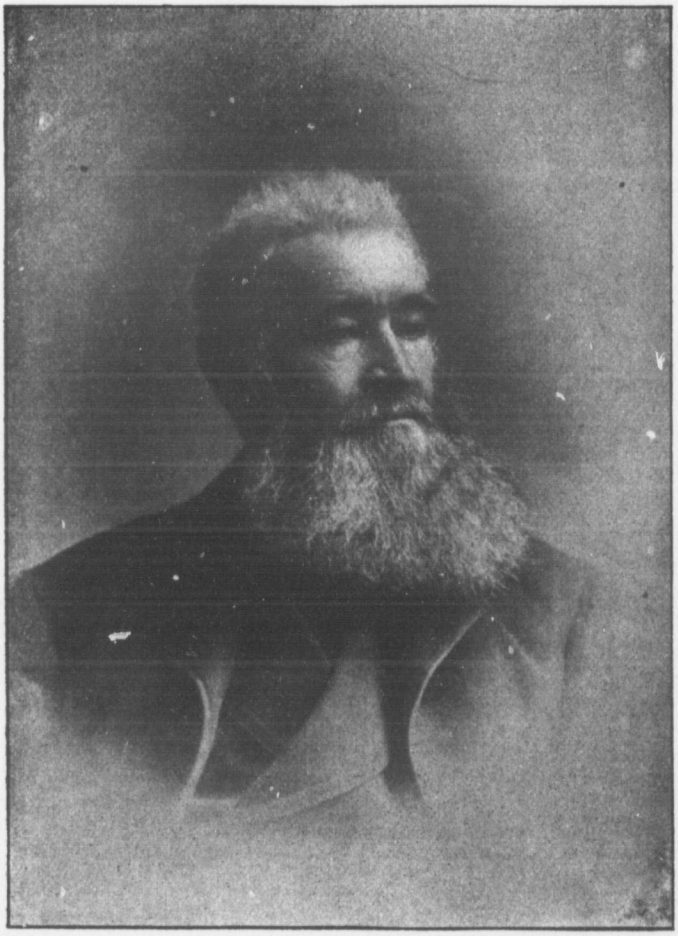

WM. H. MILLS.

President 1868-1869.

TWENTY-FIRST ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION

OF ONTARIO.

1889.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
PRINTED BY WARWICK & SONS, 68 AND 70 FRONT STREET WEST,
1890.

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FRUIT

To the Hon. C

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TWENTY-FIRST ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION OF ONTARIO,

1889.

To the Hon. Charles Drury, Minister of Agriculture:

SIR,—I have the honor of submitting to you the Twenty-first Annual Report of the Fruit Growers' Association of Ontario, in which you will find a carefully prepared report of the important papers and discussions on fruit culture, floriculture and forestry, which were taken up at our Winter Meeting in the City of Hamilton, and our Summer Meeting in the Town of Seaforth. It also contains an account of the Annual Meeting at Windsor, the president's annual address, and the officers for the year 1890.

You will be pleased to find that the plans proposed for the increased usefulness of our Association are being carried out. Arrangements have been made to send out eleven of our directors to speak at Farmers' Institutes on the subjects connected with fruit culture and forestry, and it is hoped that in this way this important industry will receive a real encouragement.

The *Canadian Horticulturist* has been enlarged and improved, and during the coming fruit season it is proposed to send out a supplement in the shape of a weekly bulletin, giving reports of both home and foreign markets.

Hoping that our work may receive your hearty approval,

I am, Sir,

Your obedient servant,

L. WOOLVERTON,
Secretary.

Grimsby, Ont., Dec., 1889.

OFFICERS FOR 1890.

PRESIDENT :

A. M. Smith ..... St. Catharines.

VICE-PRESIDENT :

J. A. Morton ..... Wingham

SECRETARY-TREASURER AND EDITOR :

Linus Woolverton, M.A. ..... Grimsby.

DIRECTORS :

Agricultural Division No.	1	John Croil, Aultsville, Ont.
Agricultural Division No.	2	P. E. Bucke, Ottawa, Ont.
Agricultural Division No.	3	D. Nichol, Cataraqui, Ont.
Agricultural Division No.	4	P. C. Dempsey, Trenton.
Agricultural Division No.	5	Thos. Beall, Lindsay, Ont.
Agricultural Division No.	6	W. E. Wellington, Toronto, Ont.
Agricultural Division No.	7	M. Pettit, Winona, Ont.
Agricultural Division No.	8	A. H. Pettit, Grimsby.
Agricultural Division No.	9	J. K. McMichael, Waterford, Ont.
Agricultural Division No.	10	A. McD. Allan, Goderich, Ont.
Agricultural Division No.	11	T. H. Race, Mitchell, Ont.
Agricultural Division No.	12	N. J. Clinton, Windsor, Ont.
Agricultural Division No.	13	G. C. Caston, Craighurst, Ont.

AUDITORS :

James Goldie ..... Guelph.
J. M. Denton ..... London.

THE ANNUAL MEETING.

The annual meeting of the Fruit Growers' Association of Ontario was held in the Music Hall, Windsor, on Tuesday, the 10th December, 1889, at 8 o'clock p.m.

The President, A. McD. Allan, occupied the chair.

The minutes of the last annual meeting was read by the Secretary, and approved.

The Treasurer's report, duly audited, was read by the Secretary-Treasurer and adopted.

On motion of Mr. J. M. Denton, London, seconded by Mr. Thomas Beall, Lindsay, it was resolved that since it is desirable that the Treasurer's report end on December 1st instead of September 1st, therefore that two auditors be appointed to audit the accounts of the Secretary-Treasurer from September 1st, 1889, to December 1st, 1889.

The President then appointed Messrs. Wm. Saunders, of Ottawa, and James Goldie, of Guelph, as auditors for this purpose.

The President read his annual address, which received the closest attention.

Mr. A. McNeill, Windsor, said that several points in the address should be noticed, for instance, the study of horticulture in our public schools. He thought the Association should express itself in favor of this study being introduced into the schools.

The Secretary stated that a letter had been received from the Minister of Education and read at the Hamilton meeting, to the effect that a book was in preparation for use in the schools which would take up the subjects of both agriculture and horticulture.

Mr. N. J. Clinton, Windsor, said that he once attended a school in which a book on agriculture was introduced, but it took the shape of agricultural chemistry. Such a book is too deep for public schools, and would be more suitable in a high school.

Mr. T. H. Race, of Mitchell, was of the opinion that the best place in which to teach the children horticulture, was in the garden at home. At one time he was in the habit of giving away the surplus fruit of his garden, but of late he had given his children the privilege of gathering and marketing both fruits and flowers, and sharing the profits. By such means, he thought, the subject could be taught much more effectively than by introducing a text book into our schools, whose list of subjects is already overcrowded.

On motion, a committee consisting of A. M. Smith, J. A. Morton and Prof. Saunders was appointed by the chairman to prepare an obituary notice of the Rev. R. Burnet.

The following resolution was presented by them and was adopted unanimously by the Association.:

Resolved, that we the officers and members of the Fruit Growers' Association of Ontario have learned with deep regret of the death of the Rev. R. Burnet, one of the former Presidents of this Association, who during his term of office manifested such zeal in advancing the welfare of our organisation. By his enthusiastic advocacy of the fruit interests of this province, he did much to stimulate fruit culture, while his uniform urbanity and genial bearing in the chair, won him the esteem of all.

We tender our sincere sympathies to his widow and family in their bereavement.

Resolved, that the Secretary be requested to transmit a copy of the above resolutions to the widow of our late lamented President.

J. A. MORTON,
A. M. SMITH,
WM. SAUNDERS.

The nominating committee presented their report, recommending the following elections, viz.:—*President*, A. M. Smith; *Vice-President*, J. A. Morton; *Directors*, John Croil, P. E. Bucke, D. Nichol, P. C. Dempsey, Thos. Beall, W. E. Wellington, M. Pettit, A. H. Pettit, J. K. McMichael, A. McD. Allan, T. H. Race, N. J. Clinton, G. C. Caston; *Auditors*, James Goldie, J. M. Denton. After the names had been voted upon *seriatim* the report was adopted.

At a meeting of the Directors, held subsequent to the election, L. Woolverton, of Grimsby, was re-appointed secretary-treasurer and editor of the *Canadian Horticulturist*.

A fruit committee was appointed by the chair, consisting of A. H. Pettit, A. McD. Allan, and W. W. Hillborn.

TREASURER'S REPORT FOR THE YEAR 1888-9.

Receipts.	$ c.	Expenditure.	$ c.
Balance on hand last audit	665 04	Plant distribution	315 08
Members' fees	2,004 75	Directors' meetings, and Farmers' Institutes	331 37
Advertisements in Journal	200 44	Express and duty	156 19
Back Nos. and bound vols.	18 29	Chromo lithographs	267 95
Government grant	1,800 00	Printing and stationery	103 30
Government allowances for engraving	50 00	Audit 1887-8	20 00
Sale of stock in Beadle Nursery Co.	75 00	Postage and telegrams	106 36
		R. R. certificates	2 00
		Electrotypes	117 60
		Commissions	88 23
		Caretaker at annual meeting	3 70
		The *Canadian Horticulturist*	1,445 75
		Stenographer	52 25
		Salary secretary-treasurer, editor and clerk	800 00
		Books and exchanges	19 75
		Advertisements of meetings	61 79
		Balance on hand	922 20
	$4,813 52		$4,813 52

To the President and Directors of the Fruit Growers' Association:

Gentlemen—We, the undersigned auditors, have gone carefully over the Treasurer's account for the year 1888-9, have compared the vouchers with the items of expenditure,

and find them correct, showing receipts amounting to $4,813.52, and an expenpiture of $3,891.32, showing a balance in the hands of the Treasurer of $922.20. We desire to express our appreciation of the systematic manner in which the Treasurer had prepared his statement for our inspection, and the uniform courtesy with which he gave every information asked for by your auditors.

JAS. GOLDIE,
NICHOLAS AWREY. } Auditors.

SUPPLEMENTARY REPORT FROM SEPT. 1st TO DEC. 1st, 1889.

RECEIPTS.	$ c.	EXPENDITURE.	$ c.
September 1st, Balance on hand	922 20	Electrotyes	20 25
Members' fees, September, October and November	108 00	Advertising meetings	3 00
Advertisements, September, October and November	73 80	*The Canadian Horticulturist*	403 94
Back Nos. and bound volumes, September, October and November	6 79	Plant distribution	5 70
		Russian exchange	29 00
		Books and exchanges	5 00
		Commissions	12 50
		Audit	20 00
		Express and duty	6 77
		Postage and telegrams	9 28
		Printing and stationery	23 19
		Directors' expenses	10 30
		Salary secretary-treasurer, editor and clerk	225 00
		Stenographer	105 00
		Balance in hand,	231 86
	$1,110 79		1,110 79

To the President and Directors of the Fruit Growers' Association:

We, the undersigned committee appointed to audit the receipts and disbursements of the Secretary-Treasurer from the first September to the 1st December, 1889, beg to present the following report:

We have examined the vouchers, compared them with the items of expenditure, and find them correct, showing receipts amounting to $188.59, and an expenditure of $878.93, showing a balance in the hands of the Treasurer on the 4th day of December, of $231.86.

JAS. GOLDIE,
WM. SAUNDERS. } Auditors.

REPORT ON NEW FRUITS.

The secretary read a report of New Fruits which had been received by him during the past two seasons as follows:

I think it is very important that a careful record be kept by this asssociation of all new fruits that are originated in Ontario, and so soon as any one is found to possess sufficient merit to deserve a place among our older varieties, that some steps be taken to encourage its propagation for the general good. I would be in favor of the appointment

of a fruit committee of three practical men, whose experience combined would cover the different varieties of fruits pretty fully, to whom your secretary could send samples of fruits in their season as they are sent into him, and who should report through him to this Association regarding the same.

During the last two seasons several new fruits have been sent into me, and in order to present some account of them to you I have prepared this paper.

APPLES.—*Reany's Seedling* is an apple that impressed me rather favorably. It was grown by Mr. S. Reany, a few miles from Port Elgin, who exhibited it at some of the local fairs, where it attracted the attention of Mr. J. H. Wismer, of Port Elgin, and he sent me a sample for my opinion. It is a fall apple of good quality for the table, and may be thus described:

Fruit above medium size, almost round. Skin smooth, slightly uneven. Color, rich golden yellow, sprinkled moderately with small grey and light dots. Stalk three-quarters of an inch long, inserted in a funnel-shaped, slightly russetted cavity. Basin abrupt, even. Calyx partially open. Flesh yellow, fine grained, juicy, with sprightly, vinous flavor. Core small. Quality very good to best.

Keane's Seedling is a beautiful dessert apple which was figured in the *Canadian Horticulturist*, Vol. XI, page 284. The original tree grows about four miles north of the town of Orillia, on the farm of Mr. James Keane, and is a chance seedling of about twenty years of age. Mr. T. Williams, of Orillia, who sent the samples to me, says it has borne every year for the last nine years most abundantly.

At first sight this apple has much the general appearance of Gravenstein, but is below average size, and struck me favorably as a commendable autumn dessert apple. It is below medium size, of even form, roundish oblate, with closed calyx in a corrugated basin. The skin is shaded, splashed and striped with bright crimson, which is deepest on the sunny side. The flesh is white, crisp, fine grained, juicy, and of a rich, aromatic flavor.

Morse's Seedling Harvest apple was sent me by Mr. S. P. Morse, of Milton, who says it ripens with the old Early Harvest, averages larger in size, and is perfectly free from leaf blight, or apple scab. The skin is very smooth, with obscure whitish dots; stem, short, stout, and set in an irregular cavity; calyx closed, set in a round regular basin; flesh, white, tender, juicy, sub-acid. It is an apple that seems to possess especial merit as an early cooking apple.

Two seedling apples were reported on by Mr. Wm. Saunders, in the *Canadian Horticulturist*, Vol. XI, page 13, and I append his description of them.

Robson's Seedling, grown by Mr. T. C. Robson, Minden, Ont.

Size above medium; form, oblate; color, greenish yellow, streaked and splashed with red; stem, slight and short, with a deep smooth cavity; calyx, open; basin, rather deep and slightly ribbed; flesh, yellowish white, fine-grained and moderately juicy, with a faint aroma and a mild pleasant flavor; core, rather large. A fair dessert apple and a good cooker. Its size and appearance would make it a desirable apple for the north. From its form, color and flavor it is probably a seedling of Duchess of Oldenburg. Season, October and November.

Robertson's Seedling, grown by Mr. F. M. Robertson, Minden, Ont.

Medium size, 2⅞ inch by 2¼ inch; form, oblate conic: color, greenish yellow, more or less splashed and dotted with dull red; stalk, short and slight; cavity, rather shallow; calyx, small, closed and shallow, with the basin strongly ribbed; flesh, nearly white, firm, grained, juicy and crisp; sub-acid, not high-flavored, but a pleasant eating apple and a good cooker; core, medium size. It is the type of Duchess of Oldenburg, but smaller in size and later in season. Ripe in November.

PLUMS.—The *Owen Sound Beauty* was sent to me by Mr. R. Trotter, of Owen Sound, who says he believes it is a seedling which has been propagated by suckers in that neighborhood for the last twenty-five years. The tree, he says, is a rapid healthy grower, with thick broad leaves. If this plum is a good bearer it will be a most desirable one for the commercial orchard, both on account of its excellence as a dessert plum and its lateness of ripening.

The fruit may be described as large, nearly globular. Skin, brownish purple with a thick blue bloom on the sunny side, dotted with numerous fawn-colored specks. Suture distinct, dividing the plum into unequal parts. Flesh, orange, very juicy, rich and excellent; separates freely from the stone. Very good. September.

The same gentleman also sent me three fine plums on the 3rd of September last, and which for convenience I will refer to as Nos. 1, 2 and 3.

No. 1 has been grown about Owen Sound for many years from sprouts without name, and is supposed to be a seedling. It is a very fine dark colored plum, obovate, with a broad shallow suture half round; stalk curved, surrounded with a peculiar ring, very good in quality. It much resembles Bradshaw, from which it may be a seedling. Mr. Trotter proposes to call it "Lady Grey."

No. 2 is a seedling from Duane's Purple, a clingstone, with greenish flesh and rather poor quality, and under medium size. The tree is a good bearer and quite hardy.

No. 3 is a seedling from Smith's Orleans. It is a semi-cling of yellowish flesh and very good quality; in size, above medium; and the tree is a very healthy grower, said to be free from black-knot. The foliage is very dense, the leaves are thick, dark green and leathery. It is a most abundant bearer.

The *Early Green* was sent me by Mr. W. Holton, of Hamilton, and seemed to me to be a most valuable seedling. An outline sketch of this plum appeared in our journal, Vol. xi, page 265, which, however, shows it rather under size. It is a delicious plum of most excellent quality, of medium size, roundish in form, with a delicate skin marbled in two shades of green; the pit is small and free. The stem is delicate and about three-quarters of an inch long. The great point which makes it especially valuable is its time of ripening. The sample came to hand on the 3rd of August, and was then in prime eating condition.

Peaches.—I have little to report to you under this head. Mr. A. M. Smith, of St. Catharines, sent me a seedling of his which on account of its time of ripening is worthy of notice. He calls it *Smith's Extra Late.*. The sample came to hand on the first of October, and on measurement I found it to be about eight inches in circumference, a fine large yellow flesh and yellow-skinned peach of good quality, and a perfect free-stone.

Another seedling was sent me from Chatham by Mr. J. L. Scott, a magnificent peach, equalling, if not surpassing the Early Crawford in quality, and also resembling that popular variety in size and beauty of appearance. The skin is yellow with an exquisitely beautiful red cheek; flesh, yellow, rich, juicy and melting, and free from the stone; well worthy of propagation. Its season of ripening is about the middle of September.

Small Fruits.—The *Pearl Gooseberry* is a seedling of Prof. Saunders, raised by crossing Downing with an English variety known as Ashton's Seedling. It has been now fairly well tested, and is worthy of especial notice because of (1) its good quality, (2) its size, (3) its great productiveness, and (4) its freedom from mildew. I saw a row of some fifty bushels at Port Dalhousie, on Mr. Smith's grounds there, and every one of them was a surprise on account of the number of berries to the inch of wood, and all of them much larger than the Downing.

Crosby's Seedling is a fine red gooseberry, samples of which were sent me in 1888 by Mr. A. Reeve, of Highland Creek. He says it was raised by M. L. Crosby of the township of Markham, about eight years ago. Fruit very large, roundish, slightly oval; skin, smooth, thin, very dark red, with veins of a lighter red, mostly dotted with small grey dots; stem stout, calyx prominent, quality excellent. The only question concerning this berry is whether its present freedom from mildew is constant or not. It has so much the appearance of the genuine English varieties, that one cannot help being a little fearful of this point.

The King Conn, or Autocrat, has been so well brought before you in other ways, that I do not think it necessary to speak of it here. Nor need I speak of the *Northern Light Grape* which is also well introduced to your notice in our Annual Reports.

I have now completed my list, and hope that out of it may come some fruits that will prove worthy of general cultivation. It is, I think, an important feature of our work to improve the varieties of fruits, both in the interest of the grower and of the consumer, and I do not think we should be hindered from giving our honest opinion of a new fruit, because it may help to make rich the originator or the introducer; nor should we hesitate to condemn a poor thing for any personal reasons of friendship to the introducer.

L. WOOLVERTON.

Prof. WM. SAUNDERS (Ottawa).—I am glad the subject has been brought forward by the Secretary. Some of the new fruits that have been brought before us of late have great promise; but some of them may succeed in some parts and not in others. I think it is of very great importance to the fruit growers of our country to know just what is being done in this direction. I may add that I hope fruit growers will use the experimental farms in testing new fruits. I assure you that every precaution will be taken to keep the fruits from becoming public property.

THE PRESIDENT'S ADDRESS.

Once more we have met together to render an account of our stewardship for the year, and in council to call from our various experiences such information as combined wisdom concludes to be important, as well as for the advancement of horticulture and the general benefit of our country. Nay, if we possess the true spirit of our profession, our aim will be to reach out to humanity with a desire to do good to our fellow man by upholding whatever store of knowledge we may have been able to extract from Nature's great storehouse of horticultural treasures. We are inspired into effort when we observe the good results of the labors of those who have gone before us; but still the field of research grows wider. The deeper we dig into the horticultural mine the clearer we see our own imperfections, and yet how keenly interest grows in the glorious study. There was a time when organizations such as ours were looked upon by an ungenerous public as a species of ring, working only for individual benefit; but with the spreading of interests, the dissemination of our discussions, and the unswerving persistence, generosity and honesty in principle of our pioneers in horticulture, to-day we find an appreciative audience. Other organizations with similar interests are working in full sympathy with us. Hand in hand we travel with our elder sister agriculture, and so interesting are the consultations we have had together that individual interest gives place to a feeling of duty to our country and interest in a general welfare.

But it is not enough that the agriculturist and horticulturist should foster an interest in our studies—the field is much wider and must include all kinds and conditions of humanity. But how shall we reach the masses? We must look to the rising generation, and in order to reach them we press for a place in common schools, that practical as well as theoretical horticulture may form a branch in the training of children. Our claim, too, is not based alone upon the money value to be reaped in after years from a knowledge of and interest in this subject; we aim higher and crave a hearing from our educational promoters as well as the public. Upon the grounds of morality and social purity in their widest sense, we appeal to a Christian people that in the early training of children the kindling of an interest in nature's charm and treasures will lead the young mind to deeper investigation, and through this channel be led to a contemplation of our great Creator. In itself the study is elevating, refining and pure; we do not see the rough element of the human family taking to flowers; even in the lower walks of life we find those whose tastes are centered in the garden or forest flowers. Find such a man and we see an enchanted home, a kind and loving husband and father, and one whose sympathies are good and pure, whose children will live to bless him. It cannot be looked

Robert Burnet

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upon, therefore, as unreasonable if we request a higher recognition at the hands of our Government in the best interest of our children, by insisting that the study of agriculture and horticulture be placed in the common school curriculum. By the present system our brightest boys are systematically educated away from interest in rural pursuits, so that now the chief industries of Canada lie languishing for the want of intelligent attention by an educated yeomanry, whereas professions of all kinds are crowded to excess. Everything is done to give prominence to the so-called "learned professions," which in itself is right enough; but why neglect entirely the foundation and backbone of all interests—the arts of agriculture and horticulture? Are they so degraded as to be beneath the ken of educated humanity? Surely it is a feeling long since dead that the tiller of the soil should be recognized as a sort of machine, a clodhopper, a necessary evil, one whose avocation should compel him to hold down the head and remain an outcast from cultivated society. The true aim of education is to fit the pupil for some sphere of usefulness. A grave responsibility rests upon our legislators for so long neglecting, from an educational point of view, this, the greatest economic science in our country, and until this study is placed, as it should be, prominently in our common school system, justice cannot be complete.

The season of 1889 will long be remembered by fruit growers. The unusual and widespread frosts of May, while vine, plant, bush and tree were in bloom, did its work of destruction so thoroughly that in most sections nothing was left to mature into fruit. In some favored sections the blossom was either not far enough advanced to kill, or the fruit formed and so beyond injury from such a degree of frost. Generally speaking the raspberry crop was fairly abundant, but other small fruits were in most sections less than half a crop. The grape escaped better along the Niagara peninsula, especially that portion between the lake and mountain range, and in the water fronts of Essex, than in any other section. Pears and plums yielded enough to satisfy home demand generally in the western part of the province; but the apple crop was confined chiefly to the counties of Kent, Essex, Elgin and Lambton. The loss of the apple crop to this province is a large one, but still we find some grains of comfort that we hope may encourage growers to persevere and put forth greater efforts in the future. While we feel the financial loss here, the consumers in foreign markets feel more keenly than we can the loss of this luxury which they have learned to appreciate more and more every year. Prices have advanced materially, and we observe that this season there is a much greater difference on British markets between prices of Canadian apples and the apples of other countries; that difference being in favor of ours. What fruit has been shipped is better culled and packed than in past years, and as a result our reputation for a genuine article is better. Then, again, there is a change working throughout British markets in favor of the best flavored fruit rather than highly-colored specimens. The Rhode Island Greening that a few years ago had to be sold at a loss, generally on account of color, is now coming into favor. It realises about the same price as the Baldwin this year, with a tendency, I believe, to take its proper place in public esteem several points ahead of the Baldwin; intrinsic worth is sure to come to the front. Is it not reasonable to expect that the codlin moth has been materially diminished by the absence of the apple crop, and that next year we may hope for much less damage by that orchard pest? This must not deter growers, however, from using means to eradicate the pest entirely. Orchards have had in most instances a much needed rest, and if we can arouse growers *now* to give proper attention to their orchards in the way of cultivation, manuring, trimming and keeping clean, it is reasonable to look forward to a new era in fruit culture. We have an opportunity now, bought dearly it is true, but if we take advantage of it the results will be most encouraging I am sure. To produce clean, large, high-flavored fruit, we must see to it that the soil is kept in good heart, that those substances required to produce such a crop are returned regularly and systematically to the soil. If this is attended to we will succeed; if not, failure stares us in the face.

The carrying companies are still to blame for much of the loss on fruits shipped. We can still charge them with rough handling, lack of proper accommodation, and often much delay in transit. The shipments of last spring bear abundant evidence of this. By

way of a practical illustration I will give one out of many instances coming directly under my own notice. A shipper at London, Ontario, sold two hundred barrels of choice apples to a firm in Covent Garden, London, England. This cargo I carefully inspected both before and after the fruit was packed, and I can testify to the fact that the fruit was choice in sample and varieties, and in splendid condition for shipping. Every possible precaution was taken, and the most positive instructions given to the Grand Trunk railway agent at London, Ontario, as to handling, accommodation and despatch, with a request also that these instructions should be sent forward to the agents of the ship. Mark the result: The goods were nearly a month on the way. I quote the report of the Covent Garden firm, Messrs. Pankhurst & Co.:

"When our man arrived at the ship a barge was alongside taking off the steaming dung quite a yard and a-half high on the deck, and immediately over the apples. Of course he knew what to expect, and sure enough when the apples came from below they were half full of juice. It astonishes us that the shipping company, in their own interest, are not more particular, as these were too full of water to go into the dock shed, but stood on the quay literally swimming in their own juice. We enclose a copy of claim we sent in to the company; also their reply." The claim referred to is made up thus:—

	£	s.	p.
Cost of apples	80	0	0
Freight on them	36	15	0
Dock dues	2	6	8
Making a total of	£119	1	8

The sales were

110 barrels, sold at 1/0	5	10	0
30 " " 2/6	3	15	0
10 " " 3/0	1	10	0
10 " " 3/3	1	12	6
40 " waste ...	..	..	..
Total sales	£12	7	6
Leaving as loss the balance	£106	14	2

To this claim the Allan Brothers & Co. replied that they could not see why the ships should be held responsible, and could only attribute the loss to *natural decay!* It certainly was most natural that the fruit should decay under such circumstances. The Grand Trunk also denied all liability for negligence. Results similar to this are, I regret to know, but too common, especially where fruit goes forward on London boats from Montreal and New York.

I am glad to be able to report quite a different state of matters, so far as I have personal experience and have heard the same from others regarding shipments by the Beaver line of steamers. In three ships of this line special apartments, supplied with atmospheric blast, are used for fruit, and I understand they will not carry fruit at all excepting what they can thus accommodate. As a result I have not been able to trace any complaints against this line for bad handling or damaged fruit. On the contrary, all reports I have received have been most complimentary, and my own experience fully corroborates these reports. If other companies do not give equally good accommodation, shippers must, in their own interests, seek the channel where they are protected from loss. There is no reason why the other lines should not supply special cold chambers for fruits; indeed there is no encouragement to widen the orchard area unless such accommodation is supplied liberally. I am sure horticulturists throughout the Dominion will be pleased to know that a convention of horticulturists, experts from every province, has been called to meet in Ottawa in February, for the purpose of discussing the present situation, and advising possible means for a more perfect development of our interests. The Dominion Government has acted generously in appropriating a sum of money towards the expenses of this gathering, and a full programme of the subjects for discussion is being prepared under the direction of the Minister of Agriculture. I trust a large delegation from this province will be present.

It has been my privilege lately to examine a newly-patented fruit package known as the "Kerr Ventilated Barrel," specimens of which I have requested the owners to have at our meeeting. From a careful examination of this package I feel satisfied it

possesses several points of superiority over the ordinary barrel for the shipping of apples. The inventor has evidently followed the generally expressed desire for ventilation, and in this particular has succeeded beyond dispute. Time was when, although it was considered necessary to have perfect ventilation in the apartment where fruit was stored, either at home or in transit to market, it was looked upon as necessary to have the barrels containing such fruit as close as possible. It appears reasonable that if ventilation is valuable in the storing department, it must be equally valuable in the packages themselves, and experience has borne this out as a fact, providing the fruit is in proper condition for shipping at all. It is quite unnatural to confine the fruit from a circulation of pure air, and it cannot but be injurious to the fruit when air is confined in the barrel with it until it becomes foul. It is well-known that if we store fruit in an ice-house or pit it will keep well for a time, but so soon as it is exposed to the air decay sets rapidly in, whereas if such fruit had been stored in a more natural atmosphere it would keep longer and retain flavor more perfectly. With the Kerr barrel a packer cannot hide poor fruit so easily in the middle of the package as the sample can be seen from top to bottom through the openings between staves. It is also said to be lighter than the ordinary apple barrel which might make a slight saving in freight. From the method of construction it can be made any size to suit trade, and the cost will vary according to size. Being made entirely by machinery, I persume it can be placed on the market for something less than the ordinary barrel. The staves can be cut of such thickness as may be necessary to give sufficient strength to avoid material damage by pressure when piled in tiers in a vessel hold. It also seems to me that the damage caused ordinarily by the shunting of cars and running vessel shoots may be largely overcome with this barrel, as there is more "give" to it than in the ordinary barrel when striking upon the top or bottom edges. I believe a cargo of apples packed in these barrels, shipped in cars and vessel apartments well ventilated, should arrive in Britain in a perfect condition, and certainly the British broker could not truthfully return an account of sales classifying any as *wet*. A purchaser could see the sample fairly well without opening, and would naturally feel greater confidence in purchasing such fruits on sight. As this barrel can be made as easily with or without bilge, I feel anxious to have it tested in all forms, for after all there is nothing so convincing as actual test.

Members of this association will remember seeing some months ago the prospectus of the "Empire Produce Co." enclosed in the *Horticulturist*. The object of this company is to act as brokers and commission agents for the growers of fruit and general farm and dairy products, disposing of the same to the legitimate cash buyers who sell direct to consumers both in the markets of Canada and Britain.

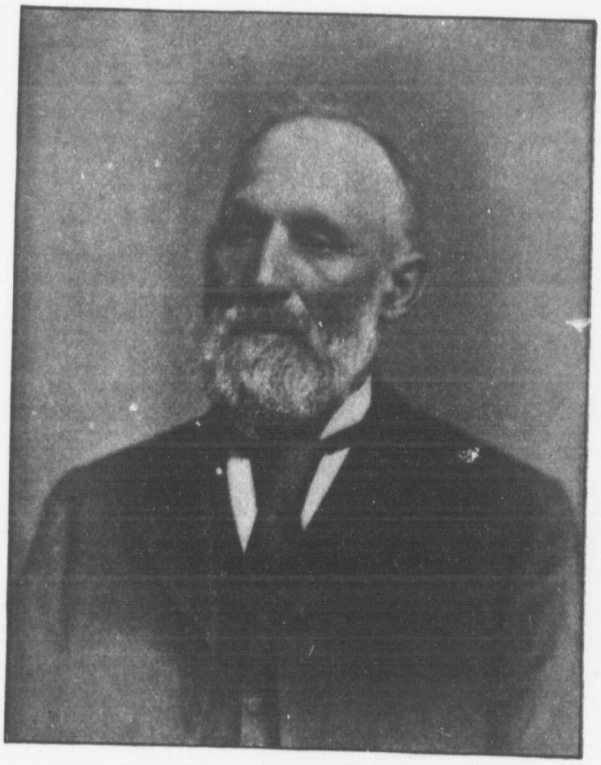
I think we are all agreed that it is unsatisfactory to consign goods to commission men who are also retail dealers or speculators. Self interests under such circumstances must clash with that of the client. We often hear complaints of bad returns, and insinuations that particular consignments of fruit must have been turned into the commission men's own stock instead of being sold in fair and open competition. Working under such a charter as this company has, no such doubts can exist. The company cannot buy a cent's worth on its own account. Its books will be audited and always open to prove the *bona fides* of returns. The precise mode of selling has not yet been decided upon, and I am authorized to ask for advice from this Association on this point, as well as other points that may occur to growers and shippers touching our interests. There is one important reform that this company will endeavor to bring about in time for next season's business, namely, the earlier daily arrival of fruit for sale in local city markets. It appears that the trade, particularly in Toronto, is greatly inconvenienced by uncertain and late arrival. The co-operation of both growers and dealers is invited to secure suitable railway and steamboat accommodation, so that goods may reach their destination at an early honr in the day. I desire members of this Association, as well as others interested, to speak out now plainly, and by advice to assist in placing this most important branch of trade upon a better footing than it has heretofore been. Personally, I have taken a deep interest in this scheme, believing that it is in the interest of producers, and that therefore it will prove to be a strong factor in advancing our industry by the obtain-

ing of prices in accordance with the brands, by assisting to regulate as well as to create brands, and by inspiring more confidence in the growers and shippers here, as well as the dealers and consumers in foreign markets. There is abundant room for such a company to work, also in opening out new markets and introducing into foreign markets fruits that at present are grown only for local markets.

Our Provincial Government has materially strengthened our hands by opening a place for our experts at farmer's institutes, where we are able to reach a class who otherwise paid little if any attention to fruits. If we can succeed in convincing fruit growers, large and small, that it is as necessary to produce the finest samples in order to make money as it is to breed the best animals, or clean thoroughly so as to bring to market the best sample of grain to command the highest prices, then we will have accomplished a great end. Probably few, if any, will deny this, but it seems difficult to get producers schooled up to that point where they will act in everything up to the "golden rule" in its strictest sense. It is an easy matter for a man dishonestly inclined to practice a fraud upon his customer by placing poor fruit in the bottom or middle of the package. It also often seems to be a difficult thing for a man who may have a deservedly good name for honesty in general business matters, to attempt to pack apples for fear the finest samples should rise to the top and inferior fruit settle into the heart of the package. But notwithstanding, every drawback advancement is the order of the day in horticulural circles.

Since our last annual meeting death has removed from our ranks one who often addressed us from the President's chair ; one whose devotion to practical horticulture was remarkable, and whose enthusiasm was inspiring, in language forcible, pure and practical, stern in good principle and Christain worth, and in example becoming his high calling. We mourn our loss in the death of the Rev. Robert Burnet.

ALEX. McD. ALLAN.



P. C. DEMPSEY,

President 1880-1882.

THE WINTER MEETING.

The Winter Meeting of the Ontario Fruit Growers' Association was held in the Court House, Hamilton, on Wednesday and Thursday, the 20th and 21st of February, 1889. The President, Mr. A. McD. Allan, called the meeting to order about ten o'clock a.m.

RUSSIAN FRUIT TREES, WHAT OF THEM?

The following paper was contributed to the Winter Meeting, at Hamilton, by Mr. D. W. Beadle, of St. Catharines:

Some few years ago the Fruit Growers' Association of Ontario became convinced that if our brethren of the "cold north" were ever to enjoy the pleasure of raising their own fruit, they must be supplied with trees much more hardy than those that formed the orchards of Southern Ontario. These had been planted by many who were anxious to have in their more northern homes the fruits that we here enjoy, but their labor ended only in disappointment. Our fruit trees were found to be unable to endure the severe cold of that climate. At the same time our brothers in Quebec, and our cousins in the north-western United States had become convinced of the same truth. The Government of the United States had undertaken to meet this need of their north-western states by importing scions from northern Russia, and this naturally turned attention to that country as a probable source from whence to obtain a race of fruit-bearing trees sufficiently hardy to flourish in our cold north-land. Mr. Chas. Gibb, an enthusiastic cultivator of fruits, residing at Abbotsford, Quebec, learning that Professor J. L. Budd, of the Agricultural College of the state of Iowa, intended visiting northern Russia for the purpose of ascertaining whether the fruit trees of that country were likely to supply the want of American north-land settlers, arranged with the professor to accompany him in his Russian tour. After his return, Mr. Gibb very generously communicated to the officers of this Association the information he had acquired during his visit to Russia; and they, being convinced that many of the Russian fruits would thrive in our cold sections, at once set about importing from north-eastern Russia those varieties which Messrs. Gibb and Budd had found yielding abundant fruit in a climate that, in both its summer heat and winter's cold, closely resembled that of our more northern latitudes.

From the importations made by our Association and those made by Professor Budd, and likewise the importation made by the United States Government, trees have been propagated and disseminated, and the inquiry now is, what is the result?

Are the Russian fruit trees proving to be what was expected? Do they endure the climate of the cold north-land of America, and do they bear fruit of such quality as to make them desirable?

Unfortunately the planting and care of these trees in Canada has not been conducted in such a manner nor for such a length of time as to enable me to point to results in our own northern regions. It becomes necessary, therefore, to draw upon the experiments that have been conducted at the stations of northern Iowa, and gather what information can be gleaned from planters in the Province of Quebec, and in northern Vermont just on the border of our sister Province.

First, then, let us look at the apples. The limits of such a paper will not admit of an exhaustive examination of the varieties that have been imported, and are being tried in various sections, even if I were competent for the task. I shall only venture to name a few, and chiefly those that give evidence of being worthy of attention from Canadian planters.

The Duchess of Oldenburg is already well and favorably known. The bare mention of this favorite autumn apple is sufficient.

The Yellow Transparent has also won for itself golden opinions. Mr. Simon Roy, of Berlin, writes to me that he wishes he had planted a dozen trees of it instead of two. Mr. Chas. Gibb speaking of it at a late meeting of the Montreal Horticultural Society, says that he expects it will be largely planted in the Province of Quebec because of the hardiness of the tree, its early and abundant bearing, the even size of the fruit, its fair quality and extreme earliness. At the same meeting Mr. John Craig said it needs no commendation, it is a favorite wherever tried. Dr. Hoskins residing in Northern Vermont near latitude 45, says the tree is productive, the fruit full medium in size, when dead ripe hardly inferior to Early Harvest, and always as smooth and fair as turned ivory.

The tree of the Hibernal variety is more hardy than the well-known Duchess of Oldenburg. The fruit is large, handsomely colored, ripening late in the autumn, and when grown far enough to the northward will keep until midwinter. In speaking of this apple together with Antonovka, Titovka and other Russian varieties, Mr. A. W. Sias, of Rochester, Minnesota, about latitude 45, says: "We are getting more large and fine fruit at the present time in Minnesota from trees of Russian origin than from all others."

Antonovka is perfectly hardy, has fruited in Northern Wisconsin and is described as resembling a very large Grimes Golden, only more oblong; and when ripe of a light golden color; ripens there in February and March.

Switzer is more hardy than the Fameuse or Snow apple; the fruit resembles the Snow apple in form and color, is juicy, tender in flesh, sub-acid, an excellent dessert apple. The late Chas. Downing said that it was a valuable fruit both for home use and for market.

Longfield has been fruited by Mr. Tuttle, of Northern Wisconsin, who says that the finding of this one variety is worth to him all the labor and expense he has had in testing Russian apples. Dr. Hoskins, of Vermont, mentions it among the fine dessert apples. It has fruited in my own grounds, for the tree bears young and abundantly. The apples were of good size, prettily colored and of good quality, ripening here in autumn.

Borovinka resembles the Duchess of Oldenburg in size, form and coloring, but is finer in flesh, less acid and better as an eating apple. Professor Budd says that the tree is a true Ironclad, and an early and abundant bearer. It ripens about a month later than the Oldenburg.

Saccharine has fruited in Iowa, and proved to be a very richly colored apple of medium size, exceedingly sweet and ripening in the latter part of September.

Enormous is very large in size, somewhat like the Alexander in form, and covered with red stripes. The tree is very hardy, and Professor Budd says the apple is surprisingly good for so large a fruit.

I will not weary you with a further description. These will suffice to show you that there is great variety among the Russian apples that have been imported and fruited in America, and that there is among them apples of excellent dessert quality, handsome in appearance, of large size, and extending over a long period in their time of ripening. The Hon. R. P. Speer, Director of the Iowa Experiment Station, had a bearing orchard of 1,500 trees, consisting mainly of Walbridge, Fameuse, Talman Sweet, St. Lawrence and Pewaukee. The winter of 1884–5 ruined it, so that there were no sound trees in it save the Whitney Crab, the Wealthy and the Russian trees. Such is his testimony to hardiness of these trees in an extremely cold and trying climate. Dr. Hoskins of Northern Vermont says that he has over a hundred varieties of Russian apples growing, many of them sixteen years planted, and that one thing has been demonstrated to his satisfaction, and that is that as a class these Russian apple trees are very much more hardy as against the winter's cold than those previously grown on this continent. Besides this he claims that in productiveness, size, and beauty they are more than a match for those varieties which we have received from Western Europe and those of our seedlings derived from them and quite as large a proportion of them that will rank as of dessert quality. Such is the testimony which we have with regard to the Russian apples, testimony from gentlemen whose statements and opinions command respect; and therefore it

seems to me that we are encouraged thereby to extend our planting of these Russian apple trees, in the firm persuasion that out of them we will eventually obtain varieties that will gladden the hearts and homes of the dwellers in our most extreme North-land.

Further, it is my conviction that we are also to obtain from this source no mean collection of pears that will thrive at least as far north as latitude 44. Professor Budd states that he found pear trees in Russia growing as street trees where the winters are so severe that the Duchess of Oldenburg will not endure the winter, and where the thermometer goes down, down to fifty below zero, and that with but scanty snowfall. Since his return he has imported scions of some of these, and having propagated and disseminated them, now gives us the results of his experiments. He says that Bessemianka, planted on dry soils and sufficiently deep to protect the tender seedling roots on which we are obliged to graft, is doing well so far north as the 44th parallel; that the fruit is of medium size, nearly seedless, tender in flesh, juicy, mildly sub-acid, almost buttery, and very satisfactory for dessert use. Ripe in September.

Gakovska, he thinks, will be hardy enough to plant as a street tree in North Iowa, having never heard of any injury to the trees by winter's cold or summer's heat. The fruit is large and handsome, valuable mainly for cooking, for which use he says it is not excelled.

Autumn Bergamont he ranks in hardiness with Bessemianka, says the fruit is small to medium, nearly sweet, very juicy, and good for dessert use.

In addition to these the Professor mentions Kriskaya Victorina, and Medviedevka as fine hardy trees that have not yet borne fruit in this country, but which are highly commended by Russian pomologists. The Early Bergamont, Flat Bergamont and Saccharine he says are fully as hardy as the Wealthy apple.

I cannot close without saying a few words about the Russian cherries. For our knowledge of these we are greatly indebted to Professor Budd. Although some of them have fruited with me, yet that fact is no evidence of their being sufficiently hardy either in tree or fruit-bud to be of value in those parts of the country where the Early Richmond and English Morello fail. From Professor Budd I learn that young cherry trees which he imported in the spring of 1883 have had very hard usage, having been fully exposed to the recent test summers and winters which literally killed out the trees, young and old, of the grade of hardiness of Early Richmond and English Morello, and have in addition been most unmercifully cut for scions in autumn and for buds in summer. Yet, notwithstanding this, many of them have proven to be as hardy in tree and fruit bud as the native wild plums, and although during the season of blooming in the spring of 1888, they were visited with severe frosts, yet twenty or more sorts fruited, some of them very heavily. I will name some of the varieties that he mentions, those that seem to me most worthy of our attention.

Professor Budd says that Late Amarelle trees from five to six feet in height were, this past season, bending with weight of the fruit; and that, notwithstanding the severe spring frost when in blossom. The fruit is medium to large in size, dark purple when ripe, which was about the 20th July.

Shadow Amarelle, so called from the mirror-like reflection from the shining skin, resembles the Late Amarelle in size, quality and season of fruit. The trees were also laden with cherries the past season.

King's Amarelle ripens with Early Richmond, has white flesh, juice slightly red when fully ripe, pit very small.

Orel is of the Vladimir family, of dwarf habit, coming into bearing when the trees are only from three to four feet high. Fruit larger than Montmorency, nearly black when ripe and very mild sub-acid flavor. I have no doubt but that this will be a valuable sort in our very cold north-land.

Bessarabian, fruit large, dark red, firm flesh, very mildly sub-acid when ripe. Tree exceedingly hardy.

Professor Budd says the Sklanka tree is as hardy as the Manitoba maple. Fruit large, flesh yellow, firm, very mildly and refreshingly sub-acid, pit very small, season of the Montmorency.

These are a few of the varieties which Professor Budd has found to be hardy, productive, and valuable. He advises that the cherry trees also be planted from four to

six inches deeper than they stood in the nursery, because of the tenderness of the mazzard or mahaleb stocks upon which we are as yet compelled to work them. When thus planted roots will be thrown out above the bud in two or three years, so that if the stock upon which it is worked should perish after that, its loss would not be material. He also advises heading the trees low, experience having been shown that sometimes the trunk will be seriously injured when exposed while the twigs show no discoloration whatever. In the Volga region the cherry is grown altogether in bush form, with several stems, like the currant or gooseberry. For nursery propagation the Professor advises most strongly root grafting the cherry, setting the grafts down to the top bud of the scion so as to favor the early emission of roots from the scion.

APPLE GROWING IN ONTARIO.

Mr. BEALL, of Lindsay, read the following paper: During the past ten years I have frequently endeavored to induce this Association to prepare a list of apple trees suitable for cultivation throughout the central and northern portions of this province. Such a list of varieties, if published in the annual report and corrected from year to year, or from time to time as might be required, thereby carrying with it the sanction and approval of the Fruit Grower's Association of Ontario, would be regarded by the public generally as a reliable list; something that could be depended on; and would do much towards giving intending purchasers of apple trees that information which is in greater requisition than any other, and hundreds of thousands of dollars might thereby anually be saved which is now paid for unsuitable stock forced on them by the peddlers; a class of gentry much more remarkable for the amount of "cheek" they possess, than for their knowledge of pomology—persons who profess to have all knowledge of the subject, but who generally know less what varieties would be suitable to the condition of the soil, climate and situation of any given locality than the intending purchaser.

My efforts in this direction were always met by the objection that the labor and expense of preparing such a list was too great for our Association to undertake at present. The necessity and desirability of the work proposed was generally admitted. I was therefore surprised to see in the *Canadian Horticulturalist* of October last, page 220, that the work which had been for so many years regarded as being too laborious and too expensive to be undertaken by the directorate had at last been completed and published. Now, although it was gratifying to find that the work I had so long advocated had been accomplished at last, I must say that the work as executed did not meet with my approbation, and I venture to assert, sir, that it does not meet your approbation or the approval of any other person in this hall. But, I may be mistaken. I will therefore read the list so that all may judge of its suitability to that portion of Ontario *north of Southern Ontario.**

"A List of Hardy Apples for the Cold North—For summer: Yellow Transparent, Tetofsky. For autumn: Duchess of Oldenburgh, Alexander, McMahon's White, St. Lawrence, Switzer. For winter: Wealthy, Scott's Winter, McIntosh Red, Fameuse, Bethel of Vermont."

Let us look for a moment at these varieties separately. For summer: 1st. "Yellow Transparent." A new apple, but little known. Spoken favorably of by many; I hope its present reputation may be established after a lengthened trial. 2nd. "Tetofsky." The most worthless apple ever introduced for cultivation in this province.

For autumn—1st. "Duchess of Oldenburgh." This is one of the best and most profitable of our early apples. But, is it an autumn variety? I prefer calling it a summer apple. 2nd. "Alexander." Very good. 3rd. "McMahon's White." A new variety owned by Mr. A. L. Hatch, a nurseryman of Ithaca, Wisconsin. This apple

*By consulting the article referred to, it will be seen that the list was not intended for Central Ontario, but only for "The Cold North," by which we understand such parts as are subject to a temperature of 40° below zero. The list was prepared by a gentleman of ripe experiences in hardy fruits, Dr. Hoskins of Newport, Vt., and for the section of country for which it is intended we doubt if the list could be improved upon.—*Secretary.*

was admitted to the *trial* or second *class* list of the Wisconsin State Horticultural Society in 1885. It might be interesting to learn what means Dr. Hoskins of Vermont—the gentleman to whom we are indebted for the preparation of this list—took to ascertain the suitability of this variety to Central and Northern Ontario where the soil and the climate are so totally unlike that of Wisconsin.* 4th. "St. Lawrence." A first class apple, and, one worthy of more extensive cultivation. 5th. "Switzer." A variety but little known.

For winter—1st. "Wealthy." An apple that is, and probably will be, extensively cultivated for some time to come in this province, yet I think it ought not to be classed as a winter variety. It may be kept a little longer than the Fameuse but it loses its flavor earlier. 2nd. "Scott's Winter." A variety but little known in this country. 3rd. "McIntosh Red." A good apple where it can be grown, but one that has so many poor qualities when removed from where it originated that it is not likely to be used extensively. 4th. "Fameuse." A favorite everywhere, but should be classed as Downing classes it; an autumn apple. 5th. "Bethel of Vermont." An unknown variety here.

Of the twelve varieties named five or perhaps six are of first-class quality and can be as generally grown in *Southern* as in Central or Northern Ontario. The reasons why other varieties, of equal or greater excellence, such as the "The Baldwin, Greening and Northern Spy" should have been excluded from the list, and claimed as being suitable *only* for Southern Ontario cannot here be given.

That the apple growers of Southern Ontario have not a monopoly of the more excellent winter varieties, and that such varieties are not, as stated "wholly unfitted" to more northern localities is fully proven by the samples now on the tables, one of which, Northern Spy No. 2, was grown by James Endicott ten miles north of Lindsay, a district not noted for greater excellence of its fruit products than many other places much further north. The other Northern Spy, The Bellefleur; the large red apple, name unknown, was grown in my own orchard. The R. I. Greening by Jas. Emerson, South Mariposa, and the Russet by Mr. Taylor of the same place.

Mr. Croil reports many good varieties of apples grown in the Eastern Townships of Ontario. Mr. Wright of Renfrew reports good varieties in his district. Professor Saunders when visiting the Agricultural Show at Pembroke last autumn, noted many, "ten or twelve" excellent varieties of apples on the tables on that occasion, and saw abundant evidence to show that, with a little more knowledge and experience, many of the finer varieties may be successfully grown in that locality. In the neighborhood of Orillia and Barrie, and also of Collingwood and Owen Sound and other points along the shores of the Georgian Bay and Lake Huron, many of the finest fruits in the province are produced.

That apple growing is successful at these so called extreme northern portions of the province is only what should be reasonably expected when the soil and situation is considered, and especially so when the summer climate is compared with that of certain well known localities in Europe, where apple culture is successful.

The mean temperature of Berlin, about 600 miles further north than Toronto, for the three summer months is 64.5° Fah. Munich, about 300 miles further north than Toronto 63.6°. Paris, about 350 miles further north than Toronto 64.5°. Each place, it will be observed, has an average of mean summer temperature under 65°.

Now, if we trace the summer isotherm of 65° of mean temperature from Nova Scotia westward, we shall have a better idea of how far to the north apples may be successfully cultivated.

Starting from Halifax north lat. 44.40° it takes a course a little north of west across the Bay of Fundy and State of Maine to the north-east corner of Vermont, where it crosses the 45th parallel of north lat. and enters the Province of Quebec; then passing still more to the north crosses the St. Lawrence river at Montreal, and passes near, but a little south of the city of Ottawa, and soon after again touches the 45th parallel and continuing on that line through the English Land Company's settlement in the County o Haliburton, thence a little more northerly crossing the Georgian Bay and running length

*Dr. Hoskins' experiments have been made in Northern Vermont.—*Secretary.*

wise of the Great Manitoulin Island, passing just south of the Sault Ste. Marie and along near the southern shore of Lake Superior, and from thence on through the state of Wisconsin, on its western course. The portion of Ontario south of this line contains a greater area suitable for fruit growing—apples, pears, plums and grapes—than can be found in the whole of Europe. Climate, however, depends as much on altitude as on latitude, and here again but little difference exists between the altitude of Europe and Ontario.

But the isothermal line of 65° of mean summer temperature does not mark the northern limit of apple culture. There is good reason to believe that apples may be grown where the sugar maple thrives, and certainly as far north as the northern limit of basswood growth ; an acquaintance of mine has a good bearing orchard several miles north of Sault Ste. Marie. The isotherm of 65° before referred to, passes through the Township of Minden, about 120 miles further north than Toronto, where the apples were grown which were referred to on page 13 of the *Canadian Horticulturist* for January last. Two years ago I exhibited seedling apples at our autumn meeting which had been grown *north* of Minden, which were as large and as well colored as the "Alexander." The town of Pembroke visited by Professor Saunders last autumn, where he found such excellent apples, is about 170 miles further north than the city of Toronto.

If a few varieties of apple trees can thus be grown so far north under the present system of obtaining supplies, when all scientific or expert knowledge is ignored, and when thoughtlessness and personal greed seems to be the guiding motives, what may be expected when more thoughtful, but simple and more common sense plans shall prevail? I believe the time is not far distant when most of our best varieties may be grown wherever basswood flourishes, which is about 100 miles north of the isothermal line mentioned, provided seedling trees be grown from seeds procured from apples from the nearest point where healthy trees exist ; varieties need not be considered, healthiness of the tree from which the seeds are obtained must be the only standard. Seedling trees thus produced should be planted out in the ordinary orchard where they are to remain, when two years old, in thoroughly prepared soil, and top-grafted with the varieties required as soon as a good root growth is obtained. By such a plan no tree need be out of the ground for an hour. An orchard will be secured in this manner for less than one-tenth the cost incurred by the present absurd system of procuring budded or grafted trees six or eight feet high from nurseries situated from 100 to 200 miles south, and where the soil and climate are altogether different ; and especially when the trees have been out of the ground for six or seven months as is usually the case.

I venture once more to press upon this Association the necessity of preparing and publishing a list of apple trees suitable to the requirements of the principle apple-producing sections in Central and Northern Ontario. I do this because—as far as my experience goes—this information is required above every other thing in relation to this subject by the whole farming community. Publishing a list of varieties prepared by a gentleman of Vermont, who can have had but little practical knowledge of the requirements of this, the greater portion of Ontario, even when assisted by Wisconsin nurseryman, and especially when it contains so many absurdities, will not satisfy the farmers of Ontario who are taxed for the support of this Association and have a right to expect, and do claim the publication of such lists as are referred to, and also that they be prepared by the best practical talent at the command of this Association.

The following list of apples as suitable for growing in Central and Northern portions of cultivated Ontario, is submitted for the consideration of any person or committee which may be appointed by this Association to prepare such a list :

For summer : Red Astrachan, Yellow Transparent. For autumn : Duchess of Oldenburgh, St. Lawrence, Alexander, Fameuse, Haas, Colvert. For winter : Yellow Bellefleur, Ontario, Wealthy, Northern Spy, Golden Russet, Ben Davis, Canada Red, R. I. Greening. And the following I would recommend to farmers and others who wish to grow apples for their own family use only, viz. : Red Astrachan, Duchess of Oldenburgh, St. Lawrence, Colvert, Fameuse, Yellow Bellefleur, Ontario, Golden Russet. This list will furnish a continuous supply of apples from the middle of August to the middle of the following April.

The SECRETARY—I would take exception to the yellow Bellflower, both for market and home use. I have had most unsatisfactory experience for many years. It is a most unreliable bearer and you cannot depend on its form or size. It should not be commended, unless it grows better in northern Ontario than in southern Ontario.

Mr. A. MORRIS (Fonthill)—What the secretary says is true of the Niagara district; but north of lake Ontario it is one of the best apples that grows. Mr. Beall's list does not give enough winter varieties for the northern section. I would add Seek-no-further, Tolman Sweets, St. Lawrence, and I think the Mann would stand the climate as far as Lindsay; and for the extreme north the new rough apple called Anis, which grows in Russia six hundred miles further north than Quebec. It has fruited with us on small trees, and the quality and size resemble Rhode Island Greening. In regard to seedlings, the bulk of them that are grown from seed will be tender. There are only a few that are any hardier than the ordinary run of apples, so there is nothing to gain in growing them as hardy stock to top-graft. Another objection to them is that some are slow-growing, and if you graft a fast-growing top on that it never makes as good a fruit as a top-grafted or budded tree.

Mr. BEALL—A friend of mine had a yellow Bellflower in his orchard, and liked it very much. He top-grafted three other trees. Two of these trees—quite young—bore smaller apples; the third bore, and continues to bear apples more than double the size of the original or either of the other two. My opinion is that there was some influence from the stock. They have been ruled out at fairs as not being the same apple, although the scions came from the same tree.

Mr. P. C. DEMPSEY (Trenton)—The Cellini is a very superior, very productive, beautiful apple, and with me it is quite as hardy as the Duchess of Oldenburg. They mature in October, usually. I took a yellow Bellflower tree, sawed the top off, and put Ben Davis on, but the Davis was perfectly worthless, aud I concluded that the Bellflower was no good to graft other varieties on; but the Bellflowers produced on the tree when the Ben Davis was growing on it were very superior and attained enormous size; so we sawed off the Ben Davis. and finally sawed down the tree. (Laughter.) Can anyone explain why this was the case? The Bellflower, in all places I have seen it growing, to all appearance will produce superior fruit one year, then for three or four years perfectly discouraging, then again give a nice crop. It is a poor apple—not a nice color, and does not open up in good shape. We want a red apple. The La Rue is found in the eastern portion of our Province. Many of them get as large as a large King, and very pretty indeed. I have never seen them growing, but you will find them in all the eastern exhibitions. I believe the best apple seedling cultivated to-day is the Trenton. (Hear, hear.) I have fruited it for six years, and have not seen one killed during the whole time. It is not a winter apple; it comes just a little ahead of the Snow. It is a seedling of the Golden Russet. It is prettier than the Snow. It is a delicious melting, crispy apple. It is destined to take a high place if it succeeds in other sections as well as in ours. There is only one nursery firm has it—the Beadle firm.

Mr. JOHN WATSON (Dixie)—I have been an apple raiser and buyer for twenty years, and can endorse all the secretary said about the Bellflower. You can't grow it on clay land. Wherever you get a good Bellflower it is on a warm sandy loam.

The SECRETARY—I have a sandy loam, and it does not succeed there.

Mr. CASTON (Craighurst)—In Simcoe county, particularly in the northern part of it, the Northern Spy is no use. You have to wait about sixteen years for fruit; and as soon as it begins to bear it begins to die. The Greening is no use at all in Simcoe. Seek-no-further does very well. It is a good keeper, but not much of a bearer. Tolman Sweet will keep as long as most of our apples except the Russet, and is as hardy as the Duchess. You can't get any variety for top-grafting better than the Tolman Sweet. The Alexander is generally classed as a fall apple. I think it will keep about as long as the Wealthy. It is one of the hardiest and best bearers we have in our section. Two years ago the St. Lawrence spotted so badly that it was of no use. They spoiled on the tree. They

were subject to the fungus spot, and very deeply cracked. It is a poor keeper. Its season is so short that it is almost worthless. The fewer fall varieties we plant the better—(hear, hear)—because the equinox generally makes enough "fall" apples without planting fall varieties. (Laughter.) The Wealthy is new in our section, but from what I have seen of it I class it very hardy—almost next to the Duchess and Tolman Sweet; it is an early bearer and the fruit does not incline to spot, but it is inclined to drop from the trees. The Scott's Winter seemed to do very well in our section. I recommend the American Golden Russet as the very best winter apple we have. It is the best bearer, and perfectly hardy.

Mr. DEMPSEY—What about the Ben Davis?

Mr. CASTON—I lost most of mine in the winter of 1884-5, but with that exception it stood the climate very well. That was an exceptional winter. I find the Ben Davis grafted on seedlings produces wonderful specimens that are very good. Years ago, when the nurserymen first sent agents out, the King of Tompkins was very largely planted. I do not know of a single specimen now that is living in our neighborhood. Of course a few miles make a great difference in some parts of Ontario. A certain variety will thrive in the south end of the county of Simcoe that will not thrive in the north; and yet go a little further towards the north-west, close to the mountain near Meaford, and they can grow the peaches where we cannot grow the Rhode Island Greening. The Red Pound I would recommend for the older portions of Ontario. It bears young and regular, is not very subject to spots, keeps well till February or even March, good for eating, and for cooking cannot be beaten.

Mr. DEMPSEY—I believe the Red Pound, Baxter and La Rue are all the same apple.

Mr. HOLDEN—I have the Red Pound and the Baxter in Barrie. There is a very great resemblance between the two. The Baxter inclines to spot badly with me. The Red Pound that I received from a friend near Barrie seemed to be a very clean and handsome apple. I think for that part of the country it ought to be a very hardy variety, which I don't think the Baxter is.

Mr. T. H. RACE (Mitchell)—I have never found in the Colvert any quality to recommend it to farmers or any other class. Buyers coming into Perth county found two-thirds of the apples grown by the farmers were of this variety, and they would not touch them. They objected that they were poor keepers, and they had small spots early in the season. If the apple industry is to be profitable we must get the farmers to confine their varieties to two or three, or four or five, and only those that will stand shipping and will keep; and we will have to try to protect them from the nursery jobbers. The reason the Colvert is so common with us is that it is a free grower and is cheaper than almost any other that the jobbers can get hold of. They will go to the farmers and either recommend it, or sell them other varieties and put in this tree, and the farmer finds that instead of the apples he has ordered the great majority will turn out Colverts. The same might be said of the Tolman Sweet. I value that apple very highly; it is an excellent packer, but a free grower, and a handsome tree when young; and many farmers have been imposed on on that account. I know a dozen farmers that claim they did not order these trees, and that they have been imposed upon by nursery jobbers.

Mr. A. H. PETTIT (Grimsby)—There is no demand for Tolman Sweet and Yellow Bellflower in our section, even if well grown. I don't think there is an apple for export that there is much more money in than the Colvert, if properly handled. They are clean and smooth, bear well—in fact, extra well—and always command a good price in the early markets in the Old Country—at least I have always found it so. The Northern Spy cannot be excelled in the southern portion of Ontario; and if our northern climate will just leave us with a few of these choice varieties I think we will grow them and make them very profitable. The King of Tompkins County we find very profitable in our section. It bears and grows very well.

Mr. CASTON—The farther north an apple is grown the better it will be in quality, and the longer it will keep. I find a difference in the soil. Apples grown on a warm

sandy loam have a better flavor than those grown on a clay soil. The Duchess of Olden burg comes to greater perfection in Simcoe county, or any place far north. The farther north you can grow it the better. There is a variety that has not been mentioned—the Pewaukee. I cannot speak positively it regard to it, because it is young.

Mr. DEMPSEY—If I were going to grow extensively I would start the list with Duchess of Oldenburg; I have seen a greater amount of money taken from it than any other. Next to that is the Colvert. A man in our section sold $400 worth of Colverts from an acre; but he did not get that next year. It was an exceptional crop, and he handled them right, and sent them to the English market, and they brought a fancy price. I would not put the Colvert in my list for central Ontario; but for us I would plant Trenton next to Duchess to fill the gap, and you might depend upon a fancy price. I would then plant Fameuse and Wealthy—the two come in about together with us, and they both command good price. We got more money for Fameuse than any other variety this year. For winter we have nothing to compare with the Ben Davis, that we have tried to any great extent. The Pewaukee is as pretty as the King with us. It will produce two barrels to one King and fetch just as much. I don't think I could recommend any apple higher than the Pewaukee. I don't think there is much money in Golden Russets of late years. There is a lot of picking to the bushel, and with us the tree is liable to canker, gum-scald, and pass away something like the Northern Spy; still they are a hardier tree than the Spy. Any man that has pigs or cows cannot grow any fruit for them cheaper than Tolman Sweets. I don't object to them ground up in the hay. The Tolmans are also good for cider.

Dr. BURGESS (Hamilton)—It seems to me the only practical plan that would be of benefit to growers of apples would be for this society to publish a list of apples suitable for each county. It would cost very little more than the other plan—drawing the data from actual growers in those counties, and if necessary draw a distinction between those grown for market and for home consumption.

The PRESIDENT—There is no such thing as a division of varieties for northern, central and southern Ontario. It is purely a local matter. If we are going to get a correct list we must go to each section and get the list from the actual growers in that section. You will find a difference in the growth and productiveness of fruits in a very few miles. It has always appeared to me as a purely local matter, and as a matter very largely of experiment in the different sections. You have not only to consider heat and cold, but there is the grower himself—how is he going to cultivate that land? What kind of soil is it? is it drained or undrained? and what is he himself as a fruit-grower? does he understand anything about it or does he not? If he understands fruit-growing, are his principles proper, and will he carry them out? It is a very difficult matter for any body of men to sit down and attempt to frame a list for any particular section, and I think the more the matter is discussed the clearer we will all see that. The Colvert is just an instance of this point. In some sections we find it very profitable, in others they think nothing of it. In my opinion it is not an apple that I would care to keep for my own use, or that is esteemed as a local apple; but for export it stands high; it comes in at a season when prices are usually fair to good; it is a good producer, and you can generally rely on a very good crop. The matter of selection by seedlings is one that I have always taken a good deal of interest in, and always felt like encouraging. In the Algoma district they are talking that matter up very strongly. Their idea is to get the seeds of the best varieties, and by planting those seeds produce apples for their own use. I visited an orchard of that description. They had about thirty trees in the orchard, and about twenty trees in the field bearing. The crop was a grand one. It was about eight miles from Sault Ste Marie. Some of them looked very superior. They were mostly late varieties of seedlings, whereas they had Northern Spy, American Golden Russet, Ben Davis. The trees themselves looked very well then; but as the orchardist himself told me, some of them would kill back a little in the winter. Some of them would escape; but he nipped the wood back towards the end of the growing season for the purpose of preserving. However, they seem to have great faith in the production of apples in a cold section like that from seedlings. The Yellow Bellflower I do not care to

grow in my section, because it is so very variable. Sometimes you would get very fine specimens, but as a general rule the crop is indifferent, and they bear so much on the tips the tree is after a while very much out of shape; but for sections where it will succeed, and other varieties will not, it is a good apple; and the best apple for sections of that sort is the apple that will succeed in all, independent of quality or flavor. If they cannot produce an apple of the highest flavor, if they can produce one of medium flavor, then that is the best for that section; there is no use in attempting anything else —you are losing time. I believe we have come down to a time when we must look at these matters as specialties, and grow those varieties in the various sections to the highest state of perfection.

Mr. WELLINGTON (Toronto)—I understand this to be a discussion of varieties fitted for the central and northern portions of Canada. Now, while the Colvert and King, and certain other varieties that have been mentioned, may do well in the south, we should not drag them into this discussion at all, because a great many may think, from favorable remarks made, that they may be suitable for those sections. I would also protest against the list as furnished by Mr. Beall going out as being endorsed by this society. The fact of the Rhode Island Greening succeeding with one or two men near Lindsay is no data to go by to show that it is a hardy variety. We all know to the contrary, and if we allow that variety to stand in his list unchallenged, a great many people, taking our report, may plant a variety only to meet with misfortune. Many varieties named are very good, but there are other varieties that have been sufficiently tested that are better for northern sections. I do not speak of the south, where you can grow the Northern Spy, and the King, and the more tender varieties, but I speak of the central and northern sections. Your remarks I fully concur in regarding the selection of varieties for localities. It must be tested there, and we must go by the actual experience of certain sections. We want a list that will stand generally. We can give a list that have been tested and proved hardy. The Magog Redstreak, Scott's Winter, and Longfield and Anis are varieties that are certainly hardy. They are as hardy, if not hardier, than the Duchess, and that is the class we must recommend for the north, if we undertake to recommend. The Tetofsky Mr. Beall classes as worthless. I object to that. It is a valuable apple in the north. It is a good cooker, and is hardy. It will stand where the Red Astracan will not stand. For that reason it should not be set down as worthless. Yellow Transparent is certainly good, but the great trouble is that it will overbear, and unless thinned out it will disappoint on account of its size. That is the experience of those who have raised it. Dr. Hoskins, of Vermont, I consider an authority on hardy varieties. He has tested them as thoroughly as anyone living in a cold section, and the varieties I have named are varieties that he has thoroughly tested, and that he recommends. I have seen them tested, and seen the fruit from them grown in our own section, and I believe that they are very desirable varieties for the northern section.

The Secretary moved, seconded by A. M. Smith, that a committee be appointed by the chair to make out a list of desirable fruits for cultivation in each county in Ontario.

The PRESIDENT thought that committee would have a hard job. He thought the work could be done best by local men, who have had experience in the various townships.

The SECRETARY—I will not press the resolution.

Mr. A. H. PETTIT—I suggest that it be divided into three sections—north-eastern, north-western, and southern Ontario, and that a committee be appointed to recommend four best varieties for summer, four best for autumn, and eight best for winter, and that they report at the next meeting. (Hear, hear.)

The PRESIDENT—That is in the right direction, but go a little further. I would suggest that this committee should frame a list, after taking evidence in the various counties as to the varieties. Confine the division to counties in the meantime, and perhaps after a while we can come down a little lower.

Mr. MORDEN—The county farmers' institutes could do something in the matter.

Mr. J. A. MORTON (Wingham) then moved the following motion, seconded by Mr. WOOLVERTON, that the matter of the preparation of lists of apples for cultivation in this province be referred to a committee consisting of the directorate.

BLACK HEART.

WHAT VARIETIES ARE MOST SUBJECT TO IT, AND HOW CAN IT BE PREVENTED?

Mr. MORRIS—The varieties most subject to it are those that are most tender. I have seen it in all varieties in different parts of the country. I account for it by a very severe winter, which freezes the sap in the trees, and when they get a little aged it turns black. I have seen whole nurseries ruined by trimming young trees in the winter time—cutting the limbs off close to the stem. That part freezes there, and kills the wood to the heart, and that will extend downwards the next summer. Perhaps the black sap will ooze out of that and run down the body of the tree, and the tree may be easily detected by the bark being dark from this sap.

Mr. E. MORDEN—All the farmers in our section are pruning in the winter, and I have not heard any complaint.

Mr. MORRIS—I don't think it would injure large trees much to cut off small limbs, but large limbs it would. I have noticed trees sent out by nurseries that have not been properly grown, quite brushy up the stem. That brush being cut off just before being sent out, the tree when planted by the farmer would not make much growth for a year or two, and the winter winds would turn that tree black-heart and kill it, although quite healthy when it left the nursery.

Mr. MORDEN—Do they prune trees in winter in Perth or the Collingwood district?

The PRESIDENT—They generally, I think, in our section begin pruning in March.

Mr. BARTLETT (London)—Pruning in winter caused destruction of a nursery in London of fifteen or twenty acres.

Mr. MORRIS—I was there when the men were trimming the trees. They had a fire in a shed to warm themselves by. I told the young man he was ruining his stock, but he laughed at me, said his father and grandfather had been nurserymen all their lives, and they knew. I visited that nursery the next fall, and found all the trees black-hearted.

Mr. CASTON—Black-heart is not so likely in the Duchess of Oldenburg on account of the close wood. I found trees I pruned in February bled all the next summer, even though I tried grafting wax. Trees pruned in June never bleed.

Mr. MORTON—There would not be the same tendency in thoroughly ripened wood that there would be in trees consisting of half-seasoned wood, because the amount of moisture is greater and the matured cells form a better conduit pipe for the sap.

The SECRETARY—I do not see any objection in southern Ontario to pruning in winter in mild weather, when the wood is not frozen if the wound is immediately protected in some way from the influences of the atmosphere. That is not so necessary in June, because it will grow over before the part becomes dried out.

Mr. MORRIS—In June the bark is very subject to become loose. You cannot step on a limb or put a ladder on a limb but what it will loosen the bark from the tree, and do a great deal of damage. That is the danger of June pruning.

HORTICULTURAL SPECIALTIES FOR THE CANADIAN FARMER.

The following paper on this subject was read by Mr. Woolverton, Secretary of the Association:—

This is an age of specialties. The time was in the history of our country when every farmer had of necesssity to be a "Jack-of-all-trades." He was an agriculturist in the broadest sense of the term. Every variety of produce that was needed, either for his family or for his stock, was grown in his own fields. He bought no fertilizers for his soil

but depended wholly for his supply upon the annual clearing of his barnyard, be the stock sufficient for his crops or insufficient. He was a horticulturist, giving high culture to a small garden near the house, in which grew both the vegetables for the kitchen and the flowers for the parlor table. He was an apiarist and kept several hives of bees to furnish his own table with honey, and occasionally to furnish a surplus for the market. He was a dairyman and a stock breeder, having always a comfortable supply of butter and milk for home uses, and as much for market as, united with the eggs from his poultry department, could be exchanged for the prints and ribbons necessary for the adornment of his wife and daughters. He was also a carpenter, and when a new barn was needed he hewed the timber, constructed the frame, shingled the roof, and completed the building. He was a wagon and sleigh maker, and many an hour of winter leisure was well spent in making a woodsleigh, or in repairing his wagon. He made his own ropes, he tanned his own cow-skins, he made his own brine and butter tubs, he patched his own boots, and he even ground his own flour. In short the Canadian farmer of a hundred years ago knew little of the advantages of division of labor, but found it absolutely necessary to know a little about all the branches of work.

But now the circumstances have wholly changed. We have advanced in wealth and in culture. Specialties rule. A man of to-day must be a devotee of one idea if he would succeed. The post-office is no longer combined with the grocery, and the shoemaker has removed his bench from the dry-goods store.

Agriculture is the wide word; horticulture the narrow one. The former refers to the field, to the broad acres devoted to grain or stock; the latter to the garden, with its fruits, its flowers and its vegetables. So extended, however, has the culture of these become in the more favored portions of Ontario, that the word horticulture has become in some parts almost co-extensive with that of agriculture, and several large sections of the country are competing with each other for the title of "The Garden of Canada."

The aim of the writer of this paper is to indicate the pathway to practical success for the agriculturist who wishes to take up some horticultural specialty, and to engage for profit more or less, according to his means, in the culture of some kind of fruit, flower or vegetable in addition to his ordinary round of farm work. This he may do judiciously and make it serve his best interests; and in like manner might the fruit grower do a certain amount of farming, and make it serve to advance the profits of his proper business. But it is by no means necessary that the fruit grower should be also a farmer, nor that the farmer should also be a fruit grower, any more than it is essential to his success that he be a shoemaker, or a blacksmith. The day is passed when a man can profitably engage in many lines. Each of the subdivisions named above has grown into a science. Books and papers innumerable, written by men of practical experience, are now published on stock breeding, bee culture, horticulture, etc. Men are finding out in this year of 1889 that they must make a special study of that line of avocation which they intend to pursue, or others will surely surpass them in it. It has now become just as necessary for the gardener or the fruit grower to be trained to his profession if he would succeed as it is for the doctor or for the lawyer. I do not mean that he should be trained by the study of books alone, but by the study of books and journals relating to his life work, united with constant daily practical experience, under the guidance, if possible, of one who is himself a professional. In this way only can a man hope speedily to gain the acquirements needed for success. If it is too late in life for a man to become thus equipped himself, by all means have the boys thus prepared for their life work. The plan of living out for a year or two with a gardener, or a fruit grower, a stock breeder, or if he can afford it, at such a place as the Ontario Agricultural College, until the young man has learned the best methods of doing each thing, cannot be too highly commended.

At all events the time has come when our Canadian farmers must leave the old ruts if they would prosper, and turn their attention and thoughts and study to some one special branch. I do not say that horticulture surpasses every other and that it is the most profitable of any, but to me it is a charming pursuit, and I have faith in it as a reliable source of income, providing it is pursued with the same determination as that which characterises men in other lines of business.

A good apple orchard pays the farmer. But, says one, I know a farmer right there at Grimsby who cut down a good apple orchard only last winter. True enough, but did you never know of a man giving up stock breeding or bee farming in disgust? There are always men to be found who grow impatient and give up, just at the point where they are within reach of success.

I do not think that we, as members of this Association, should go about the country advising farmers generally to plant out their farms to apple orchards, or even to plant large commercial orchards. The expense connected with raising a large apple orchard to bearing size is far greater than some people are willing to admit. A writer in *Popular Gardening* figures out very carefully on paper the cost and value of an apple orchard and makes out that one acre would bring $313.15 over expenses during the first ten years. He plants 100 trees per acre, and by seeding down to clover estimates his expense for cultivation during the ten years at about $10. He placed the cost of the annual pruning at 50 cents and the rent at $50 per annum, considering that three-quarters of the acre may be profitable cropped. Now if any one here has cleared $300 per acre from his apple orchard during the first ten years, I think he is a notable exception. My apple trees may be stubborn, but they seldom bear any fruit worth gathering before they reach the age of ten years, and my Northern Spy orchard is seventeen years old and it is only during the last two years that it has yielded me any returns worth speaking of. Baldwins and Greenings may, under exceptional circumstances, yield some returns within ten years, but even these varieties do not as a rule, and indeed should not, because for the first ten years after planting the orchard should be encouraged by frequent cultivation and manuring, to make as much wood as possible and not be expected to bear fruit. Neither do I think that we are wise, as members of this organisation, which holds so high a position in our land, and whose utterances are looked upon as worthy of public confidence, in following the habit of many who now-a-days picture only the bright side of fruit culture, giving glowing statements of its profits and concealing its losses. I am prepared to make free confession here to day of both sides with regard to my apples. I can show fancy figures received from my shipments as good as anybody's. I have here account sales of my apples sold in 1887 and 1888, from which you can see that my choice Gravenstein and Kings have sold in London, England, as high as $5 and $6 per barrel. And I can tell you of further fine sales that so encouraged me that last season I shipped my whole crop, some twelve hundred barrels, to that market; but the last sales took all the gilt off the season's business, for they reached the metropolis when the market was glutted and one car load was sold for the freight; another, containing russets and other prime varieties, sold so badly that a claim was made upon me from my English salesman of $35. The provoking part of all was that a week after mine were sold at $1.50 to $2, or about the amount of the charges, prices suddenly jumped to $3 and $4. Now I have no doubt many others here present can relate a story of similar unfortunate experiences. Mr. J. B. Osborne, of Beamsville, once shipped 1,300 barrels of apples to England and lost $1,300 on them; and a neighbor of mine, Mr. C. S. Nelles, shipped all his prime winter apples to London, England, last December, packing carefully and well, and might as well have tossed them over the bank in lake Ontario. Let us speak out, gentlemen, on these points. Confess our failures. Men in other lines of business do not talk constantly about their enormous profits, it would not be politic; and if we are found constantly magnifying the profits of fruit culture, we will be placing ourselves in a false position before the public; they will get the idea that we are nurserymen who have fruit trees to sell, instead of fruit growers who have fruit to sell.

But does all this discouragement frighten us out of our business? By no means; for while it is unwise to advise everyone to rush into apple culture for profit, the specialist would be a fool who would give up because of one or two season's failure. And I think also that the farmer who has a good orchard of fine varieties, just in bearing condition, and who is disgusted because of the difficulties and low price of apples, and who cuts down such an orchard and grubs it out for the purpose of devoting the ground to some farm crops, is assuredly "penny wise and pound foolish." He is throwing away invested capital and reducing the value of that land from $100 to $200 per acre. Why an apple

orchard of twenty years standing, of productive varieties, will surely average one hundred barrels per annum, and most farmers can sell these at home at $1 per barrel for the fruit. What else would yield that sum? This is not more than the acre should produce when you consider the time and expense that has been put upon that orchard to bring it to its present condition.

But many will say, "My apple orchard does not yield that amount of fruit." No, probably not; unless you are making it a specialty. Nothing pays, now-a-days, without special care. An apple orchard, *neglected*, certainly does not pay. How could it yield crop after crop without culture, without manure, and withal, receiving in place of judicious pruning, an annual butchering with the saw and the axe. Would any crop pay under similar treatment?

The apple needs potash. It is year after year extracting this element from the ground, and, if you do not supply, and other fertilizers besides, such as phosphoric acid, nitrates and lime, according to the requirements of the soil, the orchard will soon cease to bear fruit in any quantity, or of any degree of excellence. One-half of our Canadian orchards are starving to death. No farmer would expect a good crop of wheat or potatoes, without the use of manure; why then does he expect fine apples without it, and cut down his trees because, neglected, they will not do what no other crop could do? Do you advise cultivating an apple orchard? asked some one. You may as well ask a farmer "Do you advise cultivating your corn crop? Unless your orchard is vigorous and presents a healthy dark green foliage, by all means work it up, plowing the ground shallow so as to disturb the roots as little as possible, sowing to buckwheat, or keep the ground cultivated any way until you have developed a good healthy growth of the trees. Then you may seed down for a few years at a time. The orchard must have special care, and if a man has not time to give it special care, he may as well be rid of it. Insects must be fought. Large numbers of orchards in this Niagara peninsula are infested with the oyster-shell bark louse, an insect so small that it passes unnoticed; it hides itself under its shell, and there seeks the health and fruitfulness out of the trees. The writer has experimented with soapsods, kerosene, caustic soda, washing soda. The latter is the most economical. A strong solution may be made in a barrel, and about the first of June the trunks and as much more of the trees as appears to be affected, must be thoroughly washed with the solution at which time the insects are almost microscopic in size, not yet covered by the scale, and are very easily destroyed.

The Codling moth must be fought, and conquered with Paris green, hence this insect will destroy one-third of the finest of the crop; and the Canker worm may be destroyed with the same preparation. The mice must be guarded against every fall and winter, the tent caterpillar must be hunted out and diligently destroyed, and many other important precautions thoughtfully attended to.

And after all, when at last a bountiful crop rewards such patient labor, the same careful attention must be paid to the matter of gathering and marketing, or else all previous industry will lose its reward. Eternal vigilance is the price of success. It pays to use a good ladder, and a swing handle basket with a hook attached, and to gather every good apple with a gentle grasp of the hand, taking care that not even finger marks shall show upon the fruit when housed. It pays to spend time enough over the packing to look at every single apple and to properly assort them into at least three grades. It pays to pack carefully the finest in clean new barrels, lining head and tail end with white paper, and then the grower may hopefully consign his crop to some honorable and responsible salesman. But failing in all this careful attention, is it any wonder that many of our farmers, who find poor sale for the scrubby products of an uncared for orchard, should declare apple culture unprofitable.

I should include, among my remarks on apple culture, the importance of a judicious selection of varieties. The Early Harvest, the Fall Pippin, the Rambo, and the Snow are subject to the spot. The Spitzenburg no longer produce a crop with any certainty therefore discard these varieties in southern Ontario and plant Yellow Transparent, Red

Astracan, Duchess of Oldenburg, Gravenstein, Cranberry Pippin, Baldwin, Spy, King, Roxbury and Golden Russets. Such varieties as these will pay for the most careful attention, and not prove a source of disappointment as the other varieties have done of late in so many instances.

Strawberry culture frequently pays the agriculturist, but not unless he has the time and the means to give it more than ordinary attention. Many a man has already more irons in the fire than he can attend to, and he will surely get burned with one of them, if not with several. But, given the conditions necessary, and success will surely follow. They are such as, a good rich loam soil; plenty of nitrogenous manure from the barnyard in the autumn—the late Mr. E. P. Roe advised 60 tons per acre; a mulch of straw in December as soon as the ground is frozen; constant cultivation all summer, both before and after fruiting season; and careful gathering and marketing. Now if any agriculturist is prepared to make a specialty of strawberry culture in this way, let him try the Crescent, the Wilson, and the Sharpless, and go to work with confidence, and he will succeed. Four and five thousand quarts per acre are reported as among the possibilities, especially with Crescents fertilized with Captain Jack.

The same advice may be given with reference to the culture of raspberries and blackberries. Grown as many people grow them, without sufficient cultivation, without manure, without pruning, they cost more than they come to. Any specialty which the agriculturist undertakes beyond what he has time, money, and knowledge to care for in the best manner, will prove an eyesore to him, and a certain loss. The berry patch, of which one-half the produce is thistles, and which is inseparable on account of numerous unpruned straggling branches is a disgrace; but our experience is that where a plantation of Cuthbert red, or Gregg black raspberries, or Kittatinny blackberries, has received proper treatment and attention, there is money in them, even at the low prices lately prevailing. The day is passed when we could get from 17 to 23 cents per quart for our large Kittatinny berries, and from 15 to 20 cents for red raspberries. A fortune might have been made out of them in those days; but even now good returns may be counted upon by giving them careful and thorough culture.

A fine specialty in the horticultural line is the currant. "Bah," says some one, "the worm! it will destroy the bushes." My friend, that is one reason for planting them freely—you will have less competition. Plant an acre of such varieties as the Cherry and Fay's Prolific, on good rich clay loam well drained; give them the best of cultivation and manure as you would for a good crop of potatoes; prune back in spring one-third of the last year's growth to induce branching, and to keep the stems stocky; give a good sprinkling of hellebore and water whenever the currant worm appears; and ship your crop to market in twelve-quart baskets or strawberry crates, and you will succeed.

In short, our country has advanced beyond the time when it pays to be a Jack-of-all-trades. Our agricultural friends must now be specialists—they must in short be professionals in the lines they pursue. Division of labor must be more and more the habit of the age among our farmers. The rule must be, not to follow in the line of one's neighbor, and do just what he does, so that when one man devotes his attention to some specialty, every other man in the section rushes into the same thing until there is a surplus of that article, and no profit in it; but on the other hand, to chose each a separate line of his own, and to persevere in it. Let him make a study of his subject, reading those books and magazines which treat of it, talking with those who have experience, and in this way let him pursue with confidence his chosen line of work.

Thus, I am convinced, shall days of greater prosperity dawn upon our agricultural community, and less hardship result to our country at large from a general failure of any one department of industry.

On assembling in the afternoon, the question box was opened and the following subjects considered, viz.:

A NEW FUNGUS.

Q—Has any member present noticed a disease in the suckers of the Northern Spy?

Mr. A. W. PEART (Nelson)—I have just cut off some suckers that were covered with blisters—like spots of yellowish tint. Later on they seem to take on a darker color, more like the wood. [Mr. Peart produced the suckers].

PLANTING PEARS.

Q—Would it be wise to plant pears on a gravel loam rich and abundant in organic matter, with a sub-soil also of gravel containing large quantities of soil to a depth varying from five to eleven feet, based in the first place upon rock and next upon clay? The field does not require even surface drainage. If not wise, why?

Mr. DEMPSEY—There are pears that succeed in such soil. It is necessary that we should grow them and cut the top root; but by thoroughly manuring them we have succeeded. This year we have succeeded with Beurre Hardy. We grow very nice Bartletts on soil like that. It does not do for us to neglect the manure every year, and thorough cultivation; and we want to be very cautious about the roots going too far down.

Prof. SAUNDERS—I have had experience with both kinds of soil, and I found that pears planted on lighter soil—not as good as described in the question—had less blight than those on the heavier soil, and I thought they did as well as regards fruiting. That disease which Mr. Peart has brought specimens of is something quite new to me. It is evidently a fungus growth, and in cutting through one of the black spots it is clearly to be seen that the ramifications of the fungus in striking into the substance of the bark has caused the death of the bark immediately under where the spot occurs, and that the older spots have under them the previously healthy bark completely withered and perished. If such a disease as that were to be very prevalent on any of our trees it would certainly seriously interfere with their growth and productiveness; because trees with the bark so injured, and with so many dead spots as these twigs have, would not be able to carry on their functions properly and mature their fruit. I know nothing about the disease, and could not suggest any remedy. I would be happy to take samples with me.

Mr. PEART—The other apples in the orchard are not affected in this way at all. In my neighbors' orchards I found some places diseased, but not to any great extent.

The PRESIDENT—Has it been confined to the one variety in your orchard?

Mr. PEART—I can say that, and the trees themselves are healthy, vigorous trees; it does not seem to affect them.

COLD STORAGE.

Q—Is the cold storage of fruit and vegetables fully worked? How is the temperature best regulated in the storehouse?

The SECRETARY—Very little experience has been had in cold storage in Ontario. It is done a good deal in the United States, and I believe there is a process by the use of anhydrous ammonia, by which cold storage is better effected than by any other means yet tried.

Mr. RICE (Port Huron, Mich.)—In Wayne county, N. Y., they practice it a good deal, and they do not approve of ice in the cold storage of apples. The idea seems to be to put your apples in a shed and keep them as cool as possible, and have it arranged to admit the cold air at night. If it is too cool, shut it off. They prefer about 28 to 30 degrees if they can keep it at that point.

Mr. DEMPSEY—I have known Flemish Beauty pears kept perfectly till Christmas in an ice apartment formed with boards in an ordinary cellar; but when parties opened the

door connected with the furnace room all were spoiled. We have had no difficulty in keeping fruits any length of time, but they perished as soon as we took them out; so we abandoned keeping with ice. A gentleman in Michigan, named Baldwin, succeeded in keeping Duchess of Oldenburg apples nicely till July in a building above ground, sawdust walls, a confined air chamber between the two sawdust walls, or one might be a paper wall. When sawdust was difficult to get he used straw only much thicker. He had treble doors and windows, which he would throw open on opposite sides of the building on cold nights, and reduce the temperature to 25 degrees if possible, and then he closed the doors and depended on the cold air remaining, by having the apartment as perfectly sealed as possible. A temperature of 40 degrees he told me was quite sufficient so long as it was even.

Mr. GOUINLOCK—We opened thirty barrels last week and they are keeping very well, in D. D. Wilson's ice storehouse where he keeps his eggs. Two years ago my son-in-law kept six hundred barrels till spring, and only lost twelve barrels. We have some there now and they seem to be keeping well.

The PRESIDENT—Where there is ice storage the fruit seems to decay very rapidly when it is taken out of that storage.

Mr. A. M. SMITH (St. Catharines)—At the horticultural meeting in Rochester, N. Y., a short time ago, this matter was discussed, and a building was described such as Mr. Dempsey mentions; and from those buildings, leading out underground some eight or ten feet, either on to a side hill or into the wall, were some six or eight inch pipe to let the air in, after being reduced to the natural temperature of earth; and then there were ventilators to let it out or to create a draft, if necessary, to draw it in, and these could be shut off or opened. Fruit can be kept in that way nearly as well as on ice, and it did not perish as quickly when exposed to the air.

Mr. RICE—The objection to that is that the sawdust produces dry rot in the building, and our people prefer to use paper and make separate air chambers. Then the draft through the ground does not give sufficient cold, so that whenever the nights are colder than the air would be coming through the ground, it is better to open the doors to give ventilation. Forty-eight degrees is the degree they get by the air coming through the ground; and then the pipes were not considered large enough for giving sufficient ventilation.

Prof. SAUNDERS—At a recent meeting in Wolfville a number of samples were brought which showed that a fungus or black growth had developed at a furious rate on apples after they had been barreled in a cellar. It was due no doubt to the presence of moisture, with a sufficiently high temperature to promote fungus growing. Apples shipped from Nova Scotia this year have been returned as almost absolutely worthless, because the spots have grown to such an extent that they have been disfigured so as to be unmarketable; and in connection with this apple spot or fungus another mould has shown itself so as to make the apple more unsightly.

Mr. A. M. SMITH—We frequently found in packing among Snow apples and sometimes Northern Spies, that the spots were enlarging, and another fungus made its appearance in the form of a white mould, and the apples soon decayed.

Mr. ALEXANDER (Hamilton)—I had some Pippins affected in the way Prof. Saunders speaks of—each apple having a dozen or score of black spots. The cellar was perfectly dry, but I put it down to the high temperature—50 degrees sometimes.

The SECRETARY—If the apple-spot spreads after the fruit is packed, it is very important for us to know it, so that we may the more carefully keep out the affected ones. I had not thought of the possibility of sound apples being affected after they were put away, but I have seen it said within a few days, by a scientist, that the spores of this fungus would germinate and spread the disease, even after the fruit is packed away in the cellar.

Prof. SAUNDERS—In Nova Scotia a gentleman brought samples of apples that had been binned and barreled, and you could see very small spots on those that had been

kept in bins; and on those that had been kept in barrels these spots appeared greatly enlarged. It seemed to be a development of the fungus growth that had begun in the apple—the spots not being any larger than pin-heads, or perhaps not as large as that. I think this difficulty could be got over by fruit growers putting their apples either in barrels or bins under the effect of sulphurous acid gas, which could be made very easily in the cellar, and that would permeate and kill the fungus that was on the apple, and I think prevent the spreading of it. It is a remedy so easily applied that any one could try it.

Mr. MORTON—Have you any data whereby you could fix the temperature at which the fungus would not grow?

Prof. SAUNDERS—No.

THE BAKER GERMAN PRUNE.

Q—Does any member know anything of a plum or prune called the Baker, said to be successfully grown near Collingwood?

The SECRETARY—At our meeting last July at Collingwood we found we were in a great plum country, and this plum was shown to us. It is simply a variety of the German prune which has been propagated from seed, and is grown very largely in that vicinity, and they consider it one of the best prunes that they have met with. It was highly commended and noticed in our report, but I do not think any of our nurserymen have propagated it.

The PRESIDENT—There was some fruit of it sent, after ripening, to me, and the quality was superior to the German prune. Growers told us that they make more money out of that local plum than anything else on the list that they have, and they have most of our varieties.

NORTHERN OR SOUTHERN GROWN TREES.

Q—Is the climate of New York better for raising nursery stock than Ontario, to such an extent that many Canadian nurserymen really import what they are selling? Are such imported trees as long-lived as native growers?

Mr. MORRIS—I claim that the climate of Niagara peninsula is fully as good for raising nursery stock as New York state: and nurserymen of Niagara district grow the bulk of what they sell. There is no nurseryman in Canada or the States that can grow all they sell, because they will run short in some varieties. The fashions change. There will be a run on a certain class of plants in four years that they are not expected to meet, and no matter how extensive the nursery they will have to buy to keep the assortment up.

Mr. MORDEN—There is a good deal of quackery in this matter. There is an idea abroad that it makes a vast difference as to the particular climate in which a tree is raised. My idea is that you get the best article from the place that is best suited to produce it—it may be north, and it may be south. As a general rule, it is safe to get our stock in the same latitude as we wish to plant in. Sometimes we can get a better article grown south of us than any where else.

Prof. SAUNDERS—Mr. Morden's doctrine may be safe for Niagara peninsula, but I think outside of that it would not be. Where climatic influences are unfavorable, it is very important that we get trees, grown from similar climates; and if you take them north you want to get the trees grown as far north as possible; and therefore Canadian-grown trees are very much better for the northern section of this Province than those that come from as far south as Rochester, although it may be admitted that trees may be grown easier there—grown with less cost to the nurseryman, where the climate and soil are favorable to that growth; but to argue that we should go where the trees grow best for the tree that we want to grow best, is an argument that would not stand. For the Ottawa district the trees that grow best are the trees that have grown as far north as we can get them.

Mr. MORRIS—To make healthy trees they must be grown while they are small, in a mild climate. Niagara peninsula is particularly adapted for nurseries on that account. I have known nurseries started north of London failures nearly every time, from the trees becoming all black-hearted while they are young.

Mr. RICE—In Michigan we cannot grow apple trees when they are young without getting them black-hearted, even as far south as Toledo, but we go down to Rochester and get good healthy trees, and we can raise good orchards.

The SECRETARY—I got a 1,000 trees from Xenia, Ohio, once, and planted them in Niagara district, and only about one-tenth grew well; but they were entirely different from the Ontario trees. They were a long, succulent growth, and far more tender than those from our own raising.

Q. Do not nurserymen represent that their stock is home grown when they are really imported?

Mr. MORTON—No.

The PRESIDENT—We might talk all the afternoon about this subject. It is not supposed that travelling agents are all honest. They are like the rest of humanity, and while I like to indulge in a little healthy abuse of a tree agent now and then, I have a good deal of sympathy for them, because if it were not for them we would not be as advanced in the science of horticulture as we are. (Hear, hear.) They have introduced varieties into different sections that we never would have known anything about otherwise. As far as we have discovered, there is no respectable nurseryman that desires to misrepresent, but these things will occur sometimes.

FORESTRY.

The following paper, contributed by I. C. Chapais, St. Denis, Quebec, was read:—

In our Dominion of Canada some boldness is necessary to speak of forest preservation and restoration. In vain we show that countries once covered with forests as luxuriant as ours are now suffering for want of firewood and timber; the settler who has yet his axe in hand to fell the trees growing on the piece of land he intends to sow, answers us with a sneer. For him the tree is still an enemy, and you cannot make him believe that a day may come when he will regret having treated it too long as such. On the other hand, the lumber merchant who owns forest limits apparently inexhausible, wants to make a fortune as quickly as he can, and turns a deaf ear to economists who try to make him take forethought for the coming generation.

And yet many districts covered with forests thirty years ago contain now no more firewood nor timber. Very often even agriculture has derived no benefit whatever from a clearing of the trees so foolishly made, because it was made on land quite unfit for cultivation now that the beneficial influence of the ashes of the wood burnt during the clearing is no more available. I know whole regions which were cleared in that way by settlers who had to desert the land soon after, because it was worth nothing. Such districts would have been as many inexhaustible wood reserves for future generations, who during an almost endless period of time would find on them all the wood they want. To-day these same districts are quite useless in every respect.

As I am invited to set forth before you to-day my ideas on the forestry question I beg you to allow me to express the opinion that if we wish to be listened to by the farmer who is always prejudiced against ideas quite new to him, we must, for the present, speak only of what is the least apt to run counter to his prejudices. If this is admitted I think we must specially insist on what follows:

Let us request our Governments to give directions to their land surveyors chosen to fix the boundaries of the new townships opened every year to colonisation to point out with precision in their reports the regions unfit for agriculture, in order that they never be granted for agricultural purposes.

Let us further urge that the wood reserves thus created, as well as the forest limits so granted for the manufacture of timber, be protected against a systematical and complete devastation to which they are subjected by too greedy limit owners, and against fire. Forests can be protected against the aforesaid devastation by enacting regulations to prevent the useless destruction of young trees and the ill-timed felling of trees not having yet reached their full growths. As to protection against fire, the most effectual would be the promulgation of a regulation to compel woodmen to free the land from boughs, chips, shavings, branches, and other wastage, which tend to increase in a very large proportion the number of bush fires. I know that this proposal will be called an impossibility, specially by woodmen; but "the word impossible does not belong to the French language," said a famous French general, and I don't think it belongs any more to the English language.

As to the question of replanting in places where the forest has been destroyed blindly, it is still more difficult to interest the farmer about it than it is to speak to him of forest preservation and protection. His forestry education is yet too superficial to make him apt to understand that there is not only a benefit, but that it is a necessity to replant in denuded regions. In vain we mention the fact that there are foreign countries where, by the complete clearing of mountain slopes, fearful periodical floods are caused, which put under the obligation of being banked up the towns situated on the banks of rivers taking their rise on these slopes to prevent them from being overflowed. Such is the case for many towns situated on the river Loire, in France. We begin even to see the same occurrence in our own country. The river St. Lawrence is now subject to much more considerable floods than it was formerly, and we have to-day the sight of the town of Montreal protected by a dike, the same as the towns of France; yet for us this is only the beginning. But all that is insufficient to convince the farmer that replanting is necessary.

Nevertheless, replanting is necessary. As I just said, the farmer egotistically says that he won't plant trees, the shade of which he will not enjoy. A good farmer told me once: "You want me to plant trees; I am not green; I would be dead a long time before the trees that I would plant now would be large enough to shade my grave." Vainly I tried to convince him that he was young enough to enjoy the fruit of his toil; that trees grow quicker than it is generally believed. None so deaf as those who won't hear. Happily, there is another way of restoring forests, besides the mode of replanting which is so repugnant to the farmer. Almost always in the regions deprived of wood it is an easy matter to bring the land to produce by itself a good growth of trees. It is what I would call the natural restoration of forests, and please allow me to quote here a short part of a chapter I wrote on this subject four years ago in my book, *The Canadian Forester's Illustrated Guide.*

Extensive districts, long cleared of their forest growth, frequently cover themselves again with wood, if care is taken to aid nature in her operations. Generally speaking, plains and damp marshes, where a few wretched stunted trees show themselves here and there, are susceptible of this treatment. Drainage, by means of deep open ditches, of sufficient frequency to admit of the tree growing, if not of perfectly drying the land, is the only thing necessary. The moment that this has been done a multitude of little trees will spring up, which were only waiting for this amelioration to show themselves, and the new growth is usually so prolific and so rapid that we should be inclined to call it spontaneous, did we not know how long seeds would lie dormant in the ground, until all things necessary for their growth were present. The same thing occurs on certain hill-sides, where, protection being afforded against the teeth and hoofs of cattle, their hoary heads soon become crowned with a wreath of luxuriant verdure.

I must state that to-day this natural restoration is well understood by our farmers, and I can prove it by an example. The tourist who travels by the Intercolonial Railway from Quebec down to Rimouski, in the Province of Quebec, goes through a region of one hundred and eighty miles which forty years ago was far the greatest part in forest. This forest has been felled, burnt, and has made place to numerous settlements. But the land forming the slope of the mountain's range at the bottom of which runs the railroad, right through the aforesaid region, having been found unfit for cultivation, has been left by itself to make a second growth of wood. The new trees have been thinned, well taken care of, kept uninjured from the teeth and feet of animals, and now, from Quebec to Rimouski, if you travel through that region during the month of April, you will hear

everywhere the gay French songs of *A la claire Fontaine*, *En Roulant ma boule*, and *Vive la Canadienne* sung to the top of his voice by the young farmer making sugar in the fine maple bushes grown on the land once wrongfully deprived of its trees by his father.

I dwelt, perhaps, too much on my subject, but I will offer as an excuse that it is so wide and so attractive that I always find it difficult to be concise when I treat it. I hope, however, that I have not been too annoying.

FORESTRY ABROAD AND AT HOME.

Mr. R. W. PHIPPS, Clerk of Forestry for Ontario, addressed the convention as follows: I have no doubt that you all who are so much interested in fruit growing are to a certain extent interested in general tree growing, which is a matter very similar, and which has a great bearing on the other. We will go for a moment into the consideration of first principles in this matter, and we will look at what have been the effects in other countries—for there is very little use in general speculation without we have some facts to go on. We find that in the Old World the whole basin of the Mediterranean, the countries bordering thereon—Syria, Palestine, and all those ancient countries which formerly produced such magnificent armies, which flourished so greatly—we find them to-day to a very great extent a desert. We ask the reason why principalities which formerly poured forth their legions could not produce a company. It is a waste of sand. It is a desert. We find but one reason, and that is, these countries have stripped the land of the forests which formerly in every direction embowered the soil. Nobody would make any objection to a proper clearing of forest, for farms are as necessary to us as anything else; but in these examples which I am quoting they have cleared too much. They have cleared not only the arable land, fruitful for food, but they have cleared the side of the mountain; they have cleared the useless swamp; they have cleared the rocky precipice, which might well have been left in the trees with which nature planted it, and which would forever, with their natural habits of reproduction, have continued themselves in strength and beauty. Had this been allowed, had the useless parts of the land—useless except for forest—been allowed to perpetuate themselves in forest, the fruitful soil would never have lost its fruitfulness, and never have ceased to yield its proper return. We find the contrary. We find in this country, where all has been cleared, that a very great proportion now is desolate and yields no longer that return which formerly it did. It yields no more the men, the oxen, the wheat, the great ships, the armies, the navies—nothing is there.

Now, applying the principles of science to this, we find the reason: that the tree, that the forest, that the grove, is necessary to give us the proper returns of the summer rain, of the spring showers, of the gentle influence of moisture over the land. To examine more minutely into this, perhaps we will spend a few minutes in considering the manner in which the tree joins with the atmosphere above in producing and perpetuating rain at the time when it is needed. I would ask you to consider with me, the moment that the tree draws its nourishment from the roots, and partly from the atmosphere, that that nourishment brought up from the roots is carried up by the very large amount of water which passes up to the leaves; that this nourishment is there joined to the nourishment the atmosphere affords, and then the food for the tree passes back to where it is needed, while the water which carried it up, which is the vehicle, passes away from the leaves—very little water going down to the roots again. From this cause we have the reason why forests sent up very large amounts of moisture to the air. The quantity has not been properly estimated as yet; we cannot get at it exactly, but we know that a large forest is calculated to send up what is called millions of tons of water to the atmosphere above in the shape of vapor. This vapor, being cool, as it necessarily is, being produced in the forest which is always cool, passes into the clouds above, and joining with them there, the clouds above bringing each a stock of rain from the southern regions, from the equator, the junction of the two naturally occasions precipitation and occasions rain nearer or farther away. Now the very opposite of this takes place on a sandy desert, or a country covered with mere plowed land—a country destitute of herb-

age—because the atmosphere drawn up from these—the evaporation—is drier than the clouds above, and instead of occasioning precipitation by joining with the clouds above, it occasions the opposite, and if there be a cloud above it would dissipate it and change it into the atmosphere so that the cloud would not be seen. That is the result of the fact that the air holds, when heated, a certain amount of water, which when cold it cannot hold. When the cold air from below rises to the heated air above, the heated air above containing moisture, that moisture must to a certain extent fall out, that is, as we are well aware, precipitation.

Now, I would like to suggest to you what I have observed in my summer journey this year to England and through the Highlands. We are all aware that in England the fields will give forth, in grass and grain, a far superior return to what they do in Canada. I was astonished in hearing the average of grain and noticing the average of grass produced by these English acres. It is something infinitely superior to ours. I passed through that country, going up and down through England and Scotland, and crossing the country again, till I should think I covered about two thousand miles in these examinations; and everywhere I found that that country, being subdivided principally by hedges, and here and there always having a quantity of trees interspersing, and every here and there also a plantation or a pleasant little bit of wood or copse—I found that wherever I passed through that country it may be said to be sheltered; and I take it that that shelter which they preserve there is the very thing which, joining their geographical position, gives them the large crops they enjoy.

I would give you my own experience to bear out this idea. Having been an old clearer of the forest myself for many years, and knowing many townships formerly with woods which are now in farms, I have invariably found that when we went to clear the forest the land was full of little rivers, springs, creeks—full of moisture. You could get water at two or three feet. Afterwards, when we had half cleared the forest, a good many small creeks had disappeared; you would have to go down fifteen, perhaps twenty feet, for water; and when we had cleared the township too much, or again, when leaving it to about one-tenth in wood, by that time I have known us have to go fifty or sixty feet for water; our little saw-mills had long stopped; and where we formerly had pleasant little creeks every here and there most of the summer, they were dry, sun-baked and muddy.

And then I will point out to you a remarkable thing which I have noticed in many parts, and which has a close bearing on our fruit-growing ideas, and that is, that when at the first commencement of clearing we could plant a tree anywhere and it would grow, but when we cleared a good deal of the township we found that we might plant a good many trees along the roadside, and the ground seemed hard, its natural power of growth was gone, and we would lose a good many out of the trees we planted alone, where as formerly we would certainly not have lost one.

In going throughout England and Scotland I went to three large forests—the Forest of Dean, the New Forest, and the Forest of Windsor. Now they are in England, where land is dear, where land is valuable, every corner; nevertheless they perpetuate these three large forests, having, as well as I remember, from 50,000 to 100,000 acres of forest in each. They will not cut them down. They are kept inviolable; and when you are in London, in the greatest metropolis in the world, surrounded on every side by noise of business and multiplicity of business affairs, you are nevertheless within two hours of forests—two hours travel by railway—where you may wander for days and never imagine that there was such a thing as a town, or such a thing as a farm.

We pass on to Scotland again. There I found immense forests covering the country in all directions, and I found that the great Scottish hills, great barren wildernesses and precipices, are being continually covered to-day with young trees by the forests they are there planting in all directions, until, as you pass along by railway, you see the great mountain side—which you could notice has been a mountain side bleak and barren for centuries—you will see half of that covered with beautiful young trees perhaps two or three feet high. You go on through and you will find that they are taking great care of their forests, perpetuating them in all directions; and they find profit in it.

Now, I would give my experience in the border counties. Passing through the old border counties, both on the English and immediately on the Scottish border, we see immense hills there, large fields, great valleys—very few farms, however; very few cattle; very few farm-houses—all apparently a barren wilderness; and the reason, one may very well see, is that long ago they have cut down the trees; you can see no trees there. When I was in the forest of Athole, talking to Mr. McGregor—he is the Duke's chief forester there—he told me he could well remember having been engaged in planting for the Duke this twenty or thirty years; that many of the pieces of land which he has planted were utterly barren. They grew nothing but heather, which was useless; but once he planted trees, and allowed them to grow for a few years, the heather was changed into grass, and plenty of good pasture existed where formerly nothing but black heather and barren rock was.

I went to Dr. Cleghorn, of St. Andrews, who was the chief forester of India for years. He gave me his Scottish experience. He says: "You must not suppose here that we grow timber because we can sell it. I can't sell my timber. I could go and buy cheaper at the saw-mill some timber brought from America. But I grow my trees and plant my forests because all the land adjacent there gives me a far better revenue, either for plowed land or for grazing land; because once it is sheltered, then vegetation begins."

Now, gentlemen, I compare that with the great stretches of land I pass through frequently in Canada, and I look over much of our country quite destitute of trees—a country where I once well remembered passing through a magnificent forest. I look over it all now, where I can hardly see a tree in sight, and I think that this is much the reason why we now gain such small crops compared to the magnificent ones we formerly had. I remember, myself, in clearing one township, when that township was not one quarter cleared certainly we sent double away to market which now that township does, when it is quite cleared, because there was then a richness in the soil.

Now I shall pass from that topic a moment and mention something which may suggest the value of planting trees. Considering the scarcity of wood now—and I can tell you from my communications with many furniture makers and wood workers throughout the country, I have every reason to believe that good timber—valuable timber—is getting very scarce in all directions throughout Ontario, and that we have not in the forests in the rear that valuable reserve of timber which we formerly had in the place where we stand and all surrounding us; it is not the same class of forest, and it will never give that class of timber. I am told by wood-workers that nothing in their idea, will pay so well as to plant some acres of valuable trees. If I were on a farm clear of its timber I should, the very first thing, plant a few acres across that farm, in a place where they would best shelter it, of good trees valuable for wood-working. Now, as you all know, those trees are expensive; but there is a variety which are cheap and easy to grow. I would take our own maple—of course, as you are aware, the hard maple for the dry land, the soft for the wet; and I would put four maple trees to every one of a more valuable nature for wood-working; and I would leave a good tree in the centre, so that I might plant just enough very shortly to shade the land, and then as the trees grew up I should cultivate them for two or three years probably—not more—and then as they grew up I should be able to cut out my maples and use them for fire-wood or anything I liked, and I would have my centre trees growing up for valuable timber.

A great wood-working firm down to the east wrote me that they would be willing to pay for a farm covered with hickory from six inches up, or even six inches in the stem, a greater amount than they would pay for a whole crop of several townships near it, because that wood can hardly be got anywhere.

People speak of planting walnut as if they could get it immediately; but that is a great mistake. There are other trees which they had better plant, Over in Illinois I saw a beautiful field of walnut, ten acres, forty years old. The owner considered it worth $200,000, but said: "It is not worth a penny to cut now; look at what I am cutting;" and he showed me what he was thinning—logs perhaps twelve inches through,

but they were no good for walnut—they answered him very well for his bridges, his rough work about his farm. "You must wait," he said, "for twenty-five years more before you get large walnut trees that will give you the good boards you formerly got from the forest; for forty years it is all young wood; but when it gets to 60 or 65 years old then you get your great timber.

Now there is a sort of wood we can get in half that time—that is our own cherry, which will give us in thirty years a very good return.

There is a larch which I found largely planted in Scotland and England yields an excellent return; and for our shade trees, for our wind-breaks, I may mention that I have gone through all this country, and I find nothing better than the Norway spruce; but I would advise people to plant that around their orchards—not to attempt to cut it around too closely with their shears to make a hedge of it, because I have noticed it frequently turn brown and partially die. The spruce is really a tree, not a hedge plant; and when it grows big enough to want to be a tree it does not want to be a hedge any more. I should suggest that that distinction be always observed.

I may mention, before I close, some things that have been suggested at farmers' institutes should be done. In the first place, as we all know, we have immense pine forests. The great difficulty with these was that when the lumberman went in it was rather his interest to cut down this forest, because if he cut down the mature trees alone, he would leave a quantity of rubbish, which would catch fire and burn down the young trees which he would like to preserve. Now, those fires were preventible, and were caused largely by people with pipes, by camp fires, by careless sportsmen and by different methods sometimes but very seldom by lightning. Now, we have in the Province of Ontario—and I believe of all the States and Provinces of North America we are the only one that has done anything of the sort—we have in Ontario within the last two or three years got out a company of "fire rangers" throughout the summer months, when there is danger of fire. These men are paid half by the Province and half by the lumbermen; and wherever they see a smoke they travel towards it, put it out. If they find a camp that has left its fire, they put it out, follow up, and sometimes talk to the people; sometimes, where they are obliged to, prosecute them. They leave word in all the villages, "If you set fire carelessly you will be prosecuted." They speak to farmers and say, "When you are going to burn fallow we want you to take some precautions; we want you to warn your neighbors; we want you to tell us"—or something of that sort. So, gentlemen, we are taking much more care of fires than we did two or three years ago. It costs the Government some thousands of dollars yearly, and the lumbermen as much; but I see by this year's report that it is considered that last year alone they saved an immense amount of money, and I have no doubt they did; for in my wanderings through the forest I have seen small fires, which had been left by campers three weeks before, burning yet, and quite ready, when the wind sprang up, to involve the forest in ruin. Ontario has taken a great step in advance in this matter. (Applause.)

It has also been advised by some of the farmers that large nurseries be established, as in Europe—in Prussia especially—where they give away seeds and young trees of certain quality, and thereby encourage farmers to plant them. Of course it is always understood that reasonable bonds would have to be entered into, to take care of these trees, and plant them properly.

The third course that has been suggested is that the Government, in giving out wild lands, should always require that the hill slopes must be retained in forests. I was talking to Mr. George Allan, of the Canada Company, and he says that now in their deeds they always compel the settlers to retain ten acres in every hundred perpetually in forest; and I should like to observe that if that be done, a clause should necessarily be added that this be fenced, so that cattle be kept out; for if cattle be allowed to go into the forest they will certainly in time destroy it. They will bite down the young trees, and after that is done it is only a question of a short time when they old ones will cease to grow.

Other methods have been suggested, to the effect that Government should give away seeds and trees. That is not so effective here as on the borders of sea coast, where

there are great expanses of sand. I have found them, however, growing great forests by simply scatterings seed over sand or over grass fields. But there is another course suggested, and that we have followed to a certain extent of late years—that is, that forestry literature, such as pamphlets, and letters in newspapers, should be promulgated throughout the country. That we have done for the last two or three years, and I think with very fair effect; so that I think we may say in forest preservation Ontario is as far in advance as any State or Province in North America; and in some points to a considerable extent ahead of them. That is a gratifying consideration for us..

I believe every reasonable and thinking man among us must believe that the great need of Ontario is to have some better system—some more energetic steps taken—to preserve some portions of forest, and to plant more trees here and there. Now, there is no better way for this than for individuals here and there to add their voice to it, both in public and in the newspapers, and to agitate a system which was suggested by a great philanthropist in the United States—"If you wish to improve the course of tree planting," he said, "I should advise to do one great thing, and that is, to plant some trees." I think we should all add our voices, our influence in the press, our efforts in every direction, to advance this great object for this country. There is nothing will give it more benefit. There is nothing will add more to its agricultural power, to its stock of beautiful moisture; and when I say that I may add—which means the same thing—that there is nothing will add more to its general wealth; for countries have been impoverished by this simple method of destroying the forest; and countries have been re-invested with their original wealth by the simple process of re-establishing the forest. That is the point I wish to press upon you to-day; and I have no doubt you will agree with me; and that I may depend upon your efforts to assist me in this great object. (Applause.)

The PRESIDENT—What kind of forest trees are most profitable to grow on waste places?

Mr. PHIPPS—The Conifera, that is, the pine in its varieties, the fir, etc. The pine, if tolerably cultivated, will grow mostly anywhere. Then our own maple grows very well anywhere—always putting the hard maple on dry land, and the soft on wet. Then the ash in many localities will grow very well, and is a very valuable wood too. Of all others I think I should prefer the pine, and I do not know anything better than our own white pine.

[Mr. Phipps had to leave at this point to catch his train.]

Mr. MORRIS—This matter is of greater importance to the country at present than fruit growing, and this society should take more interest in it. Hickory is so difficult to transplant that it could not be recommended for forestry. Norway spruce is a very nice tree for ornament, but not for forestry. The wild cherry is a much more profitable tree to grow than the black walnut. The timber is worth almost as much, while the tree grows much faster and is not so poisonous to the soil or other trees in the neighborhood as walnut. One of the most valuable trees is the Catalpa Speciosa; it is hardy; grows well in Minnesota, and for fencing or posts is almost equal to cedar for lasting. We have two acres of Catalpa; they have been out about six years and will measure six to eight inches in diameter now. For near lake Ontario or the Niagara district the Tulip tree is recommended. It is very valuable for carriage-makers—carriage boxes are made of it.

Mr. MORRIS—The Linden is also a very good tree. European larch is very rapid growing, and better for wind-breaks or posts than spruce. The maples are too slow growing to be valuable. Catalpa is something like the sweet chestnut—you can cut it down as often as you like and it will sprout up from the root again, which is a great advantage. Elm I don't consider valuable, not even white elm; I think these others are better.

Mr. CASTON—Pine is too slow-growing; it takes it half a century to make a smart saw log, and then it is very rough. They do not reproduce themselves. You don't find the young ones among the larger ones. In our section you can scarcely see a single pine.

We will soon have to import all the timber for buildings. They have struck into hemlock now, so that soon all the soft timber will be gone. Lumbermen strip the land, and don't pay taxes on it, and it has to be sold over again, and it brings very small returns. If the Government would take that land back again and make it Crown lands, and plant it with timber it would pay in the long run. Butternut grows rapidly, and gives a valuable timber for furniture. The Catalpa is hardy, and seems to flourish north.

Mr. MORDEN—I have a good deal of faith in tree planting for shelter, and I believe before many years we will be able to use good land to produce timber. I believe it has its effects on the streams. But here is a nut for Mr. Phipps to crack: In the summer of 1887, right through the centre of this continent, from the Gulf of Mexico to Algoma, we had a drouth extending for months in the temperate region that affected the crops very much. In the same summer, on the Atlantic seacoast and up the valley of the Mississippi, clear up to the North-West, where it is prairie for thousands of miles, we had abundance of rain. Now, if the forests are going to produce the rain, and if the prairies are going to banish the rain, how can we account for that? It sounds very well as a matter of theory, but I think it is a pretty large undertaking to make climate by planting trees. I think the chief benefit of the forests in this respect is their effect as wind-breaks. Would it not pay to plant cedar? They grow rapidly. It is not necessary to go to wet ground. They will grow nicely on dry ground. Cedar is a valuable timber, and I fancy before many years we will see it planted by the acre, as well as other varieties.

Prof. SAUNDERS—Mr. Beall, what has been your experience in growing walnuts from seeds as to the size they attain in ten years?

Mr. BEALL—I should say in ten years they would be from five to six inches in diameter, and 12 to 15 feet high; that is from measurement of mine. I have about fifty trees, about 21 years since they came up, and they are from ten to sixteen inches in diameter and from 30 to 40 feet high. The diameter is reckoned from about two and a half feet above the ground.

Mr. JAMES GOLDIE (Guelph)—Many parts of our country have been so denuded of the forests that it is suffering very much. The Government should be memorialized. When public land is sold there should be a reservation, either on each farm as it is sold off, or else reserve a portion of the public domain in small tracts through the country. That apparently, has never been taken into consideration by the Government.

Dr. BURGESS—I have seen walnut timber cut, said to be about thirty years' growth, which cabinetmakers pronounced very fair for use.

The SECRETARY—There is here a specimen of black walnut, sent by Hon. Mr. Joly, of Quebec. It is eight years from the nut. There are also some seedlings here, sent to us to show what size seedlings would grow in one year.

The PRESIDENT—Have we anyone here who has planted an experimental plot of forest trees?

Mr. MORRIS—We have planted about five acres in forestry, besides long lengths of strips around the borders, perhaps twenty feet wide. These strips are mixtures of trees, but the five acres contain Catalpa, American ash, and wild black cherry. I would recommend, in planting, that these trees be mixed, because the roots of some will go downward, while some will spread near the surface, and in that way they will occupy all the ground. Black cherry goes very well with black walnut. Trees are much more profitable than a farm crop would be if a person can wait ten or fifteen years.

Prof. SAUNDERS—Mr. Phipps has given us an admirable address, and in a very practical manner pointed out methods by which tree-planting may be encouraged. He went too far, however, in saying that it would take 60 to 70 years to get a crop of black walnut trees that would be merchantable. I saw a grove in Champagne, Ill., some years ago, which had been planted out twenty years ago, and they would go from 12 to 16 inches. I measured several, and I think they would have averaged 14 inches, taking them all around. I think if you add twenty years more to them they would be

merchantable. About 18 years since I planted some black walnut, butternut, and hickory, and the last time I saw them the walnut and butternut had made fully twice the growth in the same time that the hickory had. It took three or four years before the hickory seemed to do anything at all, and then the advancement was not at all rapid. They have a very long tap root, and they are exceedingly difficult to transplant and made to grow, even if you take them two years from seed. Last year in Ottawa we put out some 300 or 400 trees of that age, and I expect in the spring to find that at least two-thirds of them are dead. They were in a very doubtful state in the autumn. Yet the timber is very valuable, and we should not be easily discouraged, and if we could arrange to plant the nuts where the trees are to grow we could do a great deal better than by buying young seedlings and planting them out. The same remark would apply to the black walnut and butternut. Both of them we know to be valuable for timber, and also for the shelter they afford. We have had only two season's experience at Ottawa, but there are nuts that we planted the first season; I noticed quite a difference between those that were transplanted on the new plantation and those that were planted in the original plot. They are nearly double the size where they were left, not transplanted; and I feel certain that the trees that make so strong a start as they at the outset would make a much greater growth afterwards than we should anticipate when we see them at the end of two years. With regard to pines, the Scotch pine has impressed me more favorably as a tree likely to be useful as a timber tree for planting in this country than the white pine, for the reason that it seems to be a very rapid grower. I have had some Scotch pine out for 15 or 16 years, and they have certainly made a larger growth than the Norway spruce in the same time, and I think if I were planting a plantation, looking forward to the wood principally, I should expect to get better results from the Norway pine than from the spruce—better, probably, than the white pine. I think there is no doubt that forests have a great influence on rainfall, and also that they have a considerable influence in inducing local showers; and yet it is a point that is very difficult to prove, and such circumstances as Mr. Morden advances show that there is no rule without an exception, and there are a great many exceptions in regard to this question of forests inducing rainfall. However, I think we may take it as a well-established fact that land that is not influenced by trees—supposing the climate to be the same—does not, as a rule, get the same amount of rainfall that land will where it is adjacent to large bodies of wood. It is not fair to compare Ontario with the maritime provinces; for instance, on the Atlantic seaboard, where they have a large amount of evaporation from the ocean right at hand to give them an abundance of rainfall there. I would imagine they would have plenty of rainfall where they had trees around. The same is the case on the Pacific coast. There they have too much rain—almost every year too much rain, although they have their dry periods occasionally in the summer time, notwithstanding the enormous wood growth there is there. It shows it is a question it is not well to be too dogmatic about; and there is another aspect of that question of evaporation which Mr. Phipps did not touch, and that is the enormous evaporation that goes on from a field of growing crop. It would be a difficult question to answer how far the evaporation from growing crops should be held to counterbalance the evaporation from trees; but the question of shelter is a very important one, and I think that was very fairly put. Mr. Phipps said not to plant soft maples on high lands, but I have seen soft maples growing as fine on high, dry soils as in the wet soils. [A delegate—"Correct."] And although we commonly find the tree growing in wet lands, yet it stands transplanting on dry soil, and does very well. (Hear, hear.) And as a tree being particularly valuable for shelter I think we should not hesitate to plant it on high land. Indeed, for shelter, I think it would make better shelter in summer, and more of it than the sugar maples, because it is a more rapid grower, and especially as it would attract the winds more fully on account of its growing of a more bushy form, and not generally growing so high. At Ottawa we have accumulated about 100,000 forest trees, and these have been planted out, some in sheltered belts and some in plots. I was glad to hear that remark from Mr. Morris about planting mixed clumps rather than undertaking to grow any one particular kind of tree. That is the way with nature; you find ten or twelve different trees in one clump. Those who have tested forestry in different parts of the world find

that many varieties will grow better than a single variety. One reason is that some strike deep roots and some are shallow-rooted. Another reason—very important—is that all our forest trees are infected at times by insect enemies, and sometimes you have seen trees entirely stripped of their leaves. As a rule, the insects that feed on one tree do not feed on another. If you have a tree stripped in that position where it is sheltered by surrounding trees, it is not apt to be so much injured as if surrounded by trees stripped like itself; and in immunity from insects it is very important to have trees planted in mixed clumps. In Ottawa we have planted out across one end of the farm a number of clumps of trees, and it is proposed to continue it all across the end where we are planting the trees in clumps of one kind, a plan to which, as I have said, there are many objections; but on the other side we are planting mixed clumps, so that we shall be able to demonstrate what the difference actually is, or the advantage of one plan over another by taking the measurements of the trees and by having these living examples to show to farmers in the future. Having plenty of trees there, we shall be able to extend this forest planting in clumps and plots and hedges and belts in such a manner that in a few years we shall have some interesting objects to inspect. We have a farm at Indian Head, in the North-West Territories. There was not a tree or bush anywhere in sight when we took hold last spring. Twenty-thousand young forest trees, of some forty or fifty varieties, were sent up last spring, and were planted out, and most of them were doing well when I last heard. If any fail I do not think we should give up the growing of those particular trees that fail from one experiment like that, because you all know it is a great advantage in planting trees in the shelter of other trees; and in order to provide the conditions that are favorable for testing other trees, a large number of native trees are being grown on the same place from seed obtained last autumn of what is known as the Manitoba maple, the *Negunda aceroides*. From trees grown in Manitoba we raised something like 40,000 young trees, which will compare very favorably with this sample here of Catalpa one year old. The young trees would average a height of ten to twelve inches, and strong-rooted; and with a start there of about 40,000 trees upon the farm we hope in a few years to get sufficient shelter to give other trees a good chance. Besides that, we have found a nursery plantation near Brandon where there was a number of these same trees from six to eight feet high, and we secured about a thousand of those and planted them out so as to make a greater show in the near future, so that the monotony of the farm may be broken in on, and to provide shelter for these other trees to be tested. The same course will be taken on the farm in Brandon, which was began last July. Then with a view to ascertaining how far the black walnut and butternut may be grown to advantage throughout the entire length of the Dominion, I am at present preparing for distribution of black walnuts and butternuts, somewhere about fifty bushels altogether, putting them up in small bags so that we can send those to some four or five hundred points in the Dominion, from Prince Edward Island to Vancouver, taking in the North-west Territories, and while it is not to be expected that these trees will succeed everywhere, yet we shall find, from the great diversities of climate, many localities where both will thrive. I was surprised to find the basswoods growing on the district of the Pembina mountains, a district they are not supposed to reach, and I also found them growing on the Riding mountains, a distance north of Winnipeg, and where basswood will succeed so well I don't see why butternut will not succeed, for it is supposed to be the hardiest.

Mr. MORRIS—Yes, considerably the hardiest.

Prof. SAUNDERS—We know the butternut succeeds in Lindsay, and in Nova Scotia a few weeks ago we found it. I hope in a few years we shall have some good reports from this distribution we are now preparing to send out. It is a very difficult thing to make much impression upon a subject so vast and important as this in a year or two, but if we can once satisfy the people on the North-west plains that trees can be grown to advantage, there is enough energy in the people themselves to buy out almost all of the seeds that can be had, and plant them out with a view to beautifying their homes and modifying the climate, giving that shelter around their farms which is so desirable. We must depend on the people themselves more than our Government help, for whatever

Government will enact in this matter, very little will result from it unless individuals put their shoulders to the wheel and help along the subject by planting trees, and planting them plentifully themselves. (Applause.)

Mr. WELD—Will young walnut trees succeed by cutting the top off? will they re-bud and form trees? and will the horse-chestnut?

Mr. MORRIS—The black walnut will sprout if it is not large, perhaps not over a couple of inches. I would say the same as to the horse-chestnut, while the latter are small, say up to an inch at the bottom, there are generally buds near the surface, or below the surface, that will sprout. Of course after they get large, and these buds disappear, they will not sprout.

Mr. J. M. PETTIT moved, seconded by Mr. A. D. LEE, That this Association do memorialize the Ontario Legislature, and urge upon them the necessity of enacting such laws as would encourage the protection of existing forests, and further assist farmers and others in planting shade trees and wind-breaks.

This resolution was carried unanimously.

FORESTRY IN INDIA.

The following paper was contributed by Mr. R. S. Dodds, Conservator of Forests in the territories of the Nizam of Hyderabad in India :—

For some years I held the appointment of Conservator of Forests in the territories of His Highness the Nizam of Hyderabad. Forest conservancy had been in existence about fifteen years previously, but the department had been presided over by native element entirely, and, partly on this account and partly from a grasping wish to realise an unduly large revenue, the system introduced was lax and unsatisfactory and the forests themselves were depleted to an alarming extent.

Apart from the destruction caused by the axe, each year many miles square of valuable forest land were devastated by fire, which every year crept in and which when once fairly alight, it was almost impossible to extinguish. These fires were sometimes the result of accident, but more frequently they were set going by the natives themselves so as to destroy the old dried-up grass and improve the village pasturage in the following year. The ashes of the burnt grass forming an excellent manure, and, stimulated by copious monsoon showers, bringing up a fresh succulent crop the following spring.

Besides the trees actually destroyed by fire, through the intense heat many others were gnarled and stunted in their growth, thus greatly lessening, if not totally destroying, their commercial value. In British India forest conservancy is carried to high perfection and although the working expenses are very high a large revenue over and above expenditure is realised each year from this source.

To minimise the loss from fire, in British India the more valuable forests are demarcated and are protected most carefully. All access on any pretext is forbidden, except of course to departmental subordinates ; to check the ingress of fire a broad space a couple of hundred feet wide is cleared of undergrowth and all other combustible matter, right ronnd the limits of this demarcated forest—this is called a "fire line." To carry out this work, of course incurs considerable outlay, but it is found to pay.

By far the most useful and valuable timber in the forests of India is "Teak" (*Tectyra grandis*). but the demand for this has been so great that at the present day it is rare to find a tree of exceptionally large growth. I remember seeing a table made of a single teak slab 8 feet in diameter ; such would now be simply unprocurable.

The other valuable timber trees are the "Deodar" (cedar of Lebanon). The habitat of this is principally on the Himalayan range. It is called the oak of India, the "Sal" (*Shorea robusta*) ; "Satin-wood" (*Chroroxylon swietenia*), which gives a very ornamental wood ; "Black-wood" (*Dalbergea latifolia*) ; "Ebony" tree (*Diospyrus melanoxylon*).

These two last work up into very handsome furniture, and the fruit of the last named is greatly eaten by natives; "Unjun" (*Hardwickia binata*). The sap-wood of this is quite white but the heart, in a matured tree, is 8 to 10 inches in diameter, in color perfectly black and as hard as iron. The natives dislike cutting it down as it turns the edges of their axes. The "Dhamin" (*Grewia elastica*): this is the lancewood of India and is very useful for gig-shafts, bows, etc.

Besides these there are the following economic trees, which are more useful for their products than for their timber: The "Babool" (*Acacia arabica*), which yields the firm, clear gum-arabic of commerce; the "Kheir" (*Acacia catechu*), the bark of which gives a fast red dye and is used in tanning; the "Bael" (*Ægle marmelos*), which yields an apple-looking fruit, the pulp of which is invaluable as a never-failing specific in bowel complaints; the "Mhowa" (*Bassia latifolia*), the fruit of which is greedily eaten by the natives in times of scarcity, its principal use however is in the preparation of an intoxicating liquor; the "Olibanum" (*Boswellia thurifera*), this yields plentifully a fragrant gum-resin much used by the people; the "Kaweet" (*Feronia elephantum*), fruit edible and slightly astringent; the "Mango" (*Mangifera Indica*), when well cultured, this yields, in my opinion, the only fruit worth eating in India; the "Serdi," or date palm, which supplies the "toddy" largely consumed all over India; when fresh this toddy is harmless, but when fermented it is very intoxicating. By Europeans it is used instead of "barm" in bread-making. The "Tamarind," of which both the timber and fruit are much prized.

The two principal sacred trees of India are the Banyan and the Peepul; the former has a wonderful manner of extending itself by dropping down roots from its branches which, entering the ground, take root, grow and in time throw out branches on their own account. I saw a single tree which was capable of sheltering a regiment of soldiers!

I must not omit to refer to that giant grass the "Bamboo," which is to be found slim and slender, when it is very useful for basket-making; also growing to the height of 70 to 80 feet with a diameter of 8 to 10 inches. These last are used for making rafts, for building-scaffolding, and, when split in two, for roofing houses of the commoner sort. Of course these gigantic bamboos are hollow, otherwise when growing they could not support their own weight. As ducts for water for irrigation and other purposes these bamboos are also very useful, There is a small description of "male" bamboo (in contra-distinction to the "female," which is hollow,) which rarely exceeds three inches in diameter. This is used almost exclusively for spear shafts, useful in warfare and also when hog-hunting.

In the State of Hyderabad it was the custom to lease out the inferior timber in the forests yearly to the highest bidder. This was done by the revenue authorities in whose charge this inferior timber remained, but the anomaly existed that the better descriptions of timber, *in the same forests*, were under the care of the Forest department. Thus each forest had two masters, which we have the best authority for knowing is not a good arrangement. Too often the lessor of the inferior timber took up his contract as a cloak to cover thefts of the better sort. The Forest department in Hyderabad sold all timber standing, the cost of cutting and carting away falling on the purchaser. In British India a different and a better system prevailed: Government established timber depots at different places through the forests and held periodical sales.

The most popular and successful sales of this description were of Sandal-wood, which grows to great perfection on the Western Ghauts. The fragrance of this wood is well known. In Bombay the best billets of it are used for ornamental carving into card cases work boxes, glove boxes, etc., while the roots and the inferior sorts are readily bought by rich natives to be used when burning the dead bodies of their relatives.

One great drawback to successful forest conservancy in the independent native states of India is the great number of "jaghires" scattered over the country. These are grants of land which have been made over to certain individuals, in perpetuity, for various reasons; it may have been for meritorious services to the state, or it may have been on condition that a certain number of armed men were properly equipped and maintained

for the public service; anyhow these "jaghires" are regular stumbling-blocks to progress; criminals take refuge in them, and while within the boundaries are free from arrest. Too often the officials are in league with thieves and grant certificates, falsely declaring that timber has been cut in private forests which really has been taken from government land.

As an effectual preventive of these malpractices I recommended His Highness' government to resume all forest land in the various jaghires, paying the owners by way of rental a sum annually, equal to the average of what had been realised in the ten years previously. They did not see, however, how to carry my suggestion into effect. The times were not ripe for such a *boulversement*. To do their duty thoroughly forest officers should be on tour eight months out of the twelve. Their duties take them into most dismal and deserted parts of the country, where the only living creatures met with were the denizens of the forest—wild beasts, and small tribes of people (Bheels, Gonds, etc.), in intellectual capacity only one degree higher. When the forester is a sportsman this loneliness is amply compensated for by the splendid shooting to be got—comprising all animals from the lordly tiger to the graceful gazelle. I cannot conclude this paper without paying a tribute of praise to His Highness the Nizam of Hyderabad and his government. His Highness has acquired a knowledge of English, and having been brought up under European tutelage has a taste for manly sports. He is quite an expert at driving a four-in-hand. In the administration of his country he has gathered round him men of genius and talent, conspicuous among whom is Nawab Moksin-al-mulk, and it is His Highness' earnest wish that all details of government should be assimilated as closely as possible to the English model. We know that imitation is the sincerest form of flattery. As Conservator of Forests he has now got a European, lent to him by the British Government, and who was specially selected on account of his industry and his superior knowledge of those details which go to the successful working of the Forest department. Improvements have been introduced but still much remains to be done, and it is only a question of time when the forests of the Hyderabad state will be on as satisfactory a footing as in any other province in India.

APPLE GROWING AND EXPORTATION.

Q.—Is apple-growing profitable? Does it pay to export our apples? What are the drawbacks to exportation? And as regards transportation of fruits to home and foreign markets, what complaints have we to make against the railway, express and steamboat companies?

Mr. P. C. Dempsey—I fail to see why the prospect for apple growing is less bright than it was fifty years ago. Nearly fifty years ago my first marketing of apples was at five cents a bushel—and we thought the price very remunerative. It was mostly common fruit, and I have repeatedly gathered fifty bushels from a tree. To-day, upon the same soil, there is growing a finer quality of apple, and people seem to think if they only get a dollar a barrel—forty cents a bushel—they are doing nothing. If people could afford to grow apples at five cents fifty years ago, I fail to see why they are not profitable to-day at forty cents a bushel. The trouble is with ourselves. We make mistakes in selecting varieties. Apples can be can be grown at a profit for ten cents a bushel, if they are properly cultivated and productive varieties cultivated, and will pay better than any farm property, if they can be grown even at those low rates. Our submitting to low prices is our own fault. I have seen good varieties of apples, well sorted and well packed, in Ottawa in October, sold at $3 a barrel. I saw at the same time the same varieties of apples, that had been badly handled, badly sorted and badly packed, only bringing $1 a barrel. It is only a question of profit and loss, whether it would pay us to properly select our fruit, pack and ship nothing but the best. Again, by our selecting just the best, and sending no other to the market, we not only make a good profit, but we are constantly increasing the demand. I find, too, that the reputation of one person, spoils

the reputation of an entire neighborhood. I will give you an actual fact, that I saw in Ottawa this winter. A gentleman was looking at some apples. He said—accompanying his remarks with some rather rough language—"There's the greatest set of schemers in the Niagara district that there is in the known world!" (Hear, hear, and laughter.) Well, I wanted to know why. He replied, "Well, here were men employed at $1.50 a day to pick and pack apples; they have no reason to defraud at all; and I want to show you a lot of Kings I have got." He opened a barrel of Kings. I said: "My dear sir, you have no reason to complain." He said: "See there! out of a carload, that is the first one I have found that was a King." He opened that; what was that? It was a cull! He opened another; that was a cull—Rhode Island Greening—never been hand picked either, and very well seasoned with worms. He opened another; it was Roxborough Russet. And he never found another barrel of Kings in the lot? That man was disgusted with the stock. He had been defrauded, and he was laying it on the whole Niagara district. I saw another man in the fall. I had some pears then I was selling. This fellow was a good natured Frenchman. He asked me where I was from. I told him "Prince Edward." "Well," says he, "In the County of Prince Edward, they are the greatest set of schemers that I ever saw." Well, it was quite a compliment, and he went on to show me where he was defrauded, and how he was defrauded, by some man from Prince Edward who had been packing fruit for him. I felt that upon a man who would perpetrate a fraud like that we could hardly inflict a remedy as severe as he deserved. Now, I know some parties that have realised some good results from their honest labor in years past. The lowest I have known one of them to sell their fruit at, even in the fall was $1.75 to $2.50 a barrel, delivered at the railway station. I fail to see why we can't all be honest in the packing of our fruit. (Hear, hear.) If we will all look well after the packing and selecting of our own fruits ourselves, and not trust to a man that is liable to be fixed with a little whiskey or cider, or something of this sort, I fancy we will find some day that apple culture is more profitable than it has been this year. As to the over-production this year, I was reading a speech the other day by Mr. Barry, in which he says we have not had such an over-production for over twenty past; that it only occurs in about once in twenty years. If that is the case we have nothing to fear. Men in our section submit to a poor crop of barley nearly every year, and still go right on with their barley; and some of those same men I find digging up their apple orchards this year, because they have not made it pay.

The SECRETARY—I don't think we would find much profit in apples at ten cents a bushel. When we count the expense of gathering, and of barrels and packing, we find even at the prices that we are averaging of late years, there are no very immense profits to speak of. I think we need a little caution in this matter I think we have been in the past speaking rather too highly of the profits of our business. We need a little moderation on this subject.

Mr. DEMPSEY—I would ask the Secretary if he thinks that common varieties of apples would not pay the producer at ten cents a bushel, to manufacture into cider? It is not a question of profits that I was talking about, or large profits. The finer varieties of apples we cannot produce in such abundant crops. We cannot get forty or fifty bushels for example, from a single tree.

The SECRETARY—I don't think it would pay to plant an apple orchand, and wait ten or fifteen years for a crop, and then sell the crop, even for cider at ten cents a bushel. Of course if a man has an orchard and gets a very heavy bearing, it might pay him to take ten cents, rather than cut down the orchard.

Mr. GEO. E. FISHER (Burlington)—Is it allowable to put an apple having a worm hole in, no matter how small, or whether it be in the blossom end, or where it is?

The SECRETARY—As No. 1 fruit I don't think it is.

A DELEGATE—Do you ship wormy apples at all?

The SECRETARY—No, not as No. 1 fruit. I have shipped them as No. 2. I always very carefully, and after a good deal of expense, separate all the apples that I ship into

three grades. I make a class of "extras," that are large and highly colored. I mark them "extra selected," or XXXXX, that is my best grade. I do that with great care. I have a large packing table, and the apples are emptied out on it. I then have one person selecting out these "extra selected" apples, which are put up in barrels by themselves. Then all the sound ordinary medium sized apples, that are free from scabs, or specks or worm holes—perfect apples, are packed carefully, and marked No. 1 grade. The third class is one I seldom ship. I am able generally to dispose of these in some other way —either by evaporating, or trading them off with farmers who do not grow fruit, for ashes or fertilisers that I can use upon the orchard. But upon some occasions I have put up a third grade of apples to ship. I always very carefully mark them upon the head as second-class apples. All the fruit I ship I mark with my own name, and the grade, upon the head of the barrel.

Mr. DEMPSEY—Don't you think it would be better for us if we never shipped No. 2 apples?

The SECRETARY—Of course it helps to fill up the market. In that way it is not profitable; but I shipped No. 2 apples to Montreal a year ago this fall, and had them sold there—a car load—for $1.90 a barrel; and it is rather a temptation to ship them when you can get that money for them. Of course knotty, misshapen ones were not included in the No. 2. These are kept for stock feeding. I have never shipped mixed apples—never put a poor grade in the centre of the barrel—and I hope it is not the habit of any of the members of our association to do that.

Mr. FISHER—The explanation is very satisfactory to me; I am much obliged to you for it.

Mr. T. H. RACE—The first thing to do is to educate the farmers up to growing only a few varieties that will stand shipping, and a sufficient quantity of those varieties to encourage buyers to go in. Then you want to encourage farmers to believe that if they will do this, there will be a market at paying prices. The city papers deal very little with this fruit question. The Government should help this association more, so that it would be able to reach the farmers more fully and educate them on this question.

The PRESIDENT—A commissioner has gone to Britain to look into the question of their methods of handling fruit, making returns, etc. One of the largest and oldest houses in Liverpool has been perpetrating upon shippers what appears from the evidence we have to be a perfect fraud. There is also a case of the same sort in Glasgow. I am satisfied that their method of handling fruit stands as much against the interests of fruit growers in this country as anything I know of. The brokers there receive cargoes and sell immediately, without regard to market, or the division or selection of those fruits from that cargo for special markets. We have discovered also that they make false returns. A great many of those firms have pamphlets or lists published, giving sales. We have taken the precaution of employing persons to attend those sales, taking a note of the buyers of various cargoes, and the prices they buy at. On one cargo alone we find there is a shortage of a little over $2,000 as between the actual amount the fruit was sold at and the return made by the firm to the shipper. It is a very great evil, and it is a question how to overcome it. One method is to make it known over there that we know it, then we will alarm the markets there to a certain extent; and as they are bound to get our fruit—for they want it, and must have our apples even if they pay a higher price than they pay any other country—then we will find that parties will come here and buy our fruit, were we can see that we are not imposed upon. Another evil is the freight rate on fruit; it is too high. It is a clean freight, and one that all railways and steamship companies desire. The present rate averages about the value of the fruit as we buy it. When you come to add that to the purchase price it makes the fruit expensive as landed over there. Yet it is difficult to know how to remedy this. It is a pretty hard thing to approach the railway and steamship companies under their present laws. We have tried to get reductions, but they absolutely refuse, on the ground that there is a law governing their rates. However, we know that they do break the law.

Mr. A. H. PETTIT—If we could get our markets in the Old Country in such a position that we could get confidence in the handling of them there, then our growers would become packers and shippers, and handle our fruits in the proper season. There is no preparation for the apple season—no arrangement for handling them, and in a season like the last one, this is a very serious mistake. The shippers are certainly to blame for being behind hand and shipping their fruit when it should be in the cellar, and having such large quantities frozen in transportation. If our attention were devoted to picking, packing and handling and shipping our apples, instead of discussing varieties, it would be more profitable to apple growers.

The PRESIDENT—I always received the top market price—and sometimes considerably over—in being careful as to the purchase of my apples, in this way: I paid in proportion to the method that the grower adopted in producing the apples. Where I found that the grower took a great deal of care with his orchard—fine, clean, healthy trees, not overloaded with fruit and therefore good samples, the soil in good heart, and all these circumstances perfect—or as nearly perfect as we could find them—I always gave that man the highest possible price I could afford. Thus, if I was paying $1 a barrel for Baldwins in an ordinary orchard, I would pay for the like of that $1.25 a barrel. I found it paid to do so.

Mr. T. H. RACE—I am to speak on fruit-growing before one or two farmers' institutes within the next four or five weeks. Could I go before them with the authority of this association and tell them that there will be a probability anywhere within the near future that a market will be opened up for Canadian fruits whereby the farmer can sell his fruit at a paying price to himself?

The PRESIDENT—I would not like to say that altogether. If we could only adopt some scale by which the grower would be responsible for the selection and packing of that fruit, there is no reason whatever why the grower himself should not forward that fruit into the market. I don't care how that market may be glutted. Take this year, at the time it was glutted the most you would find an odd parcel now and then drawing a high price. You found, even at the worst season of the year, that fine, well-selected samples brought a good price. Everything depends on that. The trouble that shippers have had is that when they go into the orchards the grower is so anxious to get rid of every individual apple he has there that he uses his influence to force off all the fruit he can possibly get rid of from that orchard; and a packer that is not thoroughly well posted, and working on a straight rule will be induced to take them. We must make both grower and packer responsible, and their remuneration must depend upon that responsibility.

Mr. PETTIT—If our apples could be packed by each grower and shipped and sold at a price subject to the buyers' inspection at the wharf at Montreal, then, being properly tried and found properly packed, there should be no risk in the handling of them further forward. If the buyer sees them on board the ship there is no risk to undergo. This plan would give us a satisfactory way of handling our fruit.

The PRESIDENT—I am satisfied it is quite possible. I know, from conversation and dealings with them, that there is a certain class of dealers from Britain that would prefer buying that way.

Mr. CASTON—If the facilities and steamers were all right it would do to have an inspection at Montreal; if not, it would be necessary to have the inspection on the other side. As to educating the farmers, the trouble is they don't come to our meetings or subscribe for our journal.

Mr. DEMPSEY—The way to educate the farmers is to reach their pockets, by the buyer refusing all varieties except such as the market requires. If the buyers could be induced to buy and pack nothing else but the very best varieties for shipping, the demand for our apples would increase so that half the quantity would fetch more money than the whole.

Mr. RICE (Port Huron, Mich.)—I attended the Western New York Horticultural Society, and heard the statement that Canadian apples brought more in foreign markets

than western New York apples. As western New York was always said to be ahead of the world, you may consider that you Canadians stand at the head of the world. (Hear, hear). Further, it was stated, on the authority of that society, that western New York buyers marked their apples, in shipping to Europe, "Canadian apples." (Hear, hear). That is a fraud that might be avoided by putting your names, your town, and everything on the head of the barrels.

Mr. J. M. DENTON (London)—The Zavitz family in Lobo have planted out 2,000 apple trees, and are going to plant out 2,000 more; and they hold that if they can get 25 cents a bag for their apples it will pay better than growing cereals. The English people will pay the price for an honest article, and I believe they would rather send their buyers here than run the risk of being deceived at Liverpool.

Mr. PATTERSON (Grimsby)—As a rule the barrels are very carelessly treated by the growers. They are left in the orchards exposed to frost and rain and sun, and they can't stand as well as those kept under cover. Shippers have told me that barrels that had been kept under cover reached England in much better condition, with fewer slacks, than those apparently packed in the same manner sent at a later period. I divide my apples into three grades. No. 1 I ship myself, or sell to shippers. No. 2 I generally sell on the Hamilton market. No. 3 I feed to stock for fattening, or to milch cows. From experience in the last three years I cannot find that there is any difference between a bushel of apples fed to steers, and a bushel of turnips.

Mr. ED. SMITH (Winona), asked: Do you have any diameter as to Baldwins you pack? also, is it correct that in England they are finding out they can grow apples of as good quality as ours?

The PRESIDENT replied that the article referred to on English apples had been admitted to be a mistake. In the newspaper correspondence, apple growers in Kent, England, had admitted that they had given up growing varieties they formerly had grown largely, because Canadians grew the same varieties to a much higher degree of excellence. (Hear, hear). And after using every method in growing that they possibly could think of, and doing justice to their orchards in every way, they could not produce the fruit equal to ours. As to the quality of fruit, we judge by the quality of flavor very largely. An apple grown farther north has greater points of merit than the same variety grown farther south. The farther north you can grow an apple, the better it will be in points of merit, especially in quality. That is why Canadian fruit stands about three shillings a barrel higher than American in the English market, on clear points of merit. Our fruit arrives at English ports in much better condition than American fruit, notwithstanding bad packing and all that, because its intrinsic points of merit are much higher. It carries better; it keeps longer in that climate than the American fruit.

Mr. PETTIT—There is a little difference in the size of the barrel?

The PRESIDENT—Yes; I am more and more in favor of a smaller package than we have had; and while I believe in a half barrel I am not altogether satisfied with it. I believe the day is coming when we will have something, perhaps not quite as large as the half barrel, that can be handled easier. I will acknowledge this, if you take a large lot of fruit of one grade, so many in ordinary size barrels and so many in half barrels, lay them open in the usual way that they exhibit them at the fruit markets, and you will at once decide, by a casual observation, that the fruit in the half barrel is certainly one grade higher than the other. It is simply the size of the package has deceived you—nothing else; and that may account to some extent for the fact that we get higher prices in smaller packages—but only to some extent.

The SECRETARY asked whether our apples were carefully inspected in England by buyers before purchasing?

The PRESIDENT—The method in all the markets is very much the same. They will select out a few barrels of each variety in the cargo and they will open the tops, and sometimes, if they are suspicious in any way, they will dig down a little way. If they are

still suspicious they will close that up and open the other end. If they are still more suspicious, they will turn that out into a large basket or sack and see what the quality is all through. But they always exhibit some and allow buyers to go and handle them, dig down and see what the character is. The character of a shipper is soon found out. You will always notice the buyers going around with their note books, taking note of the brands; and you will see buyers that will pay so much just to buy that brand right out. They will take that at sight. They will not require the agent to open that out. This shows the necessity of placing your brand on every barrel, and being very careful that your brand is correct. If you are perfectly honest and careful in that, I do not care how that market is quoted, you will get a price that will pay for apples that are shipped in good order.

Mr. SMITH repeated his question as to standard size of Baldwins.

The PRESIDENT—I would place, as No. 1 of the Baldwins, the largest apples, high-colored and perfectly clean, without spot or a worm hole. You will find on the inside of the tree large Baldwins that are not high-colored. If you pick those at the proper season and let them lie on the ground for a certain time they may gain color and become No. 1, otherwise they are No. 2. Each apple should be handled in order to get No. 1, and it certainly pays for the time of selection to select and grade your fruit. You will find a difference in price between a select and a mixed brand which will pay admirably.

Mr. SMITH—Where seven-eighths of the orchard are under size you would mark those "No. 2?"

The PRESIDENT.—Not necessarily No. 2. You can select some mark by which they will know them. I used to select small fruit and mark them as "XXX Dessert," and they were taken very well that way; they liked them, and I have often received a better price for my "XXX Dessert" than for my "XXXX Green."

The convention adjourned at six o'clock.

EXPERIENCE WITH THE FUNGUS FUSICLADIUM.

Mr. J. K. MCMICHAEL, Waterford, read the following paper on this subject:

In the spring of 1873 we planted a pear orchard, consisting of 100 Bartletts, 25 Flemish Beauties, 6 each of Osband's Summer, Sheldon, Buffum, Belle Lucrative, Clapp's Favorite; 4 of Belle D'Anjou and 2 of Seckel. The trees were remarkably thrifty, and it required a great deal of pruning to keep them in a proper shape. The fruit was all that could be expected, being large and well developed. A number of the trees suffered severely with the fire blight, but the orchard in general was prospering until the spring of 1881 when it was attacked by this fungus. This disease apparently commenced at the east end of the orchard on the Flemish Beauties, entirely destroying the fruit for that season, and for the five following years there was not a perfect sample of fruit on any of the trees. Upon the Bartletts the first year the malady was not quite so fatal to the fruit, but each succeeding year it grew worse until, in beholding the orchard you would be reminded of a lot of neglected natural fruit apple trees which had been left in the sod for fifty years. All of the other varieties were more or less affected. We experimented with ashes, sulphur, copperas, an emulsion of soap, balsam and kerosene, etc., but none of these remedies were satisfactory. In the spring of 1887, as soon as the buds began to swell, we applied hypo-sulphite of soda and repeated the application every two weeks until the fruit was about half grown. The sulphite was prepared by pouring it in a large kettle of hot water to dissolve and then diluted with ten gallons of water to one pound of the sulphite and showered on the trees with a force pump, hose and sprayer. The fall of 1887 the Flemish Beauties were fine and well developed and free from scab. The Bartlett trees made a fair growth and had on a small crop of fruit free from spot. Last spring we applied the sulphite as the buds commenced to develop and then did not

give another application until the fruit was nearly as large as hickory nuts. At that time the fungus was well developed on about half of the fruit, but was not very noticeable on the leaves. We immediately gave a heavy showering of the sulphite and another in a week. Apparently there was no further development of the disease and we picked a large crop of fruit, about half of which was a fair sample of first-class fruit.

The SECRETARY—I have used the same formula viz: One pound of hyposulphite of soda to ten gallons of water; but both the two years in which I applied it to my Early Harvest apple trees the fruit was mostly clean whether sprayed or not.

Mr. DEMPSEY (Trenton)—Two years ago we were bothered with fungus spots on our pears, but last year it failed to make an appearance.

Mr. MCMICHAEL—For six years in succession the fungus was very bad each year on the Flemish Beauties especially. I put the solution on at the beginning of the season, then I did not put it on for six or seven weeks, then I applied it very strong, so that the leaves were browning up with it, and I did not see any further development of it that year; but other years the fungus went on growing till the leaves and fruit were spoiled.

The SECRETARY—Mr. F. L. Scribner has a most exhaustive article on the fusicladium in one of the last reports of the Department of Agriculture at Washington, and he proposes a copper solution as a remedy. He thinks that eau celeste would be even more effective than hyposulphite of soda. We should begin applying it before ever the buds begin to develop. The spores, it seems, remain alive through the winter upon even the scales of the buds, and upon the young wood; and in order to prevent its appearance on the fruit, the apple-tree should be sprayed early in the spring before the leaves have developed at all—the first application should be made then. Then, again, when the fruit is quite small; when the very first beginnings of the fungus spot are observable.

Mr. MORTON (Wingham)—Hyposulphite will act on a fungus that grows on the human skin when no other sulphite that I know of will affect it.

Mr. DEMPSEY—I find it is very little use to apply any remedy if the fruit has got the size of an ordinary thimble.

Mr. GEO. E. FISHER (Freeman)—How can you account for an orchard of thrifty trees on very good land being attacked by this fungus while other orchards escape wholly? We had that occur in our neighborhood.

Mr. DEMPSEY—I have seen that in my orchard this year.

Mr. MORTON—Would a remedy that would kill one fungus kill others?

Mr. DEMPSEY—Said he had found sulphate of iron effectual when applied early.

Prof. SAUNDERS—Both these substances are antiseptics, and would destroy the life of all those very low forms of vegetation which are known as fungus growths. Sulphate of iron is not as effectual as sulphate of copper on the grape fungus. If a solution of hyposulphite of soda answers every purpose, I think it is a little cheaper than the sulphate of copper, and it is not poisonous or injurious in any way, There would not be any taste from its use at all—in fact it is decomposed to a large extent by the action of the sun, and the sulphurous acid is eliminated during the process, and that is the reason it is effectual.

MARKETING FRUITS.

Q. Is it not time for the Fruit Growers' Association of Ontario to take up the question of marketing our fruits? Would it be wise to have a fruit inspector appointed, or what means could be adopted to induce growers to put up good, straight, honest packages of fruit? Could not the members of this Association act unitedly in marketing fruit through its own agents, instead of dealing with commission men, who often make more than the growers?

Mr. DEMPSEY—If you have a good article, go with it yourself, and sell it yourself, and then you will know you have got all that the fruit brought.

Mr. E. D. SMITH (Winona)—Even if we wish we cannot avoid supporting the commission men, for they have the market in their own hands, and it is impossible for the grower to go there himself or to send some one there to do it for him. The only practical way now is to not encourage commission merchants in those places where they are not already established. In New York they are passing a law that each commission man must report to the man for whom he sells the fruit, as a check on the honesty of the commission man. We want to get into the habit of handling our fruit at both ends of the string.

Mr. DEMPSEY—Growers might send one of themselves to attend to the selling. I have gone into markets a total stranger and sold fruit just as well as the commission men. They will try to boycott us at first, but almost invaribly they will come out at the worst end.

Mr. MORDEN (Niagara Falls)—Fruit growers make a mistake when they patronise men that speculate in fruit, or retail it. A large proportion of those commission men are absolutely without any commercial rating. If we could know the rating of these men, and then ship only to reliable men we should meet with less disaster.

The SECRETARY—The difficulty is to find men who are purely commission men. I have dealt with some who represented themselves as such, but when the temptation came they would buy for themselves. I shipped fifty barrels of Bartletts to Montreal once when prices where $8 and $10 a barrel; and after waiting a long, long time I got returns at $2 and $3 a barrel. It is very evident that they had been held over until the market had been eased—until these commission men had sold the stock they had purchased. In shipping to cities we should select some one house and ship continuously to it; because if we ship to many we have our own fruit bidding against itself; and I think one house regularly patronised will look more closely to our interests, than if we shipped to several.

The PRESIDENT—The matter can be settled in markets near at hand by sending a man to watch over the circumstances and look after the commercial standing of the different firms. In England some of the commission men are actually partners in business with fruit dealers, and our agent actually stands there selling our fruit to his own partners. He may be in silent partnership with half a dozen firms; he may be selling our fruit to himself. They will try to boycott any man the fruit growers send. In Covent Garden they tried to boycott me, and wrote me down in newspapers in every way. But still a man with some sharpness and persistence about him, going in there, will succeed in spite of all that, and they are afraid of any one breaking up their system of the commission man selling to the wholesale dealer, and he to the retailer, and he to the consumer. That system has been broken through pretty well now; but no doubt it worked ruin to our profits—there had to be too many profits before reaching the consumer. I believe that proper men, going over there and persisting and selling in the face of the commission men, would tend to break that system down one way or the other. I tried to break it down for the purpose of compelling these men to buy our fruit here free on board, so that we would be face to face and know how to deal; and it would pay us better, I consider, to sell on a small margin here, so that we would know where we stood, rather than run the risks such as they are now.

Mr. E. D. SMITH—Is it possible for a good man to go to the Old Country a month or two in advance of the season and take orders for apples?

The PRESIDENT—I sold cargoes in advance to a man I had known years before, at 32 shillings, guaranteed brands; but except in isolated cases I found it a very difficult thing to do that. They wanted to see the fruit first. They were suspicious. It was all very well to guarantee the brand, but they would rather see it. We might be very honest, but they wanted to look after us a little.

Mr. GOLDIE (Guelph)—Is fruit all cash when you sell there?

The PRESIDENT—It is all cash to the shipper; but they sell on credit to some extent. Of course we lose on that. The commission men who sell our cargoes give a month to three months' credit. That is a point against us again. We should try and pass by some of these middlemen. Where I made the best sales I made them direct to the retail dealers. I had no trouble in large cities in selling direct to the retail dealer 500 and 1,000 barrels; and if I dealt fairly with him on one cargo, and gave him a brand that came up to the representation, I was perfectly prepared to sell to him again. That is why I impress on you to establish a brand and be particularly careful that you are never under that brand. Let it be a little better than your representations, if possible, but never under. Once they have established confidence in you they will buy here free on board; they are willing to trust you then because they have tested you.

Mr. A. ALEXANDER (Hamilton)—In a conference of fruit growers held in Crystal Palace, London, last September, this point was taken by Mr. Rivers—son of the celebrated Mr. Rivers—that the fruit should be graded in three classes: choice, fine and ordinary. They referred to the brands on butter, and the confidence they gave dealers at a distance in ordering. The members of this association should come to some understanding about this matter of branding. The dealers and merchants who sell the fruit will then know exactly what they are getting when they order, and by the publishing of fruit lists and prices they know exactly what the prices are. Then, would it not be possible for our fruit growers to have some co-operative agency in one or two of the principal centres in Britain where this fruit might be sent, with this brand upon it—put under the supervision of an inspector appointed for the purpose? The fruit-growing interest of Ontario is of sufficient importance for this association, even if they asked Government aid for it, to have three or four inspectors to brand fruit as marked by the growers. At a conference held in Cheswick in connection with the Royal Horticultural Society nearly all came to the same conclusion in reference to this matter of fruit. As to farmers growing too many varieties, they suggested that the farmers or growers should combine and furnish the same kind of apple, so that it would be worth while for buyers to go into the district and buy. Let every grower be his own inspector, like Mr. Woolverton, until others are appointed, and brand their fruit so as to inspire confidence of British buyers.

Mr. DEMPSEY—We never need fear English competition, because the varieties of apples they are compelled to grow in their orchards are, strictly speaking, the most hardy varieties, and generally the variety that is inferior in quality, and they calculate on Covent Garden market about a shilling a bushel. The high prices—eight to ten shillings—are generally for apples grown in gentlemen's gardens by their gardeners. I have seen English apples sold for one shilling a bushel, and ours right beside them selling for 21 shillings a barrel. The English buyers admit the great superiority of our fruit over theirs.

Mr. SAMUEL BRIGGS (Hamilton)—I was over in England at the time of the Colonial Exhibition, and I don't think the English people were more astonished at anything that we showed than the fruit. Mr. White, of Covent Garden, a commission agent, told me: "I must tell you one thing, that you Canadians and Americans make a great mistake in sending fruit over here sometimes. We can't depend on it. Sometimes we get a good lot; sometimes we get a very inferior lot. If we could only impress on the shippers of Canada not to send anything over here but good, first class, A 1, we could always get good prices for it, and there would be no difficulty in selling any quantity."

CHRYSANTHEMUM GROWING.

Mr. J. A. MORTON (Wingham) gave the following address:

In the absence of the gentleman whose name appears on the programme in connection with this subject, I feel constrained to make a few remarks; not that the subject will be better treated by me, but in the hope that in the relation of my experience some hints of use to those who may have attended this evening's session in the expecta-

tion of hearing something upon this topic may be gleaned. My experience has not been that of invariable success, and the "rocks upon which I have split" as well as the success that has attended my efforts I shall endeavor to point out, as what not to do is as essential to know as what to do. The matter will be treated from the standpoint of the amateur possessed of but few appliances for special propagation of plants, and the chrysanthemum of which I speak is the perennial sort, not the annual one.

Cuttings can be made from February till April—good healthy shoots about two inches long. Division of the roots is not so good; strike the cuttings in wet sand with a gentle bottom heat. For the purpose of striking cuttings of various plants I erected in the spring of 1888 a hot-bed greenhouse substantially according to the plan illustrated in the *Canadian Horticulturist* of 1888, page 52. We prefer, however, the building not so high; 3 feet 6 inches suits us better. Previous to building the hot-bed greenhouse cuttings were struck in the dwelling house which answered very well. Care should be taken that the sand does not become dry. Just as soon as the cuttings have sent out roots of half an inch long, pot into 2-inch pots using ordinary potting soil. It is better to pot cuttings when roots are less than half an inch long than to leave them until they have grown much longer. To such as cannot be bothered with the preparation of the regulation potting soil, I would say use ordinary clay loam garden soil, mixing therewith one-third good well rotted manure, and one-third gritty sand; this makes a good substitute for potting soil. The after treatment of the young plants consists in pinching back the shoots to induce a branching habit of growth; you will find some varieties, such as the Japanese, are more inclined to an upright habit of growth than are others, such as the Chinese varieties. Never let the plants suffer from drouth, and shift into larger pots as their roots fill the ones they are in, not allowing them to become pot-bound. Pinching back should not be continued later than the middle of July. After that the plant should be allowed to prepare for the formation of its flower buds at will. Some plant out in the garden when danger of frost is past, taking the plants up in the fall. Others keep them growing in pots set out in the garden, and a third way is to keep them in the greenhouse throughout the summer. After a trial of all three ways, I use the last one, having better success that way than with either of the others. The principal objection I found to the first way is the check which the plants necessarily receive upon being taken up in the fall. The fault found to the second plan is the liability of the plants to dry out in the pots, even when bedded in the soil, and the black aphis is a much more troublesome pest, and more difficult to control when the plants are out of doors than when they are under cover. But whichever plan you adopt the plants should have plenty of sunlight. They enjoy it, and it is essential to their vigor and health. The aphis and allowing the plants to wilt for want of water were the causes of a failure of bloom one year. I had only four flowers from about a dozen plants, and none of those flowers would be exhibited at a chrysanthemum show. Not very encouraging that, was it? The plants must be taken under cover before there is any danger of frost. A low temperature approaching the freezing point will materially affect the flower buds. One year my plants were fine, noble specimens of vegetation, with many flower buds formed, and were a source of self-congratulation to me, but alas, through inattention to the temperature of one evening late in fall, or laziness, I am not sure which, these plants of promise, although under the light cover of a protecting shade, received a check from a light frost, with the result of many stunted and imperfect flowers. The plant itself will recover from a pretty hard freezing, but buds and bloom will not stand even a light frost.

To obtain extra large show flowers, pinch off all the buds but the terminal one on each shoot, and you will be surprised at the results if your plants are well fed. Manure water twice a week gives good effects. Cow manure is recommended in preference to either horse or fowl manure, as being safer to use; not so much danger of an overdose.

What varieties to grow will be left to your own judgment. There are now so many good ones in the plant catalogues of dealers, and so many of real merit being added each year, that you can hardly go astray in an intelligent selection.

If the flowers are cut as they are fully expanded, or a little before, they can be kept in water in a cool place three weeks or more, which is much longer than they would remain in perfection if left on the plant.

The only insect pest which is troublesome is the aphis. Tobacco smoke is the most effective remedy. A handful or two of tobacco stems placed over live coals in some confined place where the infected plants are will do the business. Before my hot-bed greenhouse was built, I used a very large packing case as a smoke house. By papering inside, and with a close fitting lid it was made smoke tight. In this the plants were placed, and through a small hole in the top enough smoke could be blown through the stem of a tobacco pipe—the reverse way in which smoking is usually practised—to destroy the enemy. Leave the plants there two or three hours before removing them.

If any of you ladies do not smoke, and cannot get some one to do it for you as directed, use in the same manner, instead of tobacco smoke, pyrethrum powder, or better still, Bubach, blown in by a small powder gun such as is in common use. Syringing with strong tobacco water is also effective, and I have used coal oil emulsion with advantage. Other insect destroyers could be mentioned, but I have mentioned enough for choice.

The parts pinched off in June, or even July, can be placed in a box of light rich soil, two inches apart each way; they will strike readily, and make fine individual bloom.

Mr. MORDEN—You can make a water solution from burned tobacco or Scotch snuff and apply it without the difficulty of the smoke in the room. Pyrethrum is also a good insecticide, but not so efficient in its action as tobacco smoke. The trouble with it is that it loses its efficacy by keeping.

Mr. MORTON—I tried Myrtle Navy smoking tobacco. I boiled it.

Prof. SAUNDERS—I am afraid you spoiled it. Nicotine is very volatile. There is one thing about tobacco water, and that is in distributing it over the whole plant. It does not permeate the plant as smoke does; but I believe if water is sufficiently strong and made from as good tobacco as you can get, and not boiled but infused, it would kill the insects as well as smoke. It should be applied in a spray.

WORDS OF GREETING.

The PRESIDENT introduced Sheriff McKellar, who greeted the association. He said he had been brought up on a farm, and had worked his way up till now he occupied the position of—hangman. (Laughter.) He was glad to see the importance of fruit and agriculture recognized by the appointment of a member of the Government to look after their interests. When he was in parliament he opposed the opening of the House in the fall, as it would interfere with the farmers fall plowing. He was laughed at throughout the country, but the point was carried. There are too many lawyers in the Legislature. He would like to see more farmers there.

GARDENS IN CITIES AND SMALL SPACES.

In the absence of Dr. W. C. Adams, of Toronto, who was to have given a paper on "What can be done with a city garden of say 20 feet square in producing supplies for a family?"

Mr. THOMAS BENGOUGH (Toronto), having been a near neighbor to Dr. Adams, told about his garden a few feet square, wherein the doctor grew squashes, pumpkins, grapes, tomatoes, lettuce, and other supplies. His vines were trained "up a tree" that grew in the yard, and the novel sight was shown of big yellow pumpkins among the branches of a poplar. The squashes were trained along the fence, and supports were nailed on when the vegetables grew large enough to require them. Dr. Adams had carried out suitable plans in his new premises, and two years ago grew sufficient in one season not only to furnish his family but to net about $30 in addition.

Mr. DEMPSEY had seen a little spot where pumpkins were planted, which ran on a wood pile, and some of them weighed a hundred pounds. He himself had taken seventeen bushels of onions off seventeen feet square—a bushel from each foot. A man could take off twenty feet square a crop of lettuce, of radishes, of cucumbers, and a great many other things before the snow was off the ground, just by having some convenient glass and a stove. It is surprising how much could be grown off twenty feet square by the time you occupied the ground all the year.

Mr. MORDEN—You could get on a hundred acres about 10,000 pieces of such land That will keep about 10,000 families and make $3,000 besides. All that can be done in one year.

The PRESIDENT—There are many spots in cities—especially in front of the house—that might be beautified, and give the children an interest in growing plants. It would be very interesting for people engaged in commercial pursuits to indulge an hour now and then in a little spot of ground. They would be benefited in every way. There is something particularly refining in the cultivation of the soil for any purpose.

Mr. DEMPSEY—What I am worth to-day I made off three acres of my farm—and I have supported my family and lived pretty well, and paid some other folks' debts. I have seen on a small spot—I won't say it was 20 feet square—a crop of grapes carefully cultivated, something immense, on the east wall, and on the west wall the most magnificent apricots and peaches that I ever saw. You could nearly fill a peach basket at one scraping down—they were so thickly set on a tree that was trained against the wall. You can grow very nice pears against a southern wall with a northern exposure; and there are some fruits that will grow on a northern exposure. Then that leaves the whole of the ground free for the plants. I have sold four dozen peaches at ten cents each that were grown in a ten-inch pot. Now, figure out the inches if you like. (Laughter.)

Prof. SAUNDERS—I had a garden plot 66 by 110 feet, on which I put 120 fruit trees, and grape vines along the borders and around the fences, and strawberry vines about three feet from the grapes, bordering two paths, and I carried on that garden for 17 or 18 years, and in that time got an immense quantity of fruit off it. I might have realised a good deal more than $30 a year from the pears I got from those trees. I began by planting them out about eight feet apart each way, and as the trees grew large if they did not die I had to cut them out here and there so as to make room. I have had as much as 1½ to 2 bushels of plums off these trees—had to prop them up in all directions. I can corroborate all that has been said about getting a great deal off a small piece of land. No matter how small the piece is, by a little ingenuity and management you can make it useful, and make it contribute to your comfort and happiness.

Mr. DENTON—It is true that many people make more money out of their gardens than other people do out of their farms.

Mr. RICE—In Rochester I noticed a Dutchman growing grapes up his house. The firm of Curtis Brothers, of Rochester, paid to a man $81 for the fruit of two cherry trees in front of his house. The man paid $1,000 for the lot with the trees on, and this $81 constituted the last dollars of $1,000 that the firm had paid to that man for the fruit off those two trees. (Applause.)

The meeting adjourned at 10:15 p.m.

SECOND DAY.

The SECRETARY read a letter from the honorable the Minister of Education, referring to resolution passed by this association at Ottawa respecting the study of horticulture in public schools :

HORTICULTURE IN PUBLIC SCHOOLS.

The Secretary read several letters, received since the last session, among which was the following from the Minister of Education :—

MY DEAR SIR.—I beg to acknowledge the receipt of a copy of certain resolutions adopted by the Directors of the Fruit Grower's Association of Ontario, respecting the study of Horticulture in our Public Schools. In the new text-book on Agriculture, which is in course of preparation by Principal Mills, of the Model Farm, I expect that the subject of Horticulture will be discussed, and as the book is intended for the Public Schools, the study of this subject will be systematically taken up throughout the Province. By means of "Arbor Day" established three years ago, we are cultivating native plants and ornamental trees in all the school grounds. From the reports received by my Department we have planted already 73,000 trees. I shall consider what is prudent to do in regard to the question respecting first class teachers.

Yours truly,

GEO. W. ROSS.

L. WOOLVERTON, Esq.,
Secretary Fruit Growers' Association, Grimsby.

THE RUSSIAN APRICOT.

Q—Would some one give his experience in regard to the fruiting of the Russian apricot ?

Mr. WELLINGTON—The apricot is one of the handsomest lawn trees that has ever been put out. It is perfectly hardy, as I know from experiment. Some of the seedlings that have been put out have borne good fruit. Nurserymen are offering some half dozen varieties that have been tested, and that really bear good fruit. One is named after Prof. Budd ; and people who know him know that he would not countenance anything that was not reliable. You cannot depend on the seedlings any more than you can on the seedlings of any other fruit ; but if a man does not get good fruit from a seedling apricot he has certainly got a very fine ornamental tree, and one that will stand this climate well.

WANT OF A TASTE FOR AND KNOWLEDGE OF HORTICULTURE AMONG FARMERS.

Mr. A. M. SMITH read the following paper :

MR. PRESIDENT AND GENTLEMEN.—One would naturally suppose that if there was one class above another that would be interested in horticulture and its pursuits it would be the tillers of the soil—our farmers—surrounded as they are by the beauties of nature, trees, plants, fruits and flowers ; that these would be a constant study for them and that they would seek to develop them and bring out all of their beauty and utility. But I am sorry to say that any one familiar with Canadian farming will have to acknowledge that this is not the case—but that Canadian farmers as a rule (I know there are some honorable exceptions) are far behind our professional men and even our tradesmen or

mechanics in their interest *in* and knowledge *of* horticulture. I need only to refer you to our annual list of membership to show you that more than one-half of the members of our association belong to towns and cities instead of being farmers, and if you need any further proof of my assertion I might take you around among the farmers of the country and let you see their surroundings. The trees, shrubs and plants on their farms (or the want of them)—their neglected orchards and fruit gardens. Their unmown lawns covered with burdocks, Canada thistles and other noxious weeds, ornamented with chicken coops, wood piles and broken down farming implements, instead of trees, shrubs and flowers, and compare them with the gardens, trees and lawns in our towns and cities. Our farmers, as I have intimated, have all the surroundings that should induce them to have a taste for horticulture and all the advantages for cultivating it; but how seldom do they improve them. Take the opportunity of selecting a building site and the advantages for laying out lawns, planting trees and shrubbery, and making home attractive in general, to say nothing of fruit growing, that farmers have, and how do they improve them? Are the best sites selected? Are the standing forest trees, if there are any, so left as to present the finest aspect? Are other trees planted with the same end in view? Are lawns laid out and carefully kept? Are other farm buildings located so as to make the least obstruction to the views from the dwelling? A majority of our farm houses in Canada look as though they had been built so as to be as close to the barns and pigpens as possible, instead of being located so as to command the finest views and prospects, and the approaches to them are oftener through narrow lanes and barnyards, covered with their accumulations of filth, than they are through fine avenues of trees or over grass covered lawns, decked with flowers and foliage, and as for conservatories or even plants and window gardening, which brighten so many homes in towns and cities, how little of them do you see among farmers! And come down to the growing of fruits, even for home consumption. I will venture the assertion that the majority of town and city people who are in as good circumstances financially as farmers, are better supplied with the fruits of our country than the majority of farmers are themselves, though they have every facility for growing them. Why it is that farmers do not supply themselves with these luxuries, when they can so easily do so, I could never uuderstand. Take the farmers of Ontario as a whole and there is not over one in fifty, I will venture to say, who grows strawberries and raspberries enough for their own consumption—and what is there to hinder them? They will grow readily in any part of the province; and further, there is not one farm in fifty outside of the Niagara district that has a grape vine on it except it may be a wild one, and the same might be said of plums and pears and some of the other fine fruits. I know a man, right over here in the county of Haldimand, who has recently gone to growing grapes and pease, and he told me a few days ago that his best market for his fruit was right around among the farmers in his own neighborhood; and there is no better soil and climate for growing these fruits in Canada than there is in that locality. Is it any wonder that any community, who are so blind to their own interest, are badly afflicted with politics? Take forestry. How little judgment and foresight has been exercised by the farmers in removing the forests from their farms or in planting out forest trees. Tree after tree has been cut down indiscriminately, no attention being paid to wind breaks being left or shade for the flocks and herds on the farm, or in replanting these where needed, to say nothing of preserving the beauty of the landscape; until to-day the winter winds are sweeping over vast sections of our country which are almost treeless, removing the snow from the white fields and strawberry beds—where there are any—and from the roots of other plants and trees—robbing them of their natural covering and protection, letting the frost in to destroy their roots, pinching and blasting the fruit buds, sweeping through the barnyards among the shivering cattle, penetrating the dwellings of the farmers themselves, necessitating an extra supply of fuel (which they find is now getting scarce) and the putting on of extra storm doors, blinds and windows. Is it any wonder that the boys, and girls, too, want to leave the farm and get into the city, out of the wind in the winter time, or that the extra attractions of fine trees and lawns, fruits and flowers, should entice them to stay there in the summer. It seems to me if farmers want to solve the great problem which we hear so much discussed, "How to keep the boys on the farm," that they have got to go

to work and make their farms and farming more attractive; that they must make their farms something more than mills to grind out dollars and cents; that they must interest their children in the products of the farm and in the beauties of nature around them; that they must give them trees, plants, fruits, and flowers to cultivate, and teach them how to adorn and beautify their homes and make them attractive. Make them to feel that they have an ownership and interest in these things. I believe that every true Canadian, whether he be a farmer or not, has an interest in this subject—for the wealth, yea, the very existence of our nation, depends upon the products of the soil and if our farms and farming becomes so unattractive that our young men can not endure to stay upon the land and till it, what is to become of us as a nation? I am glad to see that our Minister of Agriculture has taken an interest in horticulture among farmers and sent out missionaries to the farmers' institutes throughout the Province to discuss and agitate this subject. I should now like to see our Minister of Education take this matter up What is there to hinder the introduction of text books into our common schools teaching the principles of horticulture in connection with botany and chemistry? Would not a knowledge of the construction of plants and flowers and how to hybridize and produce new varieties of fruits and grains, how to propagate from cutting and bud and graft trees, be as interesting and useful to farmers' sons as a knowledge of ancient history, or geography or algebra would? I doubt if there is one farmer or his sons in one hundred that knows anything about these simple principles; yet how useful they would be to them and what an incentive they might become to the young farmer to develop and bring out the fruit and other resources of the country, besides interesting him in and attracting him to the labors of the farm, and I am not so sure that these studies might add something to the knowledge of some of the students in our higher schools, who, though their heads may be filled with Greek and Latin, don't know all there is to be learned between the house and barn yet. I have not introduced this subject to cast any reflections on farmers, but with a sincere desire to awaken them to a realization of their own interests and responsibilities and a hope that they may in the future become more interested in horticulture.

Mr. MORDEN thought the farmers' lawns and surroundings would compare with those of other people. (Hear, hear). He had never failed to visit a town in Canada or the United States that he was not disgusted with the surroundings of human habitations. It is a great astonishment that people will live with those surroundings. It is a common thing in our towns to find the vilest weeds growing in the streets and yards. If we could reach the city people as well as the farmers it would be very desirable indeed.

FERTILIZATION OF PLANTS.

Prof. PANTON gave the following address:

1. *Definition.*—Fertilization may be defined, as the process by which a plant has the pollen of the stamens, applied to the stigma of the pistil, so that the elements which it contains, reach the ovule in the ovary, and so influence it that it becomes a seed containing an embryo.

2. *The Parts of a Flower.*—To understand this process, we require to know something about the parts of a flower. These are: the outside whorl of leaf-like structures termed the Calyx; its parts are called Sepals, and as a general thing, these are colored green. The next whorl is called the Corolla, and the separate parts Petals, and are usually colored.

It is possible for a plant to produce seed without either of these, and hence the Calyx and Corolla are sometimes spoken of as the non-essential organs, in contrast with the Stamens and Pistils, without which it is impossible for a plant to produce seed, and hence the term essential organs applied to them. Stamens are usually distinguished by having a slender thread-like stalk, the *filament*, on

the upper end of which is a round or oval body called the *Anther*, which contains the *pollen* grains. Under the microscope pollen grains present a great variety in form and general appearance, though to the naked eye pollen appears like dust. Some are perfectly round, others oval, some smooth, others rough. So marked is the difference in the pollen grains of plants, that an experienced observer can identify the plant by merely seeing some of the pollen. Few species show a more beautiful form than the Cuphæa (cigar plant). A close examination of a pollen grain shows that it is composed of two coats, an outside covering (extine) and inside of that another coat (intine), and yet the whole microscopic. Consequently whatever contents are inside of these must be of an exceedingly minute character.

The pistil usually occupies the central portion of the flower, like the stamens, there may be several on the same flower.

The upper part, usually more or less sticky, is called the *Stigma*, from that down, especially where slender, is the *style*, and the enlarged portion at the base is the ovary; in this you find the unfertilized ovules, which, after fertilization has taken place, become seeds. Now an ovule, under the microscope, shows several structures; the central portion nucleus (better nucellus because we have the term nucleus applied to a structure in the cells of plants), a part of this develops into the *embryo sac*, and a portion of this, exceedingly small, forms the *embryonal vesicle*, which becomes a very important factor in fertilization for here, after that process takes place, the embryo is developed.

The nucellus is surrounded by two coats; at one place there is an opening between them known as the micropyle—the use of which will be referred to afterwards.

3. *The process of Fertilization.*—The pollen grains reach the stigma of the pistil, and soon after the outer coat of the pollen bursts, and the inner develops a tube, which begins to penetrate its way down through the style, and finally reaches the embryonal vesicle of the ovule, by passing through a small opening (micropyle) between the coats of the ovule. You will remember I spoke of the ovule as consisting of nucellus, embryo sac, and embryonal vesicle, the last a very minute portion; but when it is reached by the pollen tube, which lies alongside of it, an interchange of elements takes place, and the process of fertilization is effected. At once changes commence in the ovule, and it develops into a seed possessing an embryo.

Sometimes the pollen of a flower fertilizes its own ovules, and, in fact, this was once thought to be the regular way; but close observation and thorough investigation seems to show that this is more exceptional than otherwise. Experience seems to indicate that plants fertilized in this way, are likely to produce weakly plants from their seeds. This method is known as self-fertilization. Where pollen fertilizes the pistils of others flowers of the same species, the term cross-fertilization is applied. In such cases seeds are produced, which give rise to strong, healthy, vigorous plants. Viola (violet), oxalis (sorrel), stellaria (chickweed), euphrasia (eyebright), are some examples of the few, that seem to be favorable to self-fertilization.

If cross-fertilization seems to be the common method adopted by nature, there must be some means by which pollen is transferred to the pistils of plants. The study of this becomes one of the most fascinating pages in botany. Time will not permit me to enter this interesting field further than to throw out a hint or two that may lead readers to follow up the subject when opportunity presents itself.

4. *Aids to Fertilization.*—The following aids to fertilization may be referred to here:

(1) Wind. Such plants are usually crowded together, (grasses) unattractive, and some bloom before the leaves appear (soft-maple).

(2) Insects. Flowers aided in this way possess attractive colors, perfume, and supply shelter in some cases, and food (honey) in others.

(3) Birds. Especially in the case of the humming-bird.

(4) Water. This is in the case of some water plants whose pistillate flowers are in the upper part and float above, while the staminate are below. At the proper time the staminate ripen, rise to the surface and bear pollen to the pistillate through the agency of currents.

5. *Nature of Flowers.*—We shall now examine the form and nature of flowers, and see to what extent they seem favorable to cross-fertilization.

(1) Monœcious flowers. These have the staminate and pistillate flowers on the same plant. Staminate refers to those bearing stamens and pistillate to those with pistils. In some cases they are near each other, while in others (Indian corn) far apart. Good examples of monœcious flowers are seen in the begonia, corn and pumpkin. Many a one looking forward to securing a fine crop of pumpkins, has been much disappointed to find autumn come without the golden fruit. Had he examined the plants in flower, he would have seen that they were nearly all staminate flowers and hence useless to bear fruit. No plant is more liable to cross than corn, no doubt on account of its wealth in pollen and the elevated position it occupies at the summit of the stalk, while the silken threads (portions of the pistil), indicate the pistillate flowers below. It would seem that monœcious plants are naturally to a considerable extent favorable to cross-fertilization.

(2) Dicœcious. In this group you have some plants on which all the flowers are staminate, and others on which all are pistillate, consequently the source of pollen (stamens) is much removed from the pistils, and it would seem that cross-fertilization must take place. Willows, poplars, and often in the soft maple we see trees of this character; some with none but staminate, others pistillate flowers.

(3) Hermaphrodite. Here we have flowers each having stamens and pistils, and apparently fitted for self-fertilization, but even in this case you will observe conditions that seem adapted to prevent self-fertilization and be favorable to cross-fertilization.

(*a*) Dimorphic flowers are such that the stamens are much longer than the pistils, or the reverse, and consequently not well adapted to supply the pollen of a flower to its own pistil. Examples: Primula (primrose), Sinum (flax), Mitchella (partridge berry) and Houstonia.

(*b*) Dichogamous flowers have the stamens of a flower ripen before the pistils of the same, or the pistils ripen before the stamens. Examples of *Protandrous*, those on which the stamens are matured before the pistils, and consequently the pollen of such can only be of use in fertilizing the pistils of other flowers mature at that time:—Campanula (bell), Gentiana (gentians), Verbena, Lobelia, Epilobiun (willow-herb) and flowers in the orders Compositæ and Umbelliferæ. *Protogynous*, those in which pistils mature first: Plantago (plantain), Scrophularia (knotted figwort), Anthoxanthenum (sweet vernal grass), the interesting plant Aristolochia and the apple.

(*c*) Herkogamous flowers, those in which there is a peculiarity in form or structure favorable to the prevention of self-fertilization to a great extent. This strange modification is especially seen in what are known as papilionaceous (from resemblance to a butterfly), flowers common in the order Leguminosæ (bean family). Wistaria, Robinia (locust), Apios (ground-nut), Phaseolus (beam), all have such peculiar corollas, that when an insect alights upon them to proceed in search of nectar, it receives a blow on the underside of its body from the pistil, which comes up in advance of the stamens and receives any pollen the insect may have about it collected from other flowers, and at the same time this pistil throws on to the insect pollen of that flower which has been prevented from reaching the stigma, by a collection of hair-like structures arranged on the style of the pistil. Thus we see a wonderful arrangement to aid in transferring pollen of one flower to that of another. In Kalmia (American laurel) and Berberis (barberry) we find the anthers of the stamens bent back into pockets on the petals, but the moment an insect alights on the flower, if the stamens are matured, they spring and fire the pollen upon the insect. This it is likely to carry away to other plants. The Iris (flag), and very many of the Orchids also show wonderful structures in their flowers, which seem to indicate that these modifications are for the purpose of favoring cross-fertilization.

6. *Practical results from a study of Fertilization.*—(1) It explains the innumerable varieties of plants in nature. (2) Becomes of practical value in developing new varieties by art, and enables man to obtain innumerable kinds of fruit, grain and flowers.

Fertilization of varieties gives rise to *crosses*, the seeds of which are fertile, while that of species gives hybrids of which the fertility of the seeds cannot be relied upon.

In hybridization the term generally applied to the process of crossing plants experience indicates :—

(*a*) That the characters of the new plant follow the nature of the plant in which the pistil was used.

(*b*) That the characters of the fruit follow those of the plant from which the pollen was taken.

In other words, if you wish a change in fruit use pollen from a better fruit-bearing plant, but if you want a better plant, use the pistil on a vigorous healthy tree, etc.

Some have suceeded in developing strange forms by hybridization, *e.g.*, a cross between pear and apple, giving rise to a tree which bore fruit, to which the name "What is it" may be well applied. Mr. Dempsey, well known to fruit-growers, succeeded in doing this.

Hybrid plants are not likely to revert, but if you take the seeds of such and sow them, they will likely give you innumerable varieties, and in some cases revert to the original.

Such are some of the teachings of science regarding this exceedingly attractive page in plant life, from which not only a wealth of interesting information has been gleaned, but also an immense profit derived from the practical adaptation of them in the pursuit of horticulture. We see this very markedly in our beautiful flowers, our varied fruits and valuable grains, and no doubt as the years roll on this inviting field will be worked by investigators, who will add more brilliant results to those already attained.

Prof. SAUNDERS.—A great many farmers seem to be in darkness as to fertilization. One day a farmer, knowing I kept bees, said: "We will never be able to produce a crop of buckwheat so long as bees are allowed to be kept in the country; they invariably, by visiting the flowers, destroy them, and the result is we get no grain." (Laughter.) These principles ought to be understood by every lady particularly. Our flowers and vegetables can be wonderfully improved by assisting nature. If different varieties of cabbage seed, for example, are planted together they spoil the whole affair, because the pollen is carried from one to the other, and the result is a bad mixture. I would like to hear the result of Mr. Dempsey's crossing between the apple and the pear.

Mr. DEMPSEY.—The seeds were failures, and the whole thing was a miserable failure. The whole interior of the fruit would be black and rotten. There would be nothing but a shell. The apple was the pistillate plant in that case.

Prof. SAUNDERS.—One of the laws of fertilization is that in almost every instance the plant used as the male—that is, from which the pollen is collected—has the power of impressing its characteristics on the female in regard to the form and character and color of the fruit or seed or flower; whereas the characteristics of the plant itself—its figure and method of growth, and habits of propagating, are usually in the hybrid—they usually follow those that are possessed by the female form. I made a cross some years ago which illustrates this law. Taking a Clinton grape as the female, and the Buckland Sweet Water—a large white grape growing under glass—as the male, the result resembled the Clinton in form, character and appearance, foliage and growth, but the fruit was a large, loose bunch of white grapes very much resembling the Buckland in form, and to some extent in character, but possessing more or less of the acidity of the Clinton. I might cite from another class of experiments on the raspberry, where the Adelaide Black Cap was taken as the female and the Philadelphia as the male. In one instance the plant propagates from tips, in the other from the suckers. The hybrids all propagated from the tips, although they did not propagate so readily as the female plant did, or so invariably. Occasionally a sucker would be sent up, which was a very rare thing, showing that the law with regard to the characteristics which the female plant has is about as strongly impressed in nature as the contrary law that the male affects the fruit. I cite these instances as one showing the operation of the law on one side, and the other on the other side. Hybridization cannot be accomplished without a great deal of care. People have succeeded occasionally by tying a branch of one sort in among the flowers of another variety and intermingling, and then showing those seeds as hybridized seeds. There may be a few instances of hybridization occurring in that way, but they never can be calculated on with certainty, because you are never sure whether hybridization has taken place or not. In crossing such flowers as the grape, where the stigma is very tender and easily injured by the fine forceps that you use to tear off the corolla and the calyx, you will find that the flower will be injured in nineteen cases out of twenty. In one of the old reports of the association I published my failures in hybridization, and any one will see that out of thousands of trials there were very few successes. By persevering you can get results that will be satisfactory to you and a benefit to the community; and this process is beneficial not only in the immediate results you get from a good cross, but by sowing the seed obtained from these crosses. A starting point is obtained in a case of that kind that has been compared to the wheel of a cart—the hybrid being the starting point. Your varieties extend in different directions, one upwards and one downwards, and one sideways and one below; and you have varieties that run back to the

original wild stock, and other varieties that by some mysterious process have added to them virtues and qualities which neither of the original parents contained; and you have a starting point from which there is no calculating what the results will be, because the continuity of nature being once rudely broken in on by this process of crosses. the tendency to variation is increased, so that by continuing the varieties we have we might produce as good results as by hybrids. In wheat, barley and oats it does not seem as if the agency of insects comes in at all. The grains appear in every case to be self-fertilized, and hence I do not think there is any likelihood of new varieties of wheat or barley or oats being obtained by cross-fertilization in nature, unless it be by accident, where, for instance, a grasshopper or some predacious insect may have eaten away a part of the enclosure surrounding the essential organs of the plant, and thus exposed them in a way that the wind or insects could carry the pollen from one to the other. In that class of plants we can only look for useful results by artificial impregnation. I have succeeded in securing 25 or 30 grains of hybridized cereals to start with this year, the growth of which will be watched with a good deal of interest to see what tendency they develop, and how far they combine the qualities of the two useful species which it has been aimed to combine. Mr. Hilborn, my assistant at the Experimental Farm, has succeeded in making quite a number of crosses with raspberries with different varieties, and also in some other departments of the same line; and I think a very important feature of the farm will be the origination of new varieties by both hybridization and cross-fertilization as well as by selection.

Prof. PANTON.—Do you find that those hybrid raspberries of yours are reverting back to the black in flavor?

Prof. SAUNDERS.—Not the plants themselves, or the plants struck from the roots or tips of those that have been produced; but sowing the seed of those, and raising another generation, they sprout in every direction, some white, some black, and some red, so that I have good hopes that by sowing the seed of the best of these we may multiply varieties of a useful character with much greater rapidity than we could hope to get them in any other way.

BIRDS USEFUL AND INJURIOUS IN HORTICULTURE.

Mr. T. MCILRAITH (Hamilton) read the following paper:

Although I have read with interest the reports which have from time to time been issued by this Association, and have heard with satisfaction of the success which has attended the efforts of its members in the production of new fruit, I have not hitherto been present at any of the meetings. Permit me, then, to say, that I consider it an honor to meet with those who are doing such an important work in the Province, and I had much pleasure in complying with the request of your secretary to be present on this occassion.

I do not come as a fruit grower, although I have fruit trees, and many native flowering shrubs near my home, nor yet as a fruit dealer, although for several years I have consigned an annual shipment of apples to friends in the old country. Last fall I sent a barrel of this fruit, grown near Hamilton, to a friend in Devonshire, which seemed at the time to be like sending coals to Newcastle, but in due course the receipt was acknowledged with the remark that "they grew large quantities of apples and made good cider in Devonshire, but produced no such fruit for the table as the Golden Russet, King of Tomkins County, Seek-no-farther, and other sorts which the barrel contained."

I have come, sir, to say a few words about our birds, the native birds of our woods and orchards, and their economic relations with the farmer, fruit grower and gardener.

With one exception I am glad to be able to speak of them all as friends, and that one exception I need scarcely say is the English sparrow. This, as we all know, is not a native of the country, but an imported species which finding here climatic and other conditions suited to its wants, has made up its mind to stay, and has increased at a rate for which we find no parallel in the history of any other bird.

In Canada there has been no concerted action towards getting statistics of its increase and habits, but in the United States, where it first settled and where its depredations first attracted notice, the government has at great expense obtained reports of its operations in every State where it has settled. All concur in the opinion that it now effects prejudicially the interests of the farmer, fruit grower and gardener to a greater extent than any other bird, while its rapid spread and increase renders it impossible to predict where the evil is to end.

Among the *direct* charges brought against the sparrow by the fruit growers is that of visiting the orchard in the early spring and doing serious injury by eating out the germs of the fruit buds; the peach, pear, plum, apricot, cherry, apple, currant, grape being all sufferers.

Later in the season, its visits to the vegetable garden are equally disastrous, for it attacks lettuce, peas, beets, radishes, cabbages and cauliflowers as soon as they appear above the surface, and even the seed has been taken up and devoured before it has had time to germinate. So great, indeed, has been the injury thus sustained, that in many localities the market gardeners have found it necessary to cover their garden beds with netting to prevent the total destruction of the crops. As the season advances the ripe fruit is attacked, and besides what is eaten, large quantities of apples, pears, peaches, plums, tomatoes, grapes and strawberries are destroyed by having holes pecked in the sides, causing the fruit to drop on the ground or decay on the branches.

In some localities where the grape industry once flourished, it is no longer possible to continue it with profit on account of the sparrow pest, though some growers, as a last resource, have tried to save their crops by enclosing the ripening clusters in paper bags.

While hundreds of reports have been sent in to the Department of Agriculture from different points in the union confirming the truth of the foregoing statement, others equally numerous are available to shew that the farmer does not escape the general scourge. The purport of these may be summed up in the words of Mr. Hoadly, who has been intrusted with the collection of evidence:—

"Annoying and injurious as the sparrow is to the fruit grower and vegetable gardener, the loss it inflicts on the producer of cereals is still greater.

Though for its permanent residence it prefers populous cities and places of abundant traffic and commotion, still, in anticipation of the harvest season, it gathers in enormous flocks, and leaving the cities and towns moves off into the surrounding country to feed upon the ripening grain. Its consumption and waste of corn, wheat, oats, rye, barley and buckwheat in many parts of the country is enormous. It feeds on the kernel when it is in the soft, milky state, as well as when it has matured and hardened, and in fields of ripe grain it scatters upon the ground even more than it consumes. Instances have been reported where in place of a full or fair crop, only the straw remained to be gathered."

Besides the foregoing *direct* injuries chargeable to the sparrow, it *indirectly* causes considerable loss by driving away our native birds.

Before the advent of the sparrow the insect pests in the garden and orchard were fairly kept in check, being sought for as food by such birds as the robin, catbird, blue bird, song sparrow, house-wren, yellow bird, oriole, vireo, phæbe, purple martin and white-bellied swallow. All of these have now been either entirely driven away from their former haunts, or remain in greatly reduced numbers under perpetual annoyance. The sparrows have many bitter family quarrels among themselves, but should a bird of a different species appear upon the scene, it is astonishing to see how quickly they lay aside their own disputes and unite in driving off the stranger.

The robin, from its large size and courageous nature, holds his own against the sparrows, better perhaps than any of the other birds named, but even its eggs and young are sometimes attacked and destroyed by this merciless marauder.

The purple martin, with care still has a footing on the cornice beneath the projecting roofs of a few of our city buildings, but should a pair seek to make their home in a garden box, as formerly, they have a continual fight for the occupation, and have even been known to be overpowered by numbers and killed in defence of their home.

Our native birds being thus driven off, the insects are allowed to riot unchecked among the buds in the garden and orchard, and do far more injury now than they could have done while their numbers were reduced by the birds.

On the first appearance of the sparrow among us, it was treated with great kindness and consideration.

The city council of Hamilton, with characteristic benevolence, erected a commodious house for it in the centre of the city, and for a time it was fed daily. Now the feeling toward them has changed everywhere, and the most important consideration is, how to diminish their numbers, or if possible to get rid of them altogether. Dr. Fisher, of the Department of Agriculture at Washington, recommends poisoning in a variety of ways—by strychnine, arsenic, corrosive sublimate, nux vomica, etc. This plan has been tried at the experimental farm at Ottawa, but has not been quite successful, for the sparrows are cunning, observant birds, endowed with more wisdom than some bipeds of a higher class. Should one of their number be observed to stagger, or be otherwise affected by what they are eating, the feast is stopped at once and not again resumed. On this account, a slow poison is recommended which will not take effect till some time after the birds have left the feeding ground.

The sparrows have not yet appeared in Canada in such numbers as they have done farther south, but even here they are on the increase, and with the foregoing facts in view, it becomes a question whether this Association should not take some steps to abate the sparrow nuisance before it gets entirely beyond control.

The history of the sparrow has become so important from its unprecedented increase and spread over such a vast territory, together with the extent of its ravages wherever it has settled, that large sums of money have been expended in gaining information which enables us to speak of its habits with some degree of certainty. But when we turn to consider the economic relations of our old garden friends with whose appearance we are most familiar, we have to inquire into the nature of *their* food, and on this subject our knowledge is so far from complete that any conclusions arrived at must be considered as only approximate.

Much has been said in a general way, by all writers on ornithology, about certain species of birds living on insects, and certain other species living on seeds; but we have many that change their diet according to the season of the year, and it cannot properly be included in either of these groups. Another important consideration is, to determine whether the insects destroyed by the birds are injurious or beneficial in farm or garden. Even on this point there is still some difference of opinion in regard to the true position of certain species.

Among the seed eaters, similar difficulties occur, as many birds are known to feed freely on whatever suitable seeds are available, without considering whether they are nexious to the farmer or not. In this way a bird may, during one part of the season, be doing the farmer good service, and at another he may be doing injury in a corresponding degree. In this connection I would mention the case of the bob-o-link, which, while with us, lives almost entirely on insects, and is considered highly beneficial, but when in vast flocks it reaches the rice fields in the south, it annually entails a loss of thousands, if not of millions, of dollars on the planters, by the destruction of the crops. With the foregoing facts in view, it will be seen how nearly impossible it is, in the present state of our knowledge, to form anything like a positive idea of the economic value of our birds; but we know enough of the habits of many of the species to believe that the balance for good is in their favor, and so let us protect and encourage them as far as in our power.

Among our garden birds, no one is better known than the robin, and a cheerful, joyous fellow he is, turning his bright red breast to the east in the early spring morning, and hailing the rising sun with his *hearty* if not very *musical* ditty. That he is fond of fruit cannot be disputed, and he is a good judge, taking only the finest of the cherries, but he is also known to destroy large numbers of cutworms, caterpillars, grubs and beetles, whose ravages might have far exceeded his own.

Dr. King of River Falls, who has, at the request of the State of Wisconsin, prepared the most exhaustive report I know of on the food of birds, says regarding the robin:—"In its method of obtaining food, and in the situation from which its food is gleaned, the robin performs a very important work, and one for which few other birds are so well adapted. So important is this work, that the small quantity of fruit it consumes is but a stingy compensation for the services which it renders, and I know of no bird whose greater abundance is likely to prove of more service to the country. Its eminently terrestrial habits, its fondness for larvæ of various kinds, its ability to obtain those which are hidden beneath the turf, give it a usefulness in destroying cutworms in the larval state which no other bird possesses in the same degree, and for this feature of its economy alone, its greater abundance should be encouraged."

Another familiar garden bird, now less numerous than formerly, is the cat-bird, which, like the robin, is a member of the thrush family; and it, too, delights in the society of man. It is not so much a city bird as the robin, neither is it found in the heavily timbered woods. Its choice of a residence is in the garden of our suburban villas, or near a log house on the edge of a clearing. In such places its lithe, handsome form may be seen gliding among the shrubbery, and its rich melodious notes, when heard morning and evening, are often mistaken for those of the brown thrush. Its food consists largely of insects, and in the season it also takes the berries of our wild and cultivated bushes, but a careful examination has shewn that the balance of work done has been in favor of the gardener, so by all means give the cat-bird the benefit, and encourage his presence in the garden, where his lively manners are always interesting.

The Baltimore oriole is the most gaily attired of all our garden songsters, and none build a more artistic nest. About the middle of the first week in May, the clear flute-like notes of the male are heard for the first time in the garden in the early morning, the journey from the south having been performed by short stages during the night. A few days afterwards the females arrive, and soon the pair are seen busily engaged weaving their curious purse-like nest, which is usually suspended from the drooping branch of an elm, or other suitable tree. It is a pleasing sight to see the glowing colors of this bird shewn against a background of Norway spruce, and no one of our feathered tribes more quickly attracts the notice of strangers, but it is charged with visiting the orchard to the injury of the fruit.

The food of the oriole, however, consists largely of insects, and it is known to take many of the injurious forms which other birds do not care for. As an instance of this, it has been seen to put its head through the web of the tent caterpillar, and remove the inmates. It is also known to feed freely on the insect known as leaf rollers, as many as twenty-five having been taken from the stomach of one oriole. It thus takes a high stand among beneficial birds, and should be protected accordingly.

The American goldfinch is another of our most showy birds. It resides with us throughout the year but loses its gay colors during the winter and is therefore less noticed during that season. It is very abundant and is generally distributed in all open places, feeding almost exclusively on the seeds of noxious weeds, such as the dandelion, burdock, fox-tail grass, etc. For the consumption of the seeds of the Canada thistle alone it is entitled to our protection and I think it is seldom molested.

The case of the crow is one which requires consideration, and I have no official report on it to refer to. Many writers give it credit for doing great good in the destruction of caterpillars, grubs, beetles, etc., which it picks up while following the plow. No doubt it eats these as it will eat anything else that is eatable, but it also does great havoc by pulling up and devouring the sprouting corn.

In the opinion of many observers it destroys more young chickens, ducklings, goslings, etc., than all the hawks and owls put together. It is known to rob the nests of small birds, taking the eggs and even tearing out and devouring the callon young.

I would strongly urge those who have opportunity to do so, to observe and take notes on the habit of the crow and to let him have his true position as the evidence may direct.

The woodpeckers as a class deserve our protection on account of the service they render in the destruction of the wood-boring grubs and other noxious insects which infest our fruit and forest trees. They all take a little fruit now and then by way of a relish but the true feeding ground of the woodpecker is among the timber. The yellow bellied species, a bird of handsome plumage, is the one which makes those horizontal rows of holes which we see around the trunks of the trees. In some sections where trees are scarce it is said that those holes are so numerous and so close together that the tree becomes girdled and dies in consequence, but no instance of this kind has come under my notice. I believe that the holes are drilled to allow the birds to feed on the saccharine fluid which exudes from them. So far as I have noticed the tree is not thereby in any way injured.

Perhaps there is no class of birds regarding whose habit so much misapprehension exists as the hawks and owls. Every man or boy who could handle a gun used to think he had accomplished a feat when he succeded in killing one of those birds, but the subject has been taken up in earnest by the Department of Agriculture at Washington and we are likely soon to know all that can be known regarding their food. Dr. A. K. Fisher, assistant ornithologist of the department who has instructions to make an exhaustive report on the subject, has kindly sent me some sheets which have been published in advance. Already several hundred of the birds have been sacrificed to give an opportunity of examining the contents of their stomachs and the results shew largely in favor of the birds, some of which rarely if ever touch poultry, while they render incalculable service to the farmer by the destruction of innumerable rats, mice and other small mammals.

Of the large owls the one we most frequently see or hear about is the great horned owl Bubo Virginianus. It is the strongest and most fierce and daring of all the family, and at times is very destructive to poultry. If one of those birds gets into the habit of visiting the farm buildings and taking the chickens, means should be taken to stop proceedings at once or it will return night after night and take the spoil as long as it lasts. The species is not very numerous and many individuals never come near the poultry but spend their lives in the solitude of the woods where they feast on ruffed grouse, rabbits, and other small mammals.

The long and short eared owls which we see skimming noiselessly over the meadows in the dusk of the evening feed almost entirely on mice and are therefore true friends of the farmer. Out of forty-five stomachs of this species which were examined four contained small birds, thirty-four mice, three other mammals, seven insects, and six were empty.

Much the same may be said in regard to the barred owl, though strange to say in the stomachs of two individuals of this species were found remains of their near relative the screech owl, and in another those of the saw-whet, but of thirty-seven stomachs examined sixteen contained mice while the others contained frogs, insects and crawfish.

The little screech owl which is often very common in the barns during the winter has a record which shews it to be well entitled to protection as one of the best friends of the farmer. Of ninety-four stomachs of this species examined one contained poultry, twenty small birds, forty-one mice, thirty-five insects, and several it is to be regretted were empty.

The saw-whet owl is smaller than the preceding in size, is without the ear tufts and by no means as common as the preceding. Of this species the stomachs of only six were examined and all contained mice.

The marsh hawk, slender in form with long pointed wings, dark brown above lighter below, is often seen sailing over marshes and wet meadows. Of forty-six stomachs of this species examined five contained poultry, or game birds, five small birds, twenty-four mice, nine other mammals, eight insects, three reptiles, and one was empty. The large consumption of mice by this species bespeaks for it the protection of the farmer, but it is often needlessly killed by the gunner while he is watching for ducks.

The two following species which resemble each other in color but differ in size are the most destructive to poultry and small birds of all the hawks. They are both quite common, mostly in spring and fall, and excite the admiration of those who are fond of witnessing active exhibitions of bird life by the dexterity

they show in capturing their prey. The sharp shinned hawk is the smaller of the two. The tail is long, the legs slender, and the claws extremely sharp. He is a terror to small birds, whose head he frequently takes off with a jerk at short notice, but is too light to do much mischief among the poultry, though he does sometimes make the attempt. Of forty-eight stomachs examined two contained poultry, thirty-five small birds, four mice, two insects, and ten were empty.

The other one of the pair referred to is Cooper's hawk. It resembles the preceding one in appearance but is a larger, stronger bird and more injurious in proportion. This is the one which does most mischief among the poultry and truly deserves the name of hen hawk, though that title is often applied to other comparatively harmless species.

Some hawks have the habit of sailing high overhead in wide circles, carefully scanning the landscape below with eyes which can readily be changed from a telescope to a microscope, but the species we are describing skims noiselessly along in the shade of a fence or row of bushes and pounces with inconceivable velocity on anything suitable which comes in its way. Of forty-six stomachs examined fifteen contained poultry or game birds, seventeen other birds, one mice, one frog, one lizard, two insects and eleven were empty.

The red-tailed hawk, from its large size and grand soaring flight, is well known throughout the country. It is the one usually spoken of as the hen hawk and has always been charged with carrying off poultry. On this account a more exhaustive examination has been made of this species than of any other, no fewer than 311 stomachs having been dissected. The result has shown that of all that large number only twenty-nine had partaken of poultry, while 203 had mice, the others having used insects and reptiles, while a few were empty. I look on this as the most valuable result in the whole examination, removing as it does the stigma from a bird which has always been persecuted as a robber of the roost, and placing it in its true position as a friend to the farmer to whom it renders great service in the destruction of so many mice.

The red shouldered hawk resembles the preceding in general appearance and its habits are similar. It is quite common in southern Ontario where it is known as one of the hen hawks. That it does scoop up a chicken now and then cannot be doubted, yet the examination of 102 stomachs showed that only one contained poultry, while sixty-one had taken mice, twenty other mammals, forty insects, fifteen reptiles, and a few had used a mixed diet of earth worms, crawfish, etc.

There are many other species of bird which well deserve notice, but I have already occupied much of your valuable time and will now draw to a close. On reviewing the subject generally I would recommend that means be taken at once to check the increase of the English sparrow. but all other small birds I think are entitled to protection, the balance of their influence being for good and therefore the more we have of them the better. Of the two hawks most destructive to poultry and small birds (viz., Coopers and the sharp shinned), I can only say that they are natives, and may in some way not known to us, prevent the undue increase of certain species of small birds, thus maintaining the balance of power in the economy of nature, though I must admit that I think their presence could well be spared, unless they could be trained to confine their attention to the English sparrows.

The great horned owl should be kept in check as indicated, and the crow may well be left in the hands of the farmer who is most affected by his operations.

I have only further to say that I have at home mounted specimens of all the birds I have been describing which I will be pleased to shew to any of the members who may find time to pay me a visit at Cairnbrae.

Mr. E. D. SMITH suggested that the Government be urged to take steps to destroy the sparrow. The robin is terribly destructive to the crops, so that we lose more than we gain. We subdue them by taking their nests, destroying their young, and later on shooting them.

The SECRETARY moved, seconded by Mr, E. D. SMITH, that Prof. Saunders, Mr. McIlraith and Mr. Denton be a committee to prepare a resolution addressed to the Minister of Agriculture asking legislation regarding useful and injurious birds.

Mr. GOLDIE (Guelph) said it was true the sparrow was an immigrant, but it was neither a pauper nor a lunatic. Around his residence he had 500 or 1,000, and he had never yet seen the first injury they had done to either fruits or vegetables or buds, and he knew they destroyed more insects than any other bird. He believed he was the first person to introduce the sparrows to this country. (Laughter.) His friends in the United States told him not to tell this, lest he should get into trouble and suffer lynching. (Laughter.) He could imagine that further south they might do a great deal of injury, but he could not see the injury they would do in any part of Canada, or else they must differ very much from their habits around Guelph. The tent caterpillar is a thing of the past in gardens and orchards around Guelph. He had often seen the sparrows picking the eggs off the branches, and on lanes and roadsides he had seen them frequently destroying insects, and they would catch some moths and butterflies even on the wing. He had never seen them take the buds of trees, either in England or here. He had no doubt the purple finch was the bird that often did the damage the sparrow was blamed for. He had no doubt if there were any oats in the vicinity of the town the sparrows frequented they would take a few heads of the grain around the edge of the field; but in the wheat or grain fields they are not destined to do much damage. He thought the winter destroyed so many of them that we need not fear their great increase.

Mr. WM. ORR thought the sparrow was most destructive and dirty, befouling harness, carriages, etc.

Mr. GOLDIE—That is the only thing I would have against them. I admit that they are very dirty.

Prof. SAUNDERS—We have found sparrows do a great deal of damage to our experimental plots of grain, both in the field and after it has been put in the barn, before it is threshed. Poisoning had been successful to a considerable extent by this method. Cover grains of wheat with a mixture of mucilage and water, and while wet cover these grains with arnica, mix the grains with chaff, so as to overcome the acute perception of the birds.

Mr. MCILRAITH—In the Old Country my recollection is that the sparrows betake themselves to the oat fields. Such is their custom in the United States

Dr. BURGESS—The best way to get rid of the sparrows is to destroy the nests. You will have to do this two or three times a year. I know sparrows will destroy fruit buds and fruit, but the main charge I bring against them is that they destroy our native birds and our buildings.

The resolution was carried unanimously, and the association adjourned for lunch till 2.30 p.m.

GROWTH AND MARKETING OF GRAPES.

Mr. E. D. SMITH (Winona)—There is plenty of room to extend the market (1) by getting earlier grapes of good quality. We ought to have a grape as early as the Champion and as good as the Worden in every respect. If we had that we could double our plantations. (2) At the end of the season by preserving grapes. (3) By putting on the market nothing but grapes of the very best quality. (4) By teaching the consuming population the good uses of grapes, both as food and medicine. Very little is known about that at present. The Champion is a strong grower, prolific in yield, good hardy vine, good leaf, and comes earlier than anything we have. There is a fortune for some man who will bring the right early grape before the public and handle it well. The first good grape we have is the Worden, which is at least ten days later than the Champion. The best ten days in the season for selling grapes is far more than lost, because it is occupied by a grape which destroys the sale of other grapes, being so poor. The season is partly occupied by Moore's Early, but it does not yield in sufficient quantity to compete with the Champion. We must have a grape good enough in all its points to drive the Champion out. Moyer's Seedling is not known well enough yet to pronounce positively as to all its good points. It is sweet, good flavor, and early. I think about as early as the Champion. But that is a red grape, and even if successful and as good, it may not drive the Champion out. Our thanks are due to the men who have experimented so largely in hybridization. Commercial growers have not the time, and we should be thankful we have men who have time to produce a variety of grapes. With better systems of preserving, grapes could be sold till May, and the time when strawberries come in. The best keeper I find is the Salem; but it has other qualities that do not recommend it to the commercial grower, though it is of an exceedingly good quality, fairly good yield, and handsome to look at. The great objection is the weakness of the leaf; that is the great objection, unless it can be overcome by the French mixtures. The principal one is the Bordeaux mixture. I applied it in a liquid form with a whisk. I have seen some Salem grapes packed in cork dust that are to-day as sound as when they were picked. The Vergennes do not keep as well as the Salem, nor do either of the Rogers, 3 and 4. A gentleman in Ottawa told me that he believed a thousand kegs containing fifty pounds each of the Malaga grapes were sold there every season. If that proportion is sold in other cities it would require a good many acres to raise that amount. I believe we will occupy this field one day with grapes of our own. I presume there are at least one hundred acres in the market already established. Until the Champion can be driven out by grapes of better quality it will be grown. No doubt there has been money in it; it produces so abundantly. The consumer comes along and gets a taste of this grape when it is put on the market. It is green all the time; it is bad to eat, until the Concord is put on the market, which is put on green because it is thought it will take the place of the Champion. And so we have a succession of poor green grapes in the beginning of the season, which is unsatisfactory. We must remember that the most of grapes are sold in five cent packages. A clerk or mechanic comes along and buys those grapes and finds them sour, and says: "I guess I will wait till grapes get better." He does not know the difference between Concord and Champion. He waits a week. That consumer is out of the market for a week or ten days; and perhaps he comes to try it again and gets some green Concords, and he is disgusted again; and that consumer is thrown off the market for the best three weeks of the season I believe if we had no Champion grapes and every grape that was put on the market was good quality, three years after this we could sell three times as many

grapes as we do, and get as good a price for them. People strip their vines and put everything in the basket, and the retail dealer is disgusted, and the customer is disgusted. Selling grapes is like selling whisky or wine; they make it in such a shape that people are enticed to take some more. So I say we must put our grapes on the market in the very best possible shape, and only grow those of the very best quality. If we do that we can grow an enormous quantity of them, for we have an enormous market to supply. It is well known that to-day very few grapes are known, except for fermented wine and for eating out of hand. Those who have tried them know that all varieties of grapes are as good as any fruit when sealed, and many think them better; and yet there is not one consumer in five hundred who knows how to do them up. Thousands of people would like to have some unfermented wine, but don't know how to make it; and thousands of people do not know the medicinal value of grapes. The young fellows are weighing themselves often in the fall, and they often find that in the fall they gain from ten to fifteen pounds. (Hear, hear, and laughter) That goes to show they must be of great value as medicine. Besides, we have the old grape cures in the old world, where people are dicted on grapes alone. They are started on one pound, and after they get accustomed to it they get so that they can use twelve pounds a day. (Hear, hear.) If we could show people the medicinal value of grapes we could dispose of a great many more. The fruit growers of Winona a few years ago struck off 100,000 copies of recipes for different ways of using grapes, and those were distributed to our customers in the cities; and I have been repeatedly asked for more of these for succeeding years, so it appears they were used. The way most of them did was to put one in each basket. I think the better way is, if you can get the person you are dealing with to take the matter up, and make it clear to his mind that it will be to his advantage as well as yours for him to distribute them in advance. At the beginning of the season I think it would be more use.

A DELEGATE—What size package do you recommend?

Mr. SMITH—It is better for us to adopt a uniform package, holding ten pounds, basket included. We would get better terms for our grapes than if larger baskets are used. Commission men in Toronto and Montreal object to handling more baskets, but they acknowledge that they would fetch half a cent a pound more than they will in 20-pound baskets. Besides, a great many grapes in the bottom of the basket are always bruised and wasted to the retailer. They are sending a great many Catawbas from the States in 4-pound baskets. In New York and Philadelphia they hold from 8 to 10 lb.

Mr. GOLDIE—Do you take them off the bunch? A. Most of our varieties tear so much that it would injure them that way.

Prof. SAUNDERS—In cooking them do you pop the seeds out? A. Yes.

DELEGATE—Will they succeed as well on sandy soil?

Mr. SMITH—Slow, feeble growers will do better on rich sand than on clay, while strong, thrifty growers will do better on deep, strong land. On sandy soil wood ashes is the best fertiliser. Bone dust is good.

Q. Should you plant out a one-year old or a two-year old? A. I would prefer a real strong thrifty one-year old to a two-year old. A one-year old Moore's Early beat Worden's considerably in growth on the same soil.

Q. How to put a veto on shipping grapes before they are ripe?

The SECRETARY—The city health inspector should look after green grapes and confiscate them.

Q. Have you ever tried "ringing" grapes to get them ripe early for the market? A. No.

The SECRETARY—This has been practised quite frequently for the fairs, in order to get large grapes to take prizes. It is practised about the city of Hamilton, I think, for that purpose. In Massachusetts, about the city of Concord, it has been practised largely for market purposes. An owner of a large vineyard there has been experimenting. He "ringed" half the vineyard by twisting little pieces of wire about the branches that were to be cut off that fall; and it is stated that the Concord grapes were ripened early enough to bring them in competition with the Worden in the market.

Mr. A. M. SMITH—Formerly our provincial prize list had a clause in, excluding "ringed" grapes from competition with those that were not ringed. I think this ought to be introduced into all rules of our agricultural and horticultural associations. It is entirely unfair for ringed grapes to compete with those in their natural condition. People who go to fairs to select varieties, see those ringed grapes, and not getting a chance to taste them, order those varieties, and when they come to compare them, say: "That is not the grapes I saw for the Salem or Agawam." As an educator of the public this grape is wrong to be shown in that way. But there is a separate class, like fat cattle; if they are to be shown wherever I am a judge I exclude them, and give a prize for quality instead of size.

A. M. PETTIT—Last year at the Hamilton fair, we consulted the directors and they told us to judge by flavor entirely, and the protests came in thick and fast. We had a hearing before the president and committee of that department, and they sustained our judgment. All judges at fairs should do the same. If the grape growers of the country should ring their grapes, it would reduce the consumption of the fruit to a very great extent, to put these weak, flavorless grapes upon the market. If we could grow the beautiful little Delaware as large as the Roger 15, it would not be the Delaware; and that is the case with many other varieties.

The PRESIDENT—The matter of ringed fruit rests with the judges at exhibitions altogether. It is very easy to tell ringed fruit by the lack of flavor, its watery, insipid taste. Judges should judge by flavor and throw them out.

Mr. DEMPSEY—I always judge from quality in grapes. I have competed against those that were ringed, but I never ring grapes, though I have stimulated the vine by using scissors and thumb and finger for pinching them; and invariably I have been satisfied with the result. We should encourage people to resist by any honest means the stimulating of fancy growths of fruits for exhibitions; or if we cannot do that, have separate prizes for ringed grapes. This is not the only evil, however; I have known cases of people sending to Quebec and to the United States for samples of fruit to exhibit at fairs as their own.

Mr. STIPE (Hamilton)—Should we not raise grapes for commercial use instead of quality? This Association would be doing a kindness to the grape growers by encouraging some principle of bringing the grape sooner into perfection, and I believe this ringing process will do it, and by that means we get a bigger price, and that is all we care for—the money. (Laughter.)

Mr. E. D. SMITH—I have seen vines that were ringed pretty regularly, and the result was that the vineyards were ruined.

Mr. STIPE—I can't agree with that. I believe a man can ring a grape, grow a cane every year, and produce the same amount of fruit, and have it in the market so early that he will beat others.

Mr. S. BURNER (Hamilton)—I ring all my grapes, and it pays me to do it, and that is why I do it. Last season I produced a little over three tons from five acres. I crop the ground with vegetables as if the grapes were not there. The vines would probably cover an acre if they were planted alone. They are Rogers. It has done no injury to the vines, but you must grow new wood every season to provide your crop for the next. If you ring the wood that produced this season and make no provision for the next, you would be minus a crop. As long as it pays me I think I will ring them.

A DELEGATE—What about the flavor?

Mr. BURNER—I don't possess that nice sense of palate that some of my friends do. In some seasons they will be watery, but in a cold late season I get the most benefit of the ringing. You get color into them, and a good looking thing in a basket, and like everything else, the best looking thing will bring the best price. I had 300 bearing vines, and 180 more to come into bearing this year. I have them in rows, twelve feet apart each way.

The PRESIDENT—How do you find the ringing affects the shipping and keeping qualities?

Mr. BURNER—I don't know anything about that because I get rid of them as quick as I can. I find that the early bird gets the worm. There is a lot of work about this ringing process, and that does not suit the fruit growers. (Laughter). I strip the bark not less than an inch in width. Anything much less than that is not of much effect. Some I have taken off before the grape was in bloom to make the grape set better, but they are generally about the size of pears before I got at them—in July generally. The ringing makes them four times as large as anybody else's.

The SECRETARY—While we may condemn ringing for exhibition purposes the question comes, is it not likely to be a profitable thing for us to do for marketing them by increasing the size and getting into the market earlier. Mr. Barry, the President of the N. Y. Horticultural Society, boldly denounced the ringing of grapes on the score of loss of quality, and in the face of these differences of opinion it will require further experiment before we can be very positive.

The Secretary read the following extract from one of the bulletins of the Agricultural Experiment Stations in Massachusetts :—

"Cutting rings of bark from the canes of the grape vine to hasten the time of ripening has been practised more or less for many years to prepare large specimens for exhibition, but only for the few years past has it been practised to hasten the crop for market.

"In a series of experiments made in the college vineyard in 1877 and 1878, and recorded in the Report of the Board of Agriculture of Mass. 1878 and 1879. it was found that removing a ring of bark early in July, quarter of an inch wide, resulted in hastening the time of ripening from one to two weeks.

"It was also concluded from very careful tests made at the time that the increased size and early maturity *was not at the expense of the quality*, and that as far as could be determiue i at that time, and which further observations have confirmed, that the vines are not materially injured by the girdling.

"Girdling has been practised in the college vineyard more or less every year since with favorable results; the canes that are to be cut away at the fall pruning only have been girdled to avoid any possibility of injury to vine or root from stopping the downward flow of sap by the girdle.

"Some seasons the results of this practice have been more marked than in others, but generally the increased price obtained for the early fruit has much more than paid expenses of the work, and in seasons of early frost, to which many sections of New England are liable, it has made the difference between total failure and fair profit.

"To save expense in the work for the past two years the girdling has been done by twisting a wire very firmly about the canes the last of June above the point where the cane is to be cut away at the fall pruning.

"About No. 20 wire has been found best, and results obtained have been more satisfactory when the wires were put on the last of June or early in July and twisted very firmly about the cane.

"While we have no proof that the vines are in any way injured (notwithstanding that we have made very careful observations for many years), we would not advise girdling the entire vine, but would treat only those canes to be cut away at the fall pruning, and would leave about one-half of the vine to grow to a natural condition."

Mr. HILBORN—I think it is that stimulating to the large size that gives them the poor quality—no matter how you do it.

Mr. STIPE—Rogers' forty-three comes in nearly as early as the Champion when it is ringed.

The PRESIDENT—There is a great deal of ringing going on. We can understand that a purchaser would select the finest-looking grapes. For general market purposes ringed grapes would not keep long enough to meet the market. It does not stand to reason that they will bear shipment so well as those that are not ringed.

Mr. BURNER—I ship to Montreal and they are all right enough. I have some in my cellar now pretty nearly as well preserved as those on the table here—all ringed.

Mr. A. M. SMITH—If ringed grapes are of poorer quality, then the large grapes will come to be suspected on account of poorer quality, and then the smaller grapes would get the better price.

Mr. WESLEY SMITH (Winona)—I would like to hear Mr. Smith speak of the best varieties.

Mr. E. D. SMITH—Among the reds I would prefer the Lindley; it is earliest to ripen, yields well, grows well, has a good leaf and hangs on to the end of the season, and it will keep reasonably well—not so well as the Salem. Among the blacks the Worden is king, but it will not keep, it cracks and must be marketed in a short season. For the balance of the season the Concord for commercial purposes would fill the bill better than any I know. For a large fine grape Rogers 43 and 44 succeeds best with me. For white, Niagara is acknowledged to be the queen, but, unlike the Concord, it will not succeed in all soils and all situations. It must not be planted in an exposed position where it is liable to be killed with the rot; that is its weak point, but it has no other. The roots must be sheltered.

Prof. SAUNDERS—What do you think of the Early Victor?

Mr. SMITH—Very good grape. Not so early as the Champion and therefore not early enough to crowd it out. It does not come up to the standard in bearing.

Mr. CARPENTER---For blacks I would say Roger 41, Concord, Worden, Roger's 43, 44, and also I think Roger 39, which we find very good after testing. For red I would put Roger 9, 15 and Delaware. I don't approve of the Salem very much---our vines seem to be going back the last two or three years. The grapes are very tender in the skin, and unless we watch closely we lose one-third to half a crop on some vines. For white I suggest Niagara and Pocklington, which is hardy. I would rather use fertilizers than barnyard manure, from results I have seen. I picked last year forty-five or fifty pounds of Roger's 9 off several vines in a poor spot that had not manure for fifteen years. I use the superphosphate from Brodie & Harvie, Smith's Falls, from 300 to 400 pounds to the acre for grapes; for field culture about 200 pounds to the acre every year.

Mr. F. W. FEARMAN (Hamilton)---I am probably the oldest grape grower in the room. I wrote a paper forty years ago, before this Association was started. The subject was: "Grape Growing on five acres." I said in the paper that in a few years there would be a large number in the Niagara district growing grapes and supplying the northern part of this country. I find my prediction verified this afternoon. We had at that time only three grapes---the Isabella, Clinton and Catawba. Some Americans were anxious that we should grow the old Fox grape, and a few of us did; and I find very little difference between the smell of

them and of a skunk. (Laughter). You could smell them from forty to fifty feet away from the waggon. (Laughter). I think sometimes that the Niagara grape was originated somewhere near the Fox grape---not to the same extent, but it has the same odor exactly. I have a small vineyard and have exceedingly great success in growing the Rogers grape on long wires. I have vines fifty feet long and loaded from one end to the other. There is no difficulty in cultivating the ground between the vines that are grown in that way, probably twenty feet apart. Those vines will bear if run wherever you like---up the chimney of a house. My Salems are gradually giving way. After a number of years they seem to fail. I am very much pleased to see the interest in fruit culture.

Mr. PETTIT suggested that Mr. Fearman's paper be published in our annual report.

EXPERIENCE IN A FRUIT GARDEN FOR HOME USE.

Mr. T. H. RACE (Mitchell) read the following paper :---

The garden is a chosen spot of earth. The word garden, in a scriptural sense, is synonymous with that of paradise, and is suggestive of peace, plenty, beauty and enjoyment. The very first record we have of man, associated him with the garden. Man in his primeval state, innocent and holy, was placed in a garden. It was chosen for him as a habitation, a spot in harmony with the perfection of his intellectual and moral nature, and of its fruits he was recommended to eat. When man fell he was driven from the portals of his paradise, with its fruits and flowers, prepared for him ; but though he degenerated through disobedience it remained still in the ordination of the Creator that through toil and the sweat of his brow, man should make the garden a chosen and a fruitful spot for himself, yielding fruit to gratify his appetite, and flowers, with their sweet perfume, to delight his eye and gratify his sense. It is suggestive to note the divine estimate of the garden, for we find it recorded in holy writ, as a mark of God's favor to man, that he shall be given honey out of the garden, and vineyards shall be converted out of the wilderness for an inheritance. Solomon went down into the garden of the nuts to see the plants of the valley, and to see whether the vines flourished, and he said, "I made me gardens and orchards, and I planted trees in them of all kinds of fruits," and Solomon was wiser in his day and generation than most men. Jeremiah recommended the captive people to plant gardens and eat the fruit of them ; and the very last view we are given of man, in the closing chapters of Revelation, is associated with the garden, as the home of our perfected and sanctified humanity. "To him that overcometh will I grant to eat of the tree of life which is in the midst of the paradise, or garden of God." Agriculture is the most innocent, most primeval and delightful of all forms of industry, and the garden is the very acme, the perfection of agriculture, and is associated with the first and the last views of human happiness and peace.

The subject, then, you will perceive, is a noble and exalted one. But while man in his purity was given the garden as a spot of beauty and attractiveness, and the fruits thereof to eat without toil or effort on his part ; in his degenerate state the garden must be made by him, and will yield its fruits only as a reward for his labor. God made the garden for Adam, but Solomon, as he tells us, had to make the garden for himself. Under these circumstances the great question with man is, does it pay to garden ? How often do we hear it remarked by men of every class, "It does not pay me to bother with a garden ; I can buy all the

fruit and such like things that I need cheaper than I could grow them for myself." And how often I am asked the question myself, does it pay you to keep a garden and spend the time in it that you do? The only reply to remarks and questions of this kind, is that much depends on the individual, and the purpose he has in living. Life is made up of its incidents with intermingling responsibilities and pleasures, and it is not all of life to live for filthy lucre, or that which will buy bread and raiment; literally speaking, it would not pay a man to garden who lives for such a purpose with such an aim only in view. What would be labor and loss of time to one man is pleasure and recreation to another. It was said but a year or two ago, by a member of this society, that in order to have a beautiful rose in your garden, it was necessary to have a beautiful rose in your heart. So it may be said of the garden, in order to have a handsome and beautiful garden on your premises, it is necessary to have a garden in your heart. Love makes labor light, and love will remove every obstacle that comes in its way for the accomplishment of its dreams.

Such has been my experience in the garden. No disappointment has ever for an hour subdued my love for the work, or my ambition to produce a fruit or a flower to come up to my ideal. Hence to labor in the garden is to me a recreation and a source of joy and pleasure. If I were to consider the time I have spent in the garden, and the money that I have expended in its cultivation, and calculate the return in mere dollars and cents, I might say as many do, that it does not pay to garden; but when I consider the life-renewing recreations, and the pleasure that it affords me in its cultivation, the satisfaction it brings me to gather the fruit that it yields, and to eat of that fruit at my own table with my family and friends, I realize that if it be the pleasing incidents, the gratification of natural appetite, and the pleasant associations of life that make life worth living, gardening pays.

I turned my attention more especially to fruit gardening about eight years ago, and since that time my experience has not been without its disappointments. I made many mistakes, and among the greatest I may mention that of running after high priced and highly lauded novelties. I never refused a friend or a neighbor a root or a cutting of anything I had, no matter what it cost me, so that my novelties, even though they proved to possess merit, rarely yielded me anything till after all my friends had been supplied, and the novelty had become a common thing. I can recommend it as a safe rule, for all amateur gardeners to adopt—avoid high-priced novelties.

My present garden consists of about a half acre of ground, a portion of this is in lawn and rose beds, and the whole is enclosed on the east, north and west by a high close board fence. All about this fence I have planted one dozen Gregg, one half dozen each Soughegan, Tyler and Hilborn black caps; one dozen Shaffer's Colossal, and a strip of Cuthbert and Turner raspberries. I have the black and the Shaffers planted six feet apart and held to the fence with cord stretched from post to post, and between the bushes I spread, every second year, a large panful of unleached ashes, spading the ground lightly before putting them on. The Gregg I bend down every winter, and keep them to the ground by placing sticks of firewood on the tips. I never had a picking from them until I did this, as they would kill to the snow every winter. The Cuthbert I have had to treat in the same way, and, on account of their tenderness and their trouble, I am now replacing them with the Marlboro and Golden Queen. I never allow more than four shoots of the Gregg to grow, and these I nip off when about three feet high, and encourage a growth of laterals. To allow more than four shoots to grow will only take substance away from the maturing fruit.

I have two rows of gooseberries running east and west through the centre of my garden, containing nearly one hundred bushes, and two rows also of currants, containing a like number of bushes, the latter comprising the Fay's Prolific, Cherry, Moore's Ruby and White Grape. Both currants and gooseberries are planted five feet apart in the rows, with plenty of space between the latter for a grassy walk. I trim out and tie up in the fall and keep the bushes as erect as possible without using frames, and fertilize with ashes every second year. While others have complained about the mildew affecting their gooseberries I have never seen a sign of such a thing among mine; this I attribute largely, if not in whole, to the free use of ashes, together with the free circulation of air and exposure to plenty of sunlight. To protect from the ravages of the currant worm I use white hellebore dusted on in the evening or morning by means of a common glass tumbler and a piece of book muslin. If the bottom is broken off the tumbler all the better, and with this simple and convenient arrangement two hundred bushes can be gone over easily in less than an hour. About one eighth of an acre I keep in strawberries, and the rows of bushes running through the centre of my garden serve as a snow drift to give the former winter protection.

In strawberry culture I adhere chiefly to the hill system, making the rows two and a half feet apart and the plants eighteen inches in the row. Before planting I enrich the ground with stable manure, and after the second year I apply a heavy coat of ashes between the rows. These ashes serve a fourfold purpose; they keep the ground clean, they help to retain the moisture, they supply the soil with the necessary ingredients to produce an abundance of rich berries, and they drive out that abominable pest, the white grub. I plant in both spring and fall, but for a home garden I prefer the latter, after taking off a crop of early potatoes. When planting in the fall I find it always safest to litter the patch, before the snow comes, with fresh manure from the horse stable. Two years ago I had a matted patch of three years standing (Sharpless and Cherry mixed), and to experiment with ashes as a fertilizer I marked the patch, in the fall, into two feet strips, and spaded up each alternate strip. Along the centre of the two feet strips of vines I scattered a row of ashes until they spread at the bottom over a space of six inches in width. Of course these ashes killed every plant they covered, but the effect on the vines on each side was most satisfactory. The drouth seemed to have little effect on them, while those in the hill patches were completely dried up. I place great value on ashes as a fertilizer for small fruits, but for general garden culture there is nothing to compare with stable manure. Next to watching his fruits maturing, and picking them in their luscious ripeness, there is nothing that so delights the gardener's heart as to turn up a rank mellow soil teeming with earth worms, and nothing will produce this condition of soil equal to stable manure. With plenty of stable manure worked into the soil, plenty of ashes used as a top dressing, and with the soil kept free from weeds, other things being equal, the labors of the planter and gardener will be rewarded with fruit in rich abundance.

Mr. JARVIS.—When and where can potted strawberries be obtained, and when is the proper time to set them out; and can an amateur like myself plant them out himself?

Mr. MORDEN.—The system hinted at is the hill system. The potted plants can be got by sinking the pot under the runner as it passes out. The pot can

shortly be removed with the potted plant. Any nurseryman would be able to furnish the plants if there was a demand. The runner will start perhaps in June. Sink your pots in July. Make the earth very rich in the pot.

Mr. JARVIS.—What is the best thing to eradicate the insects that attack the roses?

Mr. RACE.—Every Saturday night I applied soap suds, forced underneath with a force pump as the aphis gets under the leaves; and I had no trouble. I never had better bloom or finer growth. I used to try tobacco water.

SMALL FRUITS.

WHAT VARIETIES OF STRAWBERRIES, CURRANTS, RASPBERRIES AND BLACKBERRIES SHOULD BE PLANTED FOR HOME USE.

Mr. W. W. HILBORN here read a valuable paper on this subject, which, unfortunately has been mislaid.

A DELEGATE.—Have you fruited any of Mr. Saunders' blackberries?

Mr. HILBORN.—Yes, a number. Some of them were an improvement on Lees' Prolific. I don't know that any were an improvement on the Champion. The weather last season was too dry for judging.

Mr. CASTON.—How does the Hilborn raspberry compare with the Gregg?

Mr. HILBORN.—It is scarcely as large in size, but hardier and of better quality.

VARIETIES OF PLUMS FOR HOME USE AND MARKET.

Mr. GEO. CLