent to call up reminiscences of the past if such reflections where indulged in as a short retrospect produce the fruits of good resolutions that ward off like errors and mistakes. A backward glance at horticulture as known long ago may not be out of place or unprofitable. In all of the callings of life the successors have profited by their predecessors. To-day and as usual at the annual gathering of the "Fruit Growers' Association" we vie with one another in telling how much we know and thereby disclosing how much we do not know of horticulture. We sometimes think we have hit upon an expedient or experiments which we advocate with the enthusiasm and ardor of those who know whereof they speak and who have discovered something unheard of or untaught in days gone by, when perchance we may accidentally stumble upon some old book of two or three centuries past and find therein the same ideas set forth as advocated by the tyro of 1896.

I do not wish to be understood as saying that the science of horticulture, when I use the word horticulture I mean agriculture as

well for it has been said that "horticulture is the exquisite form of agriculture," has not made great progress in the past, but in comparison with the other sciences of the day, horticulture has not kept abreast with them. "Why," we may ask, if this be true; is it thus? Is it because men have been burning the midnight oil and laboring longer in the arts and sciences than they have in the earth to make it produce for their wants?

Ever since the world began, the imperious demands of man have been food, raiment and shelter, all of which are the outcome or product of agriculture. The first man was an agriculturist, hence we must conclude that agriculture or horticulture is the oldest of all professions or sciences known to the world. Horticulture waited for the science of Chemistry to tell it the composition of the soil, thereby unfolding to the horticulturist a more accurate knowledge of fertilization. For centuries man delved in the earth, having little knowledge of its constituents, until chemistry came to its aid and it is only since the middle ages that chemistry became a science. In those days there were a class of men called "alchemists," the predecessors of the chemists of our day. They busied themselves in ransacking all nature to discover a catholicon, a universal remedy for all diseases, by which man was to be made immortal on earth and the philosopher's stone which should turn base metals into gold. Chemistry at that time was not a science, but an unthinking practice. Too much of the farming since then, and even to-day, has not been, or is not founded upon science, but an unthinking practice.

If the farmer has not kept pace in his calling with the progress made by men in other pursuits it has not been because the knowledge he needed was not to be had for the seeking, but for the reason that the custom has prevailed to a great extent, that the dullest boy would do for the farmer, while the brightest and best when opportunity offered were to seek other callings requiring less brawn and more brain. The consequence has been in too many instances that the farmer's sons have been deprived of the education necessary to fit them for so noble a calling as the science of horticulture. They have been content to delve and know but little of what has been going on in the world, even in their own pursuit and the consequence has been that the theory and practice of hor-

ticulture has been left not to the farmer to promulgate and expound but to men of other pursuits.

Let us for a few moments call to mind what many people knew of horticulture fifty, seventy-five or even two hundred and seventy-five years ago. In a little book called the "French Gardener," published in 1620 and translated into English in 1658, the writer says "touching the pruning of apple trees, the just season for those which are old planted is the decrease of the moon in January, at which time grafts for the cleft and crown are to be gathered and provided and for such as are newly planted they must not be disbranched until the sap begins to rise that the wound may be the sooner cured, for if you cut them in winter the wood will be dried by the frost and you will have in the place of a healing scar a stub of dead wood. I could scarcely resolve with myself how to teach this art of pruning since it would merit an express discourse to instruct you perfectly, but having in my preface resolved to conceal nothing from you as a secret, I had rather hazard the censure of captious persons than hide the art from you, how you may obtain this excellent and fairest fruit in description. Whereof, I shall nevertheless be as succinct and brief as possible, teaching in all a very few lines by way of maxims what would employ more than two sheets if I should give a contexture to my periods. Those branches which proceed from the old and shoot lustily must be stopped at the second or third knot for they would attract the sap which ought to nourish the branch and in case the tree be plentifully garnished you may cut them off at the first peeping and such as you would spare are to be conducted to where you would have them continue. All buds that will bear fruit shall be spared, yet if there be any at the top of the branch that you would desire to fortify and spread, cut off that branch near a spring bud, rubbing off the fruit buds which are on the new shoot. Every branch which is so spread and fortified must be pruned, be it never so little, but on the stronger you may leave more buds than on the weak and feeble. Every bud which hath but a single leaf produces only wood, that of fruit hath many and the more the sooner it will bear. The fruit buds which grow on the body of the tree produce fairest fruit than such as grow out of collateral twigs on the tops of branches.

You shall rub off all twig buds which sprout before or behind your trees. If you desire to have your tree soon famished on both sides hinder it from sprouting in the middle. The more you prune a tree the more it will shoot. Make as few wounds on a tree as you possibly can and rather exterminate a deformed branch than haggle it in several places. Cut your branches always slanting behind a leaf bud to the end they may the sooner heal their wounds without leaving any stubs which you shall afterwards cut ofl to the very quick to avoid a second fear as a great eye sore."

The foregoing quaint description of pruning and the reason therefore by this French writer of two hundred and seventy-five years ago, is in its essence and principally the same as to-day, and yet I fear there are many farmers and farmers' sons even in the Annapolis valley who would need the training of a horticultural school before they were competent to give as complete and orthodox a summary of pruning and the reason for the same.

In 1820, or seventy-five years ago, William Prince, speaking before a Board of Agriculture in the United States, alludes to the time of planting apple trees: "Spring," he says, "is the season we feel the most pleasure in planting, as it is the most genial season, but experience has proven that fall planting is the most successful on account of drought." He also says "to cause trees to grow and continue thrifty, the earth must be kept cultivated after they are planted. No young tree can continue to grow if the grass is suffered to form a sod around it. If it should be necessary to plant them in grass ground, care must be taken to keep the earth mellow and free from grass for two or three feet around the tree. Every spring have manure dug in around the tree and the bodies of the trees washed with soft soap undiluted with water. This, with the aid of cultivated ground and some manure as before mentioned. will give a thriftiness to the trees surprising the expectations of anyone who has not seen its effect."

John C. Gray, when speaking before the Massachusetts Board of Agriculture in 1850, or over 40 years ago, says that when the planter has the choice of a hill-side it is preferable to the level as assuring a better drainage and insuring against frost, which is sure to seize upon plants on low ground. Mr. Gray also continued to

say that while any slope seems preferable to a level, a southern one is less eligible than either an eastern or a northern one. On a southern slope the trees often prolong their growth far into the autumn, and the young wood is less perfectly ripened and suffers from the subsequent cold.

Speaking again of the cultivation of an orchard Mr. Gray goes on to say that a cultivated circle around the tree is often practiced owing to an unwillingness to sacrifice the hay crop, and a belief that the circle kept perfectly tilled around the tree will afford sufficient room for the growth of the roots. This he says is an unsafe supposition, for if the tree be thrifty, the roots will extend themselves to the limits of the cleared space long before the farmer is aware of the fact.

They will then meet with a comparatively hard rim, and the tree will be, so to speak, in the condition of a potted plant. He says also, that if we regard the growth and fruitfulness of the tree as the great object, there is no doubt that orchards should be kept in tillage as long and as thoroughly as it can be done without injury to the roots of the tree. The orchard is much benefitted in the time of drought by stirring of the soil, on account of the moisture which follows the process." Mr. Gray also alludes to the distance to which trees should be set and says in regard to it "That people differ," judging from the discussion at last year's meetings of the fruit growers. Mr. Gray's utterances are as true to-day as 45 years ago. He says that forty feet is not too much to plant apple trees apart, and he who adopts this method will be surprised to find in how few years the extremes of the branches will meet. Mr. Gray also discusses entomology, and speaks of the canker worm, borer and caterpillar. He describes the canker worm as minutely as it can be described to-day, and speaks of a tarred ring around the trees, and a tarred wooden boot as a means of trapping and exterminating them. He also speaks of a sol. of Potash, one lb. to two gallons of water, for washing trees when moss has gathered upon them. In perusing the forgoing extracts from men of 275, 75, and 50 years ago, my object is to show what they knew of horticulture so long ago, and to remind ourselves that the most of what is known to us to-day in this science was known to them. The science or

study of entomology has been added to the curriculum of the horticulturist within the last dozen years, a knowledge of which has proved and will prove a great advantage to him in his pursuit. In seeking among the Archives of horticultural literature in the Boston Library, I find that those who have been foremost to advance the interests of the agriculturist in times past, have not been the farmer, but men in other walks of life. Foremost have been Presidents of Colleges, Governors of states, Judges of the courts, Doctors of Divinity, and of medicine, and politicians. The farmers as a rule have been conspicuous by their absence. Why is this? In this County, the County of Kings, I am informed that a retired merchant, the Hon. C. R. Prescott, about the year 1812, gave a great start to horticulture, and that he introduced nearly all of the standard variety of apples we have at the present time.

It was about this period that those remarkable letters were written and published in the press in Halifax, over the signature of "Agricola" on the principles of "vegetation and tillage" which evinced a grasp of the subject far in advance of his time, the perusal of which will interest anyone even to-day who will take the time to read them. Later in the history of this County, the records tell us that the late Dr. Hamilton gave to Horticulture a stimulus and impetus that it is has never forgotten, and reading subsequent reports of the Fruit Grower's Association of this province, I find a doctor taking a prominent part almost every time. Why have men in the past, outside of the domain of agriculture had the presumption to tell the farmers what to do, and how to do it, to tell him of natures ways and properties and the way to utilize them. I do not know of a calling or pursuit in Christendom where men outside of those pursuits and professions have attempted to teach or advise them, save in the domains of agriculture. The why and wherefore, is not hard to solve. The farmer has been a hard worked man. He has been looked upon more or less as a drudge, he has not realized or arisen to the dignity of his calling. The farmer boy singled out of a half dozen or more because of his muscular development, has been selected to plod on in the old way and become the farmer. A little reading, writing and arithmetic have been sufficient for the farmer's boy. His acquirements have not been such as

to fit him to couple with his life work those scientific principles which it demands, and which makes it of a noble calling, raising from the ranks of drudgery and serfdom to the dignified and noble position it claims and deserves.

The men in other pursuits and professions who have been foremost in telling the young idea how to shoot in agriculture and its different branches have done so because the farmer and horticulturist have not been awake and alive to their responsibilities in their grand and noble calling. And not having realized them. the greatest number have not put into practice the knowledge advanced 50 75 and even 275 years ago. The remedy for this is that the farmers of the country see to it, that their sons be given a liberal education, that they seek and take advantage of the horticultural training now at their doors. Being thus equipped they will not only keep up with the progress already made in horticulture but they will be the pioneers in every new theory and practice in their art. And the gentlemen in other professions who have heretofore so kindly proffered and given their ideas in horticulture, will not be heard from so often, but the farmer and the horticulturist will occupy their right and lawful position and be foremost in promulgating advanced thought in their professions.

Agriculture is truly said "to possess a threefold character, it is a science, it is an art, it is a trade." The scientific farmer must be familiar with nature's laws and know as much of them and their properties as to pronounce what can be done by cultivation; he then is a scientific farmer. He who knows how to do it is a practical farmer, and he who produces the practical result at the minimum cost is the economical farmer, and he who does all three is the complete farmer. It is to the sons of the farmers of this county we are looking to-day to make the complete farmer. The retrospective glance I have given to horticulture has induced us to believe that the most that is known to-day about the sciences was known fifty years ago. The pruning of the tree—the planting of trees—the chemistry of the soil—the drainage of soil and the cultivation of orchards were much the same as the knowledge we have to-day. Entomology or the study of insect life also got its share of attention. Spraying insecticide material on trees was not mentioned in those days, but a very suggestiv

fact to which we pay even to-day too little attention from the pen or lips of those who then voiced the interests of the horticulturist viz. that of constant cultivation and stirring of the soil in the orchard. not only for the purpose of producing moisture and exterminating weeds, but for the purpose of disturbing and destroying insects which locate and breed in the ground—while we have to-day a remedy in the spray which when properly applied is a valuable and effectual one, let us not forget in the report what was known before some of us were born, keep the ground and its surroundings clean, we then will sooner be rid of all pests. In the line of Wordsworth, "Wisdom is often nearer when we stoop, than when we soar." Although the most of the knowledge requisite to the complete farmer was known long ago, it is confined to the few. The masses did not know how to appreciate it. To-day we are looking for the "greatest good to the greatest number" then will there be a uniformity in agricultural operations and a uniformity in results. All orchards will be span clean and treated upon a scientific basis,the results will be uniform in size, quality, color and flavor. These results cannot be achieved without a proper education and horticultural training, which every farmer in this valley can get almost at his own door if he will. Although the Annapolis valley extending from Blomidon to the Digby Gap is reputed for the quality and excellence of the apple. Yet, strange to say, there is yet uncultivated to this choice fruit in the valley, a larger area proportionably adapted to the cultivation of the apple than any other tract of land of like dimensions in the province. The apple culture in this valley and in this province is yet in its infancy and the boy who fits himself for the noble life work of horticulture will find an ample and sufficient field for his energies and training. There is a strong tendency in the human breast to get back to mans primal calling, no matter what may have been his pursuit in life. There are many men in all professions who having spent three-fourths of their lives in the bustle and among the busy haunts of men, desire to spend the remainder of their days in some congenial country spot, there, as the seasons come and go in sunshine and shade, amid flowers on lawn and in the conservatory, amid blossoms and fruits in the orchard, they delight to watch and promote the development of plant life. This desire seems to be in-

herent. Cowper has said: "God made the country and men made the town." We have never known a misanthrope or a miser to be fond of flowers or the garden.

The mind must be employed and have recreation. "It is better to direct it to the works of the Creator, than to the works of man." Lord Bacon has said of the gardens "it affords the purest at home pleasures, the greatest refreshment to the spirits of man, without which buildings and palaces are but gross handiwork." Another has written:

"Give me great God, I said, a little farm,
In summer shade and in winter warm.
Where a clear spring gives birth to murmuring brooks,
By nature gliding down the mossy rocks.
Not artfully by leaden pipes conveyed
Nor falling in a forced cascade.
Pure and unsullied, winding through the shade,
All bounteous heaven has added to my prayer
A softer climate and a purer air."

CRANBERRY CULTURE.

ADDRESS.

OUR PAST SUCCESSES AND FUTURE PROSPECTS.

HENRY SHAW, WATERVILLE.

Mr. President, Fruit Growers, Ladies and Gentlemen:—I consider myself quite fortunate to-night, more so than any speaker that has preceded me. I have a partner, Mr. Bishop, one of the pioneer cranberry growers of the valley, who comes from Aylesford, the birth place of cranberry growing in this province, and he has promised to assist in placing before you the proper methods of cultivating and producing the cranberry. Now the information you have asked me to give you is in reference to our past work and future prospects.

Away back twenty years ago the late William McNeil, of Wilmot, commenced the culture of the cranberry, and he made a success of it. A few years later Holmes Kirkpatrick, Wm. Russell and

Spurgeon Bishop commenced the work, and where one made a mistake the rest avoided it, and any advantage gained by one was made known to the others,—where one made a success the rest took advantage of the methods pursued—so that to-day we have 150 acres cranberry lands in Aylesford—in Waterville 25 acres in and ready to go in. So you see the cultivation of the cranberry has increased very fast. Dr. Balcom at Aylesford put under cultivation 13 acres this summer, and he has 7 acres to be put out next spring. There are 18 acres in one bog at Auburn, managed by Holmes Kirkpatrick; and there is a company in the same place that are cultivating 18 acres. Dr. Woodbury and Dr. Bell have 20 acres in Kingston. There are probably not more than thirty acres in full bearing in that section of the country, in the township of Aylesford.

In the year 1892 the cranberry growers sent their first car-load over the Windsor & Annapolis R. R. to Montreal. They first had to forward a sample barrel there before they would handle them. The carload went forward and proved to be very remunerative.

In the year 1893 the crop was light in the Annapolis valley. In 1894 we had an excellent crop, and we call that "the big year." In that year there were 1400 barrels produced in Aylesford. Four carloads were shipped to Montreal—and nearly one car-load was shipped from Waterville.

This last year has been very unfortunate. It has been a non-bearing year; it was not only a non-bearing year here, but also in some parts of the United States.

It is very true that the crop on Cape Cod was about 230,000 bushels more than last year, but that was not sufficient to supply the demands of the markets of the United States. It was a failure in the States of Wisconsin and Michigan. To-day we can get $10 to $12 per bbl. in the United States and Canada so you see the business is not yet over done.

You wish to know our future prospects. Well, gentlemen I need not tell you that we have the most unbounded and unshaken confidence in the cultivation of the Cranberry. We have a splendid market. There is not enough produce to supply the Canadian markets, hence we do not have to ship them out of the country. There is no surplus. We have thousands upon thousands of the

best land in the world waiting! waiting! waiting! And I mean to say that the young men are *going! going! going!* away from a fortune—(applause) —going to the United States and leaving a fortune that any young man could make in five years. Now we want all the assistance we can get from the Fruit Growers Association—and we want all the cranberry growers of Aylesford, Berwick and Western Cornwallis to come and join us and they will be a tower of strength to this association and the association will reciprocate. I got an order for 10 bbls. to be shipped by each steamer to London. The agent wrote me that they would bring from 30 to 35 shillings per bbl. and I think that is a fine paying price.

Can there be anything done to induce the young men to stay who are leaving the country. Can we not keep them at home? I will do all I can.

Q.—When does the Cranberry commence to bear?

About the fourth year the cranberry vine commences to bear—and for a number of years they send up shoots and the fruit occurs on the terminal buds—and they will bear right along—when the vines get so thick and matted that they cannot send up any more shoots then they begin to bear on the previous years shoots. If a bog produces 100 bbls. to the acre that bog will have to recoup itself in some way—it is simply analagous to a heavily laden apple or plum tree. It can easily be remedied when the vines get thick—go out and sand them in the winter season—go out on the ice and spread your sand and the sand will go down, and a new growth will soon come up.

Now gentlemen Mr. Bishop will be able to tell you more about the business than I can. There are a great many little details in connection with this business that I cannot think of. You can take the most worthless land in the country that is not fit for anything and by putting on it a certain amount of labour you will soon count it the most valuable piece of land in the country, and you can then sit up on the fence and smoke your pipe and watch your vines growing, which will be enough satisfaction to you to make you feel satisfied that you embarked in the business of cultivating the cranberry (applause).

J. E. STARR—What kind of land is needed? Do you have to flood the vines?

HENRY SHAW—The very best location is a deep black mucky swamp, which grows either alders or spruce—you clear away all obstructions—you put on it about two or three inches of sand and flood it if possible.

Next to that is the ordinary bog—you take the turf off of the top and set out your vines. Mr. Selfridge has started a bog on the Caribou bog, first taking off the turf—and on such a bog you can grow very fine berries. The sand stops the frost from throwing out the vines.

Next to the land I have described is wet sandy land. It should not be too wet nor too dry. The growers in the United States plan if possible to keep the water within a foot of the surface in very dry seasons, that keeps the land moist.

DR. CHIPMAN—Are our bogs adapted to cranberry growing?

HENRY SHAW—Yes.

DR. CHIPMAN—How much is there?

HENRY SHAW—Two thousand acres.

HON. MR. LEBLANC—Are the American vines preferred to the native vines—and is fresh water sand preferable to salt water sand?

HENRY SHAW—I do not consider that the American vines are better than ours. I would not use the American vines. We are not troubled with the Tip Worm and Fire Worm or the Gall Gnat. If you import foreign vines the chances are that you may import some of these pests also.

The cranberry growers of Wisconsin have erected two experimental stations which are kept up by State aid, and which are run under the supervision of the Cranberry Association. They asked me to send them samples of all the varieties of cranberries we have. I sent them five different kinds. At the head waters of the La Have river is a wild cranberry district.

MR. HUBBARD—Do you know anything of the Labrador Cranberry?

MR. SHAW—No, Sir. I have had a bunch of vines sent me from Newcastle N. B. and also some from Sable Island.

A VOICE—What would it cost an acre to set it out?

HENRY SHAW—That depends upon the nature of the place. If you have your sand handy it is all the cheaper. If you have to carry the sand from a distance it will add all the more to the cost. The cranberry dam should be built from 2 to 3 feet high—that will give you from 2 to 3 feet of water. If you can flood your bog it is all the better. When the mercury goes down you can turn on the water.

A VOICE—How long does it take to produce the berry?

MR. SHAW—You will get a crop in the 4th year—from the 4th to the 8th year you will get a full crop. 160 bbls. to the acre would be a fine crop.

J. E. STARR—What depth of sand would you put?

MR. SHAW—If the mud is 10 to 12 feet deep I would put 10 inches.

J. E. STARR—Supposing the muck is black and is 6 or 8 inches deep and you can put your plow in and take up the white sand?

MR. SHAW—Then simply plough, and turn the sand up.

MR. HEMEON—said that there were thousand upon thousands of acres of land in the counties of Queens, Shelburne and Lunenburg at the present time which could be adapted for cranberry culture.

MR. SHAW—said that possibly the ground may be too rich there.

A VOICE—Do you cover the plants or do you set them out like strawberries?

Mr. SHAW—No Sir—I would not cover them up. If it was in June I would set them out as deep as possible but be sure and leave some part of the vine out.

DR. CHIPMAN—Is there any bog out there for sale (Aylesford

MR. SHAW—Yes.

MR. HEMEON—There are 10,000 acres in the counties he had mentioned for sale.

A VOICE—And plenty of sand.

MR. HEMEON—Yes.

MR. HEMEON—Is there any necessity to run trenches through the cranberry bogs?

MR. SHAW—The only necessity is for drainage purposes, and to let the air down through the soil. If the ground is too dry you will have a smaller berry.

M. G. DEWOLF—Are there any drawbacks on account of cranberry insects and pests?

MR. SHAW said the greatest enemy was the spring frost.

MR. PINEO—What time of year would you advise to set out the vine?

MR. SHAW—In the month of June. I would not set them out later than June. If you set them out later the dry weather is apt to kill them. They will grow from cuttings just as well as from strong roots. Where you can furrow with a horse all the better—strew the vines in a row and let the uproots stick out, where you cannot get a horse on the bog plant with a spade.

MR. HEMEON—said that in the counties he spoke of they were very seldom troubled with the frost.

A VOICE—What is the cost of purchasing the plants?

MR. SHAW—I think the cranberry growers of Aylesford have been selling them at $2.00 a bbl. You can get them yourself at the wild bogs, and they will cost you nothing except the trouble of pulling them.

M. G. DEWOLF—What berry do you consider the best to cultivate in Nova Scotia?

MR. SHAW—A vine from the Four Mile Lake is the best I know of. The largest kind is the Cherry. When they ripen in the fall of the year they look like the old fashioned blue plum, with a kind of purplish hue. The Spice is a little gray cranberry which will not grow so well. I got a kind from William Nevil's which I

call the Nevil's berry which is very much like the Early Black Bell, they are very early, they are of a dark color and medium size.

WM. YOUNG—What is a fair average crop on an average bog per acre?

MR. SHAW—An average crop is about 50 bbls. per acre, White gives facts and figures and he says from 7 to 800 bushels to the acre is a good crop.

WM. YOUNG—What is your own average?

MR. SHAW—My own average is about 50 bbls. to the acre.

SOME IDEAS ON CRANBERRY CULTURE.

J. S. BISHOP, AYLESFORD.

It is only within about the last ten years, that cranberry growing has been recognized as one of the industries of this Valley. Previous to this, cranberrying was associated with a long walk, over wet spongy ground, with the result of a few quarts of inferior fruit, gathered here and there after a diligent search; with no further demand than the want of a few domestic preserves. At the present day every market report from the different cities of the Dominion has its item on the price of cranberries. Every exhibition table is graced with creditable samples of this product; and the fruit growers of Annapolis and Kings as they assemble in session are willing and anxious to hear the conditions under which this fruit is produced.

One of the grand designs of this new industry, is to utilize, in something like a profitable way, the bog lands of which we have such an abundant supply in the section of the Valley between Middleton and Kentville.

One has but to take a trip through the country and see the extensive preparations now being made for the raising of this fruit; and note the expenditure of capital in this direction, to be convinced that cranberry growing has come to stay.

CHOICE OF SITUATION.—Almost any ground that comes under

the head of bog, if properly handled, will grow cranberries. In some places a bit of meadow with a natural water course through it has been turned to profitable account for their culture. If means for flooding are available it is undoubtedly an advantage, although success does not depend upon the water supply.

A moist white sand flat is a good place to make a bog, and if in a location of this kind, care is exercised in keeping the plants weeded for the first year or two, until the vines take possession of the ground, you want no better. In fact, the majority of the farms through the central portion of the Valley, have somewhere within their limits, a suitable situation for a cranberry patch.

PREPARATION OF GROUND.—Whatever the site chosen may be the first consideration is drainage. Unless this can be properly effected, and the water settled to at least one foot below the surface, you might as well stop at once and abandon the project. If your ground is a natural bog begin as near the outlet as possible. First remove the turf down to the mud. I might say here, the cost of doing this varies from $20 to $80 per acre, according to the thickness of the turf, and distance it has to be moved. On a bog that has been heavily fired the turf is often quite thin. If burnt through, the ash must be removed, as it favors the growth of fire-moss—a point to be avoided if possible. If the mud is not over four inches deep after the turf is removed, the sand can be brought up with the plough. After ploughing and harrowing it is ready for vines. If, however, the mud is deep; sand must be brought on, and spread over it to the depth of about two and a half inches. This is done with wheel barrows, if the ground is too soft to bear up a team. It is evident to me that white sand is best, although any kind of sharp grit will answer. The vines will make a better growth the first season on white sand than colored.

If the selection is meadow land with a deep mud soil the sod had better be removed to clear it from grass, sand brought on, and treated about the same as bog. The great difficulty in this case is to keep the grass in check until the vines get properly matted over the ground. A white sand flat needs only to be ploughed, harrowed and planted same as in the other cases and cared for accordingly.

MODE OF PLANTING.—There are two popular ways of planting vines, either of which is good. The one is to run shallow furrows across the piece to be planted from 16 to 24 inches apart, with a light plough or corner of a hoe. After stringing the vines along in these rows, the sand is drawn from each side with a hoe, covering up the lateral and leaving the ends of the uprights out, pressing the earth down firmly as you go along.

The other way is to mark off the ground with a marker, about the same distance apart, as in the former case, drop the vines along these lines and press them into the soft ground with a blunt pointed stick, leaving the ends exposed.

I consider spring planting best; any time during the month of May up to 10th of June will secure a good growth; if continued later the dry, hot weather is apt to hurt the vine, and the tender shoots to be broken off in handling.

Fall planting is attended with good results if the ground can be flooded afterward; otherwise, the plants are most sure to be thrown out by the action of the frost. About ten sacks of vines are required for an acre. The closer they are planted the more quickly they will come into bearing.

CARE OF VINES. Although vines, if left to themselves after being put out, may struggle along and come into bearing with scarcely any care or attention, very much is to be gained by carefully removing weeds, grass and bushes as they appear for the first year or two, thus giving the vines a chance to cover the ground, and throw up the uprights on which part the fruit is produced in much less time. If so treated, they will likely yield from two to five bbls. per acre the fourth year, while the fifth year's crop, if not affected by insects, is generally large enough, if sold at a fair rate, to more than cover all expenses in preparing the ground and caring for the vines to date.

The question now comes, how long will this bog continue to produce or how shall I treat it to ensure a regular crop? I am told there are bogs in the vicinity of Cape Cod that have been in bearing 40 years or more, with no conditions to suggest age about them. With a fair amount of attention, three crops in five years should be assured. The other two will likely be, more or

less, shortened by frost and insects. By a judicious use of sand the vines are renewed and their growth controlled. After two or three good crops have been gathered, the vines may show signs of failing in spots. By applying a thin coat of sand, say 30 to 40 loads per acre, any time during the fall or winter, the vines are stimulated to new growth, and will soon be in bearing condition again, unless the soil is very shallow over the hard pan in which case something is needed in the way of fertilizers. Have in mind that sanding bears much the same relation to cranberry culture that pruning does to the orchard.

HINDRANCES TO CULTURE. It is true there are some hindrances to this business. To say that cranberry culture had no shady side would be rather too good.

Like every other cranberry growing country, we are liable to injury from frost. It is not until about the first of June that the vines begin to show signs of growth. Then the bud at the end, formed the fall before, bursts and sends up a tiny shoot, which a little later develops into from two to five flower buds. It is this new growth that is affected by the June frost. Anything like a freeze late in the month is sure to materially injure the prospect for a crop that year. It is to this cause that I largely attribute the failure of the past year. The vines blossom early in July and by the middle of August the berry is more than half grown. If a frost strikes in September, before the berry has attained its full size, it kills it. If, however, it is fully developed, and has begun to turn, it suffers no injury, and a few light frosts then rather help to bring out a good color and improve the keeping quality of the fruit.

We also suffer some seasons from the ravages of the berry-worm. This worm appears in the summer when the fruit is growing, eating its way into the side of the berry, causing it to fall and drop off. Nearly every summer a few of these worms are to be seen, and some seasons they destroy from 20 to 75 per cent of the crop. They were very plenty with us the past summer. However, as yet, our grievances are not nearly so numerous as those of the cranberry grower in the adjoining republic. They have the vine-worm, living on and destroying the leaves; the tip-worm, so minute that its presence can scarcely be detected without the aid of a glass, preying on

the tender buds in the early part of the season; also what they call scald,—an affection of the berry—causing it to rot just before it is ready to pick. I would caution any of my hearers against bringing vines from the States to plant less they should introduce any of these pests. We have every reason to fear that like other nuisances of a like character, once they are brought to us they usually find their surroundings comfortable enough to ensure their stay.

WHAT KINDS TO PLANT. I see some before me with the question already on their lips, what variety shall we plant and where shall we get our vines for planting? Some of our native sorts are as good as can be found in any part of the world. Others, again, are inferior in size and color. The berry introduced to us by the late Wm. McNeil of Melvern Square and also the well known variety coming from a bog that used to be called the VanBuskirk property, at Auburn, are considered the best kinds we have. These varieties are very much alike, good dark color, ripen early, and the best of keepers. There is also a very pretty berry rather smaller in size, grown quite extensively in some sections, called the Handley Mountain berry. Its size is about all one can say against it. There are also some of the Cape Cod Early Black growing on Dr. Woodbury's bog at Kingston. They are a beautiful dark berry, fine flavor, medium size, but inferior in keeping quality. It might rightly be called the Gravenstein of cranberries. No berry makes a better sauce in its season than this sort. Some good varieties are found along the South lakes; but usually two or three kinds growing together, and when you get vines it is difficult to tell just what you are getting. A variety maturing late is especially to be avoided, as they are most sure to be hurt by early frosts in the fall. You can scarcely see the advantage that a large berry has over a small one in gathering; also the large berry will always sell first. If you can please the eye of your customer you can reach his pocket. Fifty bbls. per acre is considered a fair crop, although an instance came under my notice where three bushels of berries were taken from a square rod of ground, this means, at that rate, 160 bbls. to the acre.

MARKETING.—In the fall of '91 we had our first surplus of

fruit, some three or four hundred bbls. The Halifax people were well supplied with fox-berries at a low price, and did not care to pay fancy figures for our product. After looking around some, we found that the fruit merchants of Montreal, for the small consideration of 10 per cent, on gross sales, were willing to place our berries in the hands of the retail grocers of the city. Accordingly a carload was dispatched thither from Auburn—the first full carload of cranberries that ever left the province. They sold at a fair rate and gave tolerably good satisfaction. Previous to this, Montreal had received its supply almost wholly from the United States. Ever since, as far as we have been able to supply them, they seem willing to substitute our berries for the American product, at about the same price. The same year a lot of 50 barrels was sent from Auburn to London. This was a mistake; while the demand there was fairly good for a five or ten bbl. lot from one steamer, when exceeded by a large shipment the returns have been invariably disappointing. This is due to the fact that, as yet, the English people are not accustomed to using cranberries; but with the present efforts that are being made to introduce their use there, we hope they will, before very long, have acquired a taste for our sauce. In the year '94 we had another full crop; this time between 11 and 12 hundred bbls. Five full carloads of these found their way to Montreal and neighboring cities; the stock by this time being well known and sought after.

The character of the soil and conditions of the Upper Provinces are not favorable for cranberry culture. There are small sized berries found in the district of Algoma in considerable quantities, also tracts in the northern part of Quebec, where wild berries are found and the cultivation might be developed; but from the nature of the people there we need not fear much competition in that direction for some time to come. Notwithstanding, Canadians are in every sense of the word a cranberry eating people. Virtually we have the markets of the cities of the Dominion to ourselves. In view of this fact, and that we have every reason to expect development to our interest in this direction on the other side of the Atlantic, you will all agree with me that there is a future for the cranberry culture.

RELATION OF STOCK HUSBANDRY TO FRUIT GROWING.

W. W. HUBBARD, SUSSEX, N. B.

Mr. President: Ladies and Gentlemen your association has now reached the mature age of 32 years and I must congratulate you on your retrospect. I must congratulate you on your present opportunity for sowing the seed of knowledge and your boundless prospect for the future.

Now Sir, it is eminently desirable that in all discussions we should be practical, theory is useful in helping us to draw our plans and forecast our results, but it must be moulded to suit our practical needs.

In speaking upon the relation of Stock Husbandry to Fruit Growing I presume I am before men who know more about the subject than I am privileged to know and I shall not attempt to speak extensively on the subject but be confined to a few items of practical experience.

1. You will not gainsay me when I state that fruit trees bushes and plants all require ample food for their profitable culture and so few soils contain enough of this food to last for any lengthened period that we must provide for the fertilizing of our orchards and fruit gardens.

For this purpose we can obtain what are termed Natural fertilizers and Artificial fertilizers. To consider for a moment first, the latter class. It is quite possible with a system of applying Phosphoric Acid and Potash through Bone meal and Wood Ashes or in the use of some of the many various manufactured fertilizers and the growing and plowing under of leguminous crops to assist in the absorption of Nitrogen from the air and at the same time to keep up the humus in the soil to enrich the soil sufficiently for any crop. Under such management live stock is not necessary for fertilizing purposes.

Just here however the question of profit comes in—this most practical of all questions is what makes and unmakes every business and we cannot disregard it. It is a question that every man must answer for himself in deciding how to fertilize.

The system of artificial fertilization has some advantages. It saves the cost of housing and fencing stock, it saves the cost of caring for them, and for the specialist in fruit growing whose acres are limited no doubt may be the best system.

But Sir as I understand it when we talk about the fruit growers of Nova Scotia as a class we do not refer entirely to fruit specialists but as a general thing to a class of men whose average holdings would be 100 acres or thereabouts and who are to-day pursuing to a greater or lesser extent a system of mixed husbandry in addition to fruit growing. To such orchardists it seems possible that careful and intelligent stock husbandry should be a great help.

Exclusive fruit growing upon a farm where the orchard comprises only a small portion of the total arable acreage does not seem to be an economical system. It involves a waste of land and of opportunity that is bad for the country which will drive labour from the rural districts and do for a country side to a lesser extent what exclusive hay growing is doing for some districts.

We have districts in New Brunswick to-day and you have some in Nova Scotia where stock husbandry has been dropped and the labour on the land reduced simply to harvesting and marketing of the hay crop. Work has become so scarce that working men have found it impossible to live there, yes even the land owner's family have removed to places where they would secure constant occupation with its regular remuneration; and the result has been depopulation and decay and among superficial observers the cry of blue ruin (due doubtless in their minds to the Trade policy of the country), when the fundamental reason lies in the ruinous system of farming.

MARKETS.

These men have claimed that there were no markets for animal products; regardless of the fact that hundreds of thousands of dollars were sent annually from Nova Scotia and New Brunswick for staple food products.

Now what is the condition to-day? I stand here to assert that the home market of the Maritime Provinces is one of the best in the world and furthermore that we are in as good a position to supply the greater markets of the world with anything we can grow as

in any other country and geographically considered we are in a better position than most of them. With the advent of cold storage systems this market prospect enlarges to possibilities almost beyond our vision and while it is of primary importance to the fruit growing interests of the Province it is of almost equal importance to the stock growing interests.

Should we not then conclude that we have as good an opening for the sale of live stock and their products as has any country and not be deterred on that account from undertaking to fertilize our orchard lands through the medium of farm stock?

As your programme is full and time short it would not be wise to dilate on the special advantages of different kinds of live stock. The keeping of horned cattle however and the marketing of them in the shape of beef and their produce in butter and cheese is one of the most important branches.

You are aware of the growth of the dairy business in Eastern Canada and the money that is kept in and brought in to the country thereby. The orchardist especially when he lives near a creamery or cheese factory can by keeping special dairy cows realize a good monetary profit as well as retain fertility on his farm. It is necessary for profit though that the cows be bred and fed for milk production.

We should also make more and better beef in the Maritime provinces; the meat that is put on our hotel tables is a reproach to our provinces and productive of much vexation of spirit, as well as indigestion.

Cattle are also useful in the consumption of wormy or otherwise worthless fruit. (The result of pasturage on an old orchard planted 1816).

In giving apple orchards a rest from cultivation for a year or two there is nothing better we can do with them until the fruit is fit to harvest than to pasture them with low headed stock as calves and swine; all the fallen fruit would be taken care of and where supplemental food was given as in the case of swine there would be an enrichment of the soil.

Sheep are a valuable stock in connection with fruit growing and when we secure legislation against dogs, that will permit of our

keeping sheep safely we should keep thousands more than we now do. They are valuable in that they will glean a living on lands where other stock will not but they also act as destroyers of weeds and bushes:—Ox-eye daisies or white weed, Couch Grass, Grey birch bushes. Care should be taken to keep them out of young orchards as they will nibble the bark and destroy them up to the time they are 6 or 7 years old.

In conclusion let me state that we should aim to have a rounded and well developed system of agriculture in this province, affording ample occupation at all seasons of the year to our population thereby enabling them to get a full year's pay for a full year's work and this can only be done by a more or less general development of stock husbandry.

The times are moving on apace and we must move with them, the streaks in the sky betokening the dawn of the twentieth century already become visible and it is for us and for our compatriots to strive that the Maritime Provinces be not left behind in the march of progress. We are here to develop this country to make the most of our opportunities. Let us then see that it is not a one sided development, but that through the wisdom of our building we shall leave behind us an heritage that will adorn this Canadian Dominion and ever remain one of the brightest jewels in Britannia's crown.

"CULLS, WHAT SHALL WE DO WITH THEM?"

DR. A. P. REID.

I will try to give what I have to say in as few words as possible—and as the subject was not a novel one I thought you would be able to appreciate it viva voce as well as if in writing. Nearly all produce has fallen in value during the last few years—products of the loom, the manufactory and the farm—sugar at ¼ old prices and potatoes and grain of all kinds must be sold at low rates. It simply means that the producer must adopt some system of economy if he is going to hold his own. There are exceptions. I got 16

shillings a barrel for Baldwins, that is not a heavy drop. If you exclude the fruit grower every other variety of our products has fallen in value, but he may expect a fall in price. Now the question is, what are you going to do with the inferior fruit which is going to waste—if you feed it to cattle they get tired of it. Make it into cider? Cider is all very well, but the cider mill is too often not available. Dry them? You cannot do that very well for reasons you well know. But by evaporation you can accomplish it. We should at least handle 10 per cent of our products in this way. The American farmers consider that one third of their crops are not of sufficient value to send to market. I am very much afraid that a great many of the small apples settle to the middle of the barrel. If we send an inferior variety of fruit to Halifax it will not bring the price of the barrels,—under those circumstances it would be better to let the fruit rot. If you are able to take the water out of the fruit you will be able to utilize it in a great many different ways. Why should it be expensive? With a hired man in a couple of days I had a machine by which all my waste fruits were evaporated, and I do not think the whole thing cost me more than $20.00 and the ordinary evaporating plant costs from $150.00 to $250.00. Last year I put up the ordinary form, but it was so high that it was difficult to work. Next year I intend to put up a different form of an evaporator, with a greater width and less height and with each tray independently removable. There is no orchard in the country that should not have the means at hand to enable us to utilize the fruit as it falls. Commence in the month of July or August and just as the fruit falls evaporate it—and when the autumn comes you can evaporate drops and small fruit and have no culls to get into the barrel. There is a great demand for evaporated fruits in Europe, I think it is used in the manufacture of wine. A chopped apple will make an excellent variety of apple jelly. If you take away the core and the skin away from an apple you take away the best part of it. When you chop the apple and evaporate it (with core and skin) it can at any time be made into jelly, etc. When boiled well pass it through a strainer, add sugar and it will astonish you what a magnificent jelly it will turn out. You will find that the dried chopped apple turns out a better article than the fresh fruit.

Is it necessary that we should allow our fruits and vegetables to be in a condition where they undergo change? I think it is not. I think the time will come when every farmer will feel it his duty to preserve a portion, greater or less, of the vegetables which he grows. There is no practical reason why he should not be able to feed his cattle on dried turnips as well as on dried grass. The only question is the plant which he is to do it with. Vegetables to be used in spring should be evaporated (Dr. Reid exhibited some excellent specimens of evaporated turnips, carrots and potatoes, raw and boiled). These articles will keep until doomsday if kept in a dry place. The apparatus required to evaporate your products is very simple. A big box stove as a heater will suffice, put it in a hill-side and the plant can be so low in height that a boy can easily attend to it. The plant I had could be put up or taken down in 30 minutes.

With regard to the use of sulphur.—If you want to manufacture for the market, use sulphur because it makes the fruit look better.

A FEW FLOWERS WORTHY OF GENERAL CULTURE.

M. G. DE WOLFE, KENTVILLE.

The aim of this address is to win for hardy plants recognition of their great usefulness and beauty. All women and some men love flowers, and in planting their gardens they should think of the many advantages of hardy shrubs and plants over bedding ones, as a general thing they are far more beautiful than perennials. Have you ever noticed that it is the hardy garden flowers that the artist selects for pencil or brush to copy?

By hardy plants I mean all that great wealth of shrubs, herbaceous, plants and bulbs, that once planted are but little care and really "a thing of beauty and a joy forever."

Start a garden in a moderate way, and watch the rapid development and gain in value; these plants are of such easy culture, many being independent of high cultivation, and increase in value and beauty each year, so that the first cost is the only one. Making an investment in them yields an annual dividend of loveliness not to be computed in an ordinary way.

Heretofore the great wealth of hardy plants has been left out of our gardens, and much labor, time and expense spent on tender varieties.

The garden of the future in Nova Scotia will be, I hope, something like the following: Spring will be ushered in with myriads of snow drops, crocuses and violets peeping through the grass, with yellow daffodils and scarlet tulips, with rarest blue of scillas, with odors of hyacinths; and later with lilies of the valley loved by all, with lilacs. hawthorns, laburnums and many other flowering shrubs; then comes June, the month of beauty, the garden should be all aglow with roses, hardy poppies with their oriental splendor, columbines of which few seem to know the value, irises of all shades, and later on the lilies of all sorts, for there are many kinds; then follows quickly day lilies, hardy pinks, fox gloves, the old tiger lily (none better), hardy helianthus (of which there are some fine sorts), the stately hollyhocks single and double, larkspurs and evening primroses, so that our gardens daily until frost will have new attractions and even with the snows of November, will give us a bunch of pansies.

Many sorts worthy of mention have been omitted in the hurry. It is wonderful what a great and goodly number of hardy plants are to be had. Among them, roses, hardy phloxes, the peer of many; aquilegias, such as chrysantha, pretty as a canary bird; asters, many good native sorts; tall campanulas, hardy larkspurs (or delphineums) so tall and blue; dicentras of different sorts, early white lychnis (grand old plant), pyrethrums (equal to asters), pæonies of old and new sorts and our own native ferns. The latter should be grown about the garden in spots where flowers will not thrive, there is nothing more attractive, more graceful or more easily grown. We have a number of evergreen ferns that are very willing workers in the garden when most other plants have died down and out of sight, the evergreen fern has not yet fulfilled its mission, for it was made to beautify twelve months in the year.

Among climbers we have clematis, wistarias, honeysuckle and many others, our own native clematis, often seen running over the alders on the side of the roads, is a most beautiful vine, both at the

time of flowering and later when it throws the plumy seed pods which give it the name of "Old mans beard."

A few words as to making a hardy garden.

1st. Group each variety by itself.
2nd. Surround tall plants by low ones.
3rd. Plant to have bloom all the season.
4th. Use lots of spring bulbs.
5th. Have no bare ground.
6th. Divide every three years.

The ideal garden of hardy plants is near, time adds attractions to such a garden, in this how different from human life, the happy owner of such a garden may go away for a visit and return to find only new beauties there.

I am glad to find the School of Horticulture at this place doing such good work, and I hope more of the young women will soon be students there, as the cultivation of flowers is woman's work, and why should they not be in charge of green houses in this country as well as in England and other places? If our farmers would give their sons and daughters a part of their ground, on which to cultivate small fruits and flowers for themselves, we would not have so many of them going over into "the States" to join the army of white slaves there; they would stay at home and make themselves useful and happy men and women. Do not wait till they are brought home in a casket to be buried in the family lot, but surround them with flowers in life and give them happy homes and you will reap the reward of having them stay with you.

FRUIT CULTURE IN NOVA SCOTIA.

PROF. E. E. FAVILLE.

Mr. President Ladies and Gentlemen and members of the Nova Scotia Fruit Growers Association. It affords me a sense of pleasure to come before you to-day to report briefly some of the conditions of the fruit industry as it exists in your province and as observed by me during my official lecture tour during the past two years. I will endeavor to place before you some ideas that may prove of worth. In reviewing briefly the various counties of Nova

Scotia, I shall not comment at length upon fruit growing in the Annapolis valley with which many present are so well acquainted, yet we should note that in this same valley there are many problems yet unsolved and many features that can be improved. It is pleasing to note that marked advancement has been made in the counties of Hants, Kings and Annapolis during the past few years. Although the past season has not been as productive as the year preceding the apples placed in the London markets have been freer from fungous attacks and better packed than ever before; not only has this proven true in large fruits but in the general marketing of small fruits at home and in foreign markets. More thorough and judicious spraying has been carried on. It should always be borne in mind that prevention is the watchword in spraying crops of all kinds. I am pleased also to report that the fruit growers in the Annapolis Valley are becoming better acquainted with the need of thorough drainage and cultivation and are furnishing many object lessons for other fruit districts. That a rapid advance is being made is evinced by the frequent and intelligent inquiries from all parts of the province respecting fruit culture. I shall ask you to go with me through the counties of the province and take note of the possibilities and growth of this great industry. In every section you will find farmers deeply interested in horticultural work. It is by coming in contact with the fruit growers of the province and by telling them their needs that most good is done. Passing from the Annapolis Valley I visited Digby county; this is the home of the cherry, where they grow luxuriantly in a wild state and are excellent for home and market use, yet they could be improved by judicious crossing, thus making them hold up better in shipping. By actual measurement wild cherry trees in the vicinity of Bear River measured 3 feet in diameter. South of Weymouth a number of young orchards are flourishing and bearing well, more and better pruning and cultivation should be practiced. Yarmouth county presents the only locality where hedges are properly grown and cared for. This is chiefly true of the city of Yarmouth, where they serve the double purpose of ornament and protection. Here may be found a number of graperies bringing remunerative returns.

Back from the shore fruit trees of such sorts as Ontario, Ben

Davis, Baldwin and Grimes' Golden do well, and have borne excellent crops during the past few years. Young orchards are being set out rapidly both of apples and plums. Near Tusket I found a number of orchards containing fine trees left for some one else besides the farmer to care for and as a result they are the prey of fungi and insects, lacking in cultivation and pruning and therefore deteriating in value. Shelburne county is now able to supply the home consumption of large and small fruits. The most favorable parts of Shelburne county for fruit are along the Jordan and Clyde rivers. Cranberry culture though in its infancy can I believe be advanced with profit, in parts of the county. Growers are beginning to spray their orchards. Queens county has several sections where fruit can be grown with as little effort as in the Annapolis Valley. At Caledonia Corner and Brookfield this has been demonstrated. Distance from railroads has thus far made the marketing of fruit irksome. The flavor of the fruit is good. Cranberries grow wild in the many natural bogs. In Lunenburg county I found two favorable localities for the growing of fruits such as plums and apples in addition to small fruit. I refer to Bridgewater and New Germany. In the former locality a number of large orchards may be found with apples, grapes, apricots and peaches growing. In new Germany, which is in the La Have valley a number of old orchards bear heavy crops each year but many have been sadly neglected. From correspondence I find that this county during the past two years has taken hold of the raising of fruit in a more systematic manner and large results may be expected. I visited during the past season Middle Musquodoboit, Halifax county, where the possibilities are flattering for fruit growing. The trouble is that the orchards have been set out and then left to care for themselves and the wonder seems to be why they do not thrive better. A few orchards that have received attention are doing well. Such sorts as Kings, Russets, Baldwins and hardy kinds are thrifty. Proper planting spraying and cultivation are requisite. The fruit industry is in a growing state in Colchester; the southern part of the county would be improved by utilizing wind breaks for exposed plantations. Success in raising plums is to be seen near Tatamagouche in the northern part of the county; during the last few years the fruit industry has

been growing. A better knowledge of packing and shipping fruit is needed. There are favorable localities in Pictou county such as River John and New Glasgow where orchards are looking well. Ontario, Alexandria, Duchess, Astracan, Kings and Ribstons are among the varieties of apples grown with more tender sorts top-worked upon hardy stocks. Moor's Arctic, Lombard and Gage are among the plums grown. Small fruit and vegetables are produced easily. Messrs Harris and Morrow have the principal orchards in the county.

In Antigonish the fruit business needs better cultivation and the application of fertilizers. The keeping quality of all fruits is marked, although as a rule apples are a shade smaller in size, yet they are of good flavor and best keeping qualities. Ribstons, Kings, Ben Davis and fruits of like character when properly cared for do well.

Guysboro county is too often looked upon as a failure in fruit culture. I wish to disabuse your minds of this by calling your attention to the Guysboro Interval and the locality in vicinity of St. Mary's where a number of young orchards are being planted and old orchards with care are producing large crops. The general impression regarding Cape Breton is that it is a country for the growth of fish chiefly. This is a mistake. At Point Aconi good crops of fruits are produced yearly and there is not a county in Cape Breton where fruits of the more hardy sorts can not be produced with profit. Since Cape Breton with its beautiful and enticing scenery is fast becoming a resort for tourists it is important that fruit growing should receive greater attention, as the demand at the present time exceeds the supply. I visited a number of plum orchards, in vicinity of Wycocomagh, Baddeck and Sydney. Orchards are quite free from curculio attacks but suffer with black knot. Apple trees are afflicted greatly with scale bark louse which can be removed by alkali washes. The importation of inferior stock by nursery dealers and the improper treatment of nursery stock when first received has been a great draw back in the fruit industry here. More intelligent treatment must be exercised. Cranberry lands may be found in Cape Breton.

I now come to the last county in the list viz. Cumberland. The

high winds in many parts of the county are unfavorable to fruit growing but where windbreaks are judiciously planted this feature is overcome in a great measure. In the River Philip section there is no trouble in producing fine fruits. The Experimental Farm under the judicious management of the esteemed Col. Wm. Blair affords many practical examples of worth to the farmer. The farm orchard contains at present over seventy varieties of apples, of those hardy sorts suitable for that locality.

In conclusion I would throw out a few points which can I believe be of use to the fruit growers' throughout the province and if followed prove of estimable value. Proper selection of stock and careful planting, judicious application of all kinds of fertilizers thus avoiding waste, careful and neat packing of fruit for market, thorough pruning cultivation and spraying of orchards.

Your association by estimates carefully prepared have found that about 7500 acres of land in Nova Scotia are in bearing orchards and 5000 acres coming into bearing which adds to the great extension of the fruit industry now growing year by year. The Horticultural school now in its third year is I believe doing excellent work. Students representing nearly every county in the province are in attendance. Since its inception progress has been the key note, apparatus, grounds and improvements have been added yearly and all funds granted the institution have been judiciously expended. The institution appeals to the best interests of the farmers as well as the legislature of the province which has given it a hearty support. The experiment grounds and laboratories although small have been of great benefit. Increased funds are now the greatest disideratum. A number of tested trees and plants will be gratuitously distributed this year through the province.

I believe by observation of other countries that Nova Scotia is in the lead in the fruit industry with its access to foreign markets and easy transportation. More intelligence is being applied yearly and fruit growing is becoming the leading branch of agriculture in the province.

BLACK KNOT ON PLUM TREES.

DISCUSSION.

G. C. Miller said that he advocated the use of a good sharp knife—the early use of a good knife for the black knot. He said they went over their orchard three or four times every season and carefully removed all the black knot they could discover, and as an application used spirits of turpentine, and the black knot never returned again in the same spot. The subject of black knot was one of great moment to fruit growers, and he also alluded to the fact that an orchardist might be careful in looking after his own orchard, and his next neighbor might be negligent, and he advocated some stringent measures to be taken to remedy this existing state of affairs.

T. H. PARKER.—How far may the spores of the black knot be carried.

PROF. CRAIG.—The summer spores are very light, and I do not know how far they could be carried—they are exceedingly light and can be carried by winds for a long distance—but I think in ordinary practice they are not carried very great distances. You will always notice the outside rows of orchards affected worse. Mr. Shaw has pointed out to you the benefits of good cultivation. I do not think we should pin our faith to cultivation on the one hand but should combine the two. In the nature of the disease we have two sets of spores. There is a winter set of spores which are formed after the leaf falls and are stored up in little bags which are ready to escape in the warm days in March.

C. A. PATRIQUIN.—If we wish to grow plums we will have to use force pump with one hand and cultivate with the other. We must give them a thorough cultivation. I have here a copy of the Ontario law with reference to the black knot, which I will read, and will move that a committee be appointed to secure legislation in this Province. Motion carried and committee appointed.

BUSINESS SESSION.

Friday morning's session was devoted to the business of the Association.

Secretary Parker spoke as follows:—Mr. President, Gentlemen. It has been customary at the annual meetings of this association in the past for the secretary to submit a report. I do not know that I can add anything of interest to what the President has read in his annual address. The work of the association is so arranged that the President's report and the Fruit committee's report embrace about everything which is of interest, and contains really the work of the association for the past year. With a live President and a live fruit committee to report on the doings of the fruit growers throughout the province it would be useless for your secretary to attempt anything at this stage of the meeting. I need not tell you that anything I could say would be a repetition of what you have heard here during the last three days.

There is only one question I would like to speak of which I noticed the President did not observe in his report, and that is with reference to the Farmers' Association of Nova Scotia. The attendance at Antigonish last July was large. By the Act of the Legislature passed last winter a representative attendance is provided for, and the travel of each delegate or representative member attending the annual meeting is paid out of the funds of the society he represents, one half of which amount so spent is reimbursed to the society by the Farmers' Association—by this means the Farmers' Association will always be able to secure a representative attendance at their conventions. Our association has never been to such an extent a representative organization. Although this is a provincial organization yet it is largely composed of fruit growers of the Annapolis valley. We have endeavoured to branch out throughout the province and have endeavoured to enthuse the people engaged in fruit growing in all sections of the country and induce them to join our association—and through the labors of Professor Faville who is looking to your interests, and who has lectured throughout the province, we have reason to believe that we are accomplishing a great deal towards the fruit production of this province.

This Farmers' organization, although some of us may doubtless have looked upon it at first with a jealous eye perhaps because it may have been a protege of the Local Government, and it may be

because the Government gave them four times as much grant as we have to organize the concern with, is going to do much good for the agriculturists of this country. Your president and myself attended the first convention and they did me the honor of making me a vice president of that organization. I urged your president to allow himself to be placed in that position instead of myself, but he told me that the labours he had already upon his shoulders were all he could stand and so he insisted on retiring in my favour and nominated me for the vice-presidency. Although the Farmers' Association is a new organization, and will be maintained as a separate body, yet the executive of your association thought it right that we should be represented on their board and I was the representative selected to go on. If any of us did look upon that organization with a jealous eye, I think any cause of jealousy must be removed—it will do a good work—it will do a similar work in the agricultural lines as we are doing in horticulture, and for that reason I think we can work in conjunction and in harmony with that body. The fact of the new organization meeting at Kentville this week has been to this meeting a matter of great assistance. We have had a large number present, in fact the full executive board of that association, came to our meeting—they came on Wednesday evening and intended to stay until Thursday morning. On Thursday morning they decided to stay until Thursday afternoon—and when Thursday afternoon came they liked our meetings so much that they thought they would stay until Friday morning, and so they will be with us till our meetings close. I have no fear that these two organizations will not work in perfect harmony and accomplish a good deal of work for this province.

Regarding our own work, I am of the opinion that our work demands extension and we cannot extend without money. Our work demands not only a horticultural school going on here but it demands a practical scientist—a more advanced work can be done. I would advocate a man travelling in the fruit interests throughout the length and breadth of the province—spending a short time in each fruit section giving practical instructions and teaching the farmers how to grow fruit. It was stated here yesterday that "If the Mountain would not come to Mahomet, Mahomet must go to the

Mountain"—the mountain will not come to us from the extreme end of the province, and the best way is to send Mahomet and build up the fruit interests on their own ground. We are fully convinced that the fruit interests of this Province are capable of indefinite expansion.

THE THIRD ANNUAL REPORT OF THE SCHOOL OF HORTICULTURE.

W. C. ARCHIBALD, CHAIRMAN EX. COM.

1. The Council Board respectfully recommend the association to ask the Provincial Government of Nova Scotia to amend the Act relating to the establishment of the school and condition the grant of $50 per capita to an average attendance of six months, and increase the maximum basis to sixty students instead of forty as now authorized.

2. The necessity for these recommendations is due to the greater number of regular students, experiment and greenhouse expenses and the employment of an assistant teacher this year.

3. 33 students completed the 1st year's work. The 2nd year there were 55 in attendance and 43 attended for the full term. At present there are 61 enrolled, representing 12 counties of the Province.

4. The Council adopted a special course for farmers and their sons, adapted to practical orcharding, opening January 8th of each year. It is earnestly hoped a larger number of young farmers will attend these sessions.

5. We are pleased to report additions to our apparatus and requirements of greenhouse, microscopes, books for library, fruit periodicals, nursery grounds, to a total value of over $1200.00 for the year.

6. The Council recommend the passing of a resolution by this Association inviting the Provinces of New Brunswick and Prince Edward Island to the rights and privileges of the school as enjoyed by the people of this Province on the same terms as granted by our Legislature.

7. The Council see the need of securing for themselves a

Horticultural Hall at an early day and ask the Association to consider ways and means to assure the same.

8. It is further recommended that the Province be divided into districts for the formation and organization of branch societies and for the location of sub-stations for testing fruits.

9. A series of twenty lectures on Horticulture were delivered throughout the Province, in addition to class room work of the term, by Prof. Faville, the director of the school. Words of appreciation reach us from many counties and are encouraging to overtake pressing and important work.

W. C. ARCHIBALD,
Chairman Council Board of the School.

The following resolution was passed and ordered to be forwarded to the Governors of New Brunswick and Prince Edward Island.

Whereas the Nova Scotia school of Horticulture now in the third year of its work is in receipt of a number of applications from persons in your province desirous of attending our School.

Resolved that, the N. S. F. G. A. now in its 32nd. annual session having given the subject careful consideration do hereby invite and extend to your government and the people of your province the advantages and privileges we enjoy on the same terms and conditions granted by act of the legislature of Nova Scotia.

This act requires the payment of $50 per capita as a tuition fee for a school term of six months. by the government of the province, and your province is hereby invited to join with ours on the same terms.

The report of Treasurer was read and adopted and officers were elected for the ensuing year, as appears in the opening pages of this report.

IN MEMORIAM, GEO. LAWSON, PH. D.

G. THOMPSON, WOLFVILLE.

The following tribute to the memory of Dr. George Lawson, late Secretary for Agriculture, and a life member of this association was read by G. Thompson of Wolfville, and ordered to be published in the annual report.

Mr. President, Ladies and Gentlemen,—In the autumn of las year, there passed from this life, one whose name has been on our roll of life members for almost twenty years. He was widely known on both sides of the Atlantic for high literary and scientific attainments—he was respected and beloved by the numerous students, who as a college Professor, he led along the paths of scientific research. Naturally fond of agricultural pursuits, he spent much of his leisure hours in experimental work at his well known farm Lucy-field.

With practical knowledge thus obtained, combined with his scientific culture, he was peculiarly well fitted for the position of Secretary for Agriculture for the province. This office he filled for many years, to the perfect satisfaction of both the government and people of Nova Scotia. That he took a lively interest in this association is evinced by his attendance, and addresses delivered at our public meetings. He neglected no opportunity to promote our agricultural and fruit growing industries. It was at his particular request that our government undertook to forward samples of our apples to the great fruit exhibitions at Edinburgh, and Glasgow. The officers of this association, were chosen to prepare a collection or that purpose. This collection our Secretary reported to us, at the time "received the highest award and encomium." This single instance out of many which might be mentioned, shows the direction of his thoughts and his forwardness to bring before the British people the agricultural and fruit producing capabilities of Nova Scotia. Only those who were associated with him in the management of the Provincial and other exhibitions of his day can fully appreciate the value of his counsel, or the extent of his labours.

Nova Scotia has been greatly benefitted by the devoted and successful life work of our lamented friend Dr. George Lawson. His name will for a long time, be a household word among our farmers and fruit growers. His numerous personal friends while deeply regretting his comparatively early death will ever remember him as a genial, courteous gentleman, abounding in valuable information which he was always ready and willing to impart.

I quite agree with you Mr. President in thinking that it is meet we should pay some tribute of respect to the memory of our honor-

ed dead, and that our minutes should contain a record of the esteem in which they were held by their contemporaries—so that in the days to come, when our whole land shall have become one vast orchard and every fruit grower in it a member of this association—when this association tree shall have grown to be an overshadowing power for good—then its members may know something of those men who toiled at its planting and early cultivation.

SPRING MEETING.

The spring meeting of the N. S. F. G. Association was held in Middleton on Wednesday, March 25th. Among those present from a distance were: President Bigelow and Mrs. Bigelow, Secretary Parker, R. W. Starr, Asst.—Secretary; Rev. E. Crowell, Dr. DeWitt, T. H. Parker, Mr. and Mrs. A. H. Johnson. Many of the leading farmers from the surrounding country were present. About two hundred persons were present at the afternoon session.

The President announced the first question for discussion to be the best package for shipment. He said we were put to a disadvantage owing to the smallness and inferiority of the barrel used. The President read a letter from W. H. Chase of Wolfville, urging the superiority of hard wood barrels, of which he had used 4,000 this year in shipping apples and potatoes and would use 20,000 next year. The barrel is 30 inches stave, 17 inches head, and 19¼ to 19½ inches inside of bilge.

Mr. Bullock then explained the prospectus of the company organized to purchase the Lequille property near Annapolis, and at a cost of $10,000 to erect works for the manufacture of hard wood barrels. The wood was close at hand. These barrels could be made at about the same price as soft wood barrels cost now. A long discussion followed in which R. W. Starr, Dr. DeWitt, A. Whitman and L. O. Neily favored the hard wood barrel and T. H. Parker and the majority of the meeting thought barrels of the size prescribed by law made from our own spruce all that is required. A great difference of opinion existed as to whether hard or soft wood staves and round or flat hoop was best. Prof. Faville said

that three of the largest London buyers of our fruit whom he asked about the matter preferred the flat hoop.

The question of "the five best varieties of apples for commercial purposes grown in Annapolis county" was first spoken to by F. M. Chipman. He named the Nonpareil for its keeping qualities and special suitability to this district; the Ben Davis, as a fast grower, good looking fruit, early and annual bearing and long keeping properties; the Northern Spy, as fine flavor, thrifty growth and tough wood; the Baldwin, for its general good qualities and the Gravenstein, as a good grower, good bearer and good seller.

COL. SPURR put Gravensteins first, then Blenheim Pippin, Ribston, Ben Davis and Baldwin.

PRESIDENT BIGELOW said he saw a carload of Northern Spys from Falmouth, N. S., sell for $12 per bbl. in Chicago.

WM. RAND believed that when we get cold storage the apple with the best flavor would be the leading one, rather than that with the longest keeping qualities. He predicted that the Bishop Pippin would yet take its place in the English market.

W. BROWN said his experience was that there was a great difference in different localities, and that each man was only qualified to speak for his own section.

PRESIDENT BIGELOW stated that the long talked of fast steamship service was now to be a fact, and he would request the Association to adopt the following resolution:

To the promotors of the Fast Line Steamship Co. between Canada and Great Britain

GENTLEMEN,—Whereas you are establishing said fast line we wish to bring to your notice the fact that the export of apples from Halifax to Great Britain is now over 300,000 barrels each winter season, and will be over 1,000,000 barrels in the near future; and if your line affords more speedy transit, better ventilation, and cheaper freight rates than those we now have, you will secure a large share of this profitable freight, which you may safely estimate at from $50,000 to $100,000 each winter season, and this class of freight being light weight, quickly handled and always ready, is most desirable for fast lines.

Resolved that this Association strongly recommend the establishment of said fast lines, as it will afford us better facilities for

transportation of fruit and secure us a regular, speedy, weekly line to Great Britain in addition to the present service.

MR. J. CLARKE of the Horticultural School then read a paper on "Kitchen Gardens."

At the evening session the attendance was not quite so large as in the morning. It opened with a paper on "Cranberry Culture" by J. S. Bishop of Aylesford. This paper was very valuable and appears elsewhere in this book.

HENRY SHAW of Waterville was then called to the floor to answer questions. They were thrown at him from all directions, but he had a ready and satisfactory answer for each. He considered the paper just read the most valuable to Nova Scotia growers of any he had heard. He had received 60 letters of enquiry within three months. He would emphasize Mr. Bishop's advice, do not import vines from the United States, as ours are just as good and you will import pests. To get information and vines go to Bishop at Aylesford or Kirkpatrick at Auburn or some other successful local grower. There are 10,000 acres of land wholly worthless for any other purpose awaiting industry to convert them into profitable cranberry bog. He preferred to flood the bog to kill insects, and sanding he believed almost essential. The sand attracted and held the heat and thus prevented danger from frost. Put on sand from half an inch to two inches deep. Best results from sanding every year.

MR. BISHOP was next called upon to answer questions. He would remove turf but as little mud as possible. A neighbor has a bog in white sand. He sands with light layers every year, and never suffers from frost.

When N. R. French of Cape Cod, the best authority on cranberry culture in America, was at Aylesford he said our varieties were as good as they had. Our berries in the Boston market bring the same prices as the Cape Cod article, and in the Upper Provinces they are just as welcome as those from the United States. Have sent variety imported from Cape Cod in same shipment with the McNeil and Vanbuskirk varieties but the latter brought much higher prices. Do not go to lakes for vines as you cannot tell whether you are getting a good or worthless variety.

MRS. A. H. JOHNSON said she wondered if there were any lady horticulturists in Annapolis county. There were a few in Kings and the number is increasing. We are told that women cannot understand many things that men can, but fruit growing is not beyond our intellect. Orcharding is not as hard work as school teaching. Her health has improved during the ten years she had been engaged in this business. She did not understand why all fruit growers did not join the Association. In other professions those who do not join their organizations are out in the cold. She had been a member for 15 years. She wondered that more fruit growers did not attend the Horticultural school. She attended the lectures. If we learn how to plant trees, drain the land and care for trees and fruit there will be no dishonest packing for there will be no poor fruit.

PROF. FAVILLE addressed the meeting on "Our Enemies and Our Friends." By the aid of drawings and a box of specimen insect pests he explained the chief enemies of the fruit growers and the remedy for each. He then answered questions from the audience.

The Prof. then gave some observations on what he saw in the London market last autumn. Apples are first landed from the steamers on the docks which extend for eleven miles. There they are taken on barges and trucks to the markets. Three methods of selling: Apples put in lots for inspection and private sale as followed by Nothard & Lowe; in Covent Carden market, the Jewish quarter, samples are set out before the sale and the auction proceeds so rapidly that a stranger cannot follow the sales. Watched three barrels opened; first had paper on the top and apples looked well; second looked dirty and the lot brought 2 shillings less, and the third was poorly packed and brought 3 shillings less than first. They do not care for excelsior. In the plan followed by Houghton & Co. of Surrey market and some others, samples barrels of each lot are examined by the buyers the day before the sale, and by the aid of catalogues the purchases are made in the auction room.

PROF. FAVILLE thought the Nova Scotia fruit growers or the N. S. F. G. A. should have an agent or agency in London and

market their own fruit as is done in France by the French fruit growers. He inspected the cold storage steamers and ware houses. This is what we must have here. Germany will afford us a market for cranberries as they bring $12 to $15 per barrel there.

Attorney-General Longley was then called upon to speak on the exhibition question. He first expressed his pleasure on hearing the papers and discussions so direct to the point. The good attendance was a noticeable contrast to meetings of the Association he had attended in other places. The advance of fruit growing in Nova Scotia dated from the organization of the society and the present prosperous state of the Valley was not a little due to this Association. The belief that other parts of the Province where the wild apple trees have not shown the same vitality that they have here, will prove equally good fruit producing sections will prove a delusion. Regarding the exhibition question. The plan of a provincial exhibition once in three years and county exhibition the other years, was changed to a provincial exhibition one year, district (east and west) exhibitions the second and county exhibitions the third year. But it was believed that to be a success the provincial exhibition must be held annually in the same place and in the most central and attractive place. The Farmers' Parliament, after considering the question, asked the government to provide for an annual provincial exhibition at Halifax. As the city offered to contribute one half of all expenses incurred the government complied. The policy is now to have an annual provincial exhibition at Halifax and county exhibitions once in three years. A provincial exhibition must not be just an agricultural show but rather an industrial fair in which all our varied resources have a part.

President Bigelow expressed his satisfaction at the large attendance and hearty response of the farmers of this part to the invitation of the Association for a discussion of fruit topics, and the meeting then adjourned.

FOURTH ANNUAL ANNOUNCEMENT OF THE NOVA SCOTIA SCHOOL OF HORTICULTURE.

E. E. FAVILLE, DIRECTOR.

The Nova Scotia School of Horticulture, established by the Nova Scotia Fruit Growers Association in 1893 by virtue of an Act passed by the Provincial Legislature, has just closed its third year of successful work. In making the fourth announcement it is pleasant to note the increased interest, attendance and support given by the fruit growers and agriculturists of the province, thus making the institution stronger year by year. Thus far the various counties of this province have been represented as well as the other maritime provinces. The extended growth of the school is indicative of health. The government of New Brunswick has granted a bonus to students in attendance from that province, and Prince Edward Island is expected to render similiar assistance. The scope of the work pursued in the course of study is in every way most practical. The study of English, Mathematics, etc., may be pursued by students, thus the better fitting them for the thorough understanding and expression of the science of Horticulture. This is often necessary and is of great assistance. The equipment of the school consists of a comprehensive library, containing leading horticultural and agricultural literature, a full list of magazines and periodicals with bulletins from the various experiment stations may be found in the reading room, to which the student has constant access. The lecture rooms are fitted with charts, herbarium, etc., for illustration of lectures in all branches, including landscape gardening. The greenhouse is so constructed and arranged as to carry on pruning, grafting, budding, seeding, planting, fertilizing of blossoms, etc.

During the winter months fruit trees are in blossom and in fruit continually, enabling practical experiments to be carried out. Spraying for insects and fungous growths is taken up by the students and actual work done. The exotic plants make the study of propagation and plant feeding interesting. Commercial fertilizers are examined and soils studied. Collections of insects and fungi are made and studied in the laboratory which is well equipped to show

the development of these pests and the study of their life history by means of microscopes. The nursery in connection with the grounds gives opportunity for practical work in nursery stock treatment. By aid of root cellars all kinds of nursery practice are carried on. Field work in early fall and winter is engaged in by all the students including cultivation, draining, planting pruning and care of orchards. The institution is continually adding to its equipment, acknowledging the receipts of numerous donations from different parts of the province. The Acadia Manual Training School affords all students instruction in carpentry, blacksmithing, etc. so necessary in all farm work.

The school is situated in a university town thus affording a stimulus to students to study and avail themselves of many opportunities that few institutions of its kind possess.

The school is the only one of its kind in Canada. The school year is arranged for the convenience of the farmers and farmers' sons, extending from Nov. 1st, to May 1st,. The complete course is two years with diploma. Special courses may be taken. It is expected that students will possess a knowledge of the branches taught in the common schools.

The following chief points present themselves.

1. *Free tuition to all students.*
2. Thorough equipment for practical work.
3. Library and Reading Room containing the best literature of the present time.
4. The course emphasizes Theory with Practice.
5. Board at cost.

Circulars and all necessary information will be sent upon application. All correspondence will receive prompt attention if addressed to the Director Horticultural School, Wolfville, N. S.

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man, R. S. Eaton, J. W. Bigelow, R. W. Starr, S. C. Parker, E. E. Faville, Secretary.

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O. D. Harris, Wolfville; E. E. McNutt, Truro; Otto Wile, Bridgewater; D. W. Smith, Truro.

COMMENT.

A GREAT MEETING.

(Co-operative Farmer).

The annual convention of the Nova Scotia Fruit Growers' Association was largely attended, over 800 people being present. Admirably conducted and ably entertained, it was the sort of meeting that both delights and instructs the visitor and gives him some idea of the extent of the fruit growing interests which it was called to promote.

The effect of such meetings can only be for good; we, as farmers and horticulturists, need the stimulating effects of more of such gatherings. Beside the educational benefits there are others, call them sentimental if you will, which go a long way to stimulate the growth of an industry and promote the prosperity of the country; and when an industry like fruit growing obtains such a standing that the Legislature of a province adjourns for a day, and, headed by the Lt. Governor, sends a contingent of its members to attend their meetings, it shows the appreciation in which the work of the fruit grower is held by the Government of the province.

The business-like way in which the work of the Association is conducted, the success which is attending its efforts, particularly in regard to the School of Horticulture, will have the effect of increasing its membership and extending its field of influence. We think that every county in Nova Scotia should have a local Fruit Growers' Association, for the fruit growing capabilities of the province are not confined by any means to the Annapolis Valley. These local societies should send delegates to the larger Association and so provide for the representation of all portions of the province.

Fruit growing in the Maritime Provinces is yet in its infancy, the most ardent enthusiast cannot place our boundary of produc-

tion. What we most need is knowledge of how to grow fruit, what kinds to grow and how to prepare and place it on the world's markets. We, as farmers, should organize and study all along the line with the object of making our country what it seems fitted by nature to be—one of the great fruit producing countries of the world.

The past record of the Nova Scotia Fruit Growers' Association has been one of earnest endeavor to develop the industry in the province and to place the fruit before the world, and a glance at the medals and diplomas gained at London, at Paris, at Chicago and other great exhibitions, shows that the Association has not been idle and has perhaps done as much to attract immigration and capital to Nova Scotia as any other one agency. Long may it continue on its career of usefulness, is the wish of the CO-OPERATIVE FARMER.

YOU WANT IT

Harris M. Foster, Esq., of Hampton, Annapolis Co., writes that in the year 1875 his wife was sick with liver complaint and general debility, and three doctors pronounced her incurable, and after suffering for five or six years I heard of your Life of Man Bitters, and went to Bridgetown to get it. I saw one of the doctors and told him she wanted to try Gates' medicine, and he said by all means, it will do no harm. I got the Bitters and Syrup, and in a comparatively short time she was well and able to attend to her household affairs. Since that time I have kept Gates' medicine in my house nearly all the time, but have tried some other medicine highly advertised but always go back to the old Gates' Life of Man Bitters. I do not believe there is any better medicine in the market to-day, and am willing to answer any one that will write to me about it

Address. HARRIS M. FOSTER, J. P.,
Hampton, Annapolis Co., N. S.

RHEUMATISM CURED.

Port Greville, Sept. 5th, 1895.

C. Gates, Sons & Co., Gents: Last summer I had a bad attack of rheumatism in the hip, caused by cold and exposure. I used a bottle of your Syrup and one of your Acadian Liniment, and it cured me, so that I have not had a return of it since, though often exposed at sea. At another time I used your Vegetable Plaster for a bad kink in the back, with the best success. Yours truly,

CAPT. ISAIAH MORRIS.

Was sick over 2 years. Friends thought I could not live. Gained 30 pounds in flesh.

Canada Creek, Dec. 14th, 1892.

Messrs C. Gates & Sons, Gentlemen: This is to certify that I was sick for over two years and was unable to work, having a fearful cough and no appetite, and friends thought I could not live long. In April last I took about six bottles of your Life of Man Bitters and Invigorating Syrup. My appetite soon returned, system worked well, and I am now over thirty pounds heavier than when I first commenced taking the medicine. I am also able to do my work, and feel altogether like a new man. I intend taking some more of it now, and believe there is none as good in the market to-day.

CHARLES E. EATON, J. P.

Gates' Nerve Ointment. The Best Healing Medicine.

Canning Feb. 8th, 1894.

Messrs Gates, Son & Co., Gentlemen: Last July I was at work caulking on a ship at Kingsport, and fell through the staging and hurt the shin bone of my leg, which turned to a running sore. I tried a good many things prescribed by the medical profession, but did not succeed in getting anything to help it until I used your NERVE OINTMENT, which affected a cure in a very short time. I have used your other medicine with good effect.

Yours truly, JOHN HENDERSON.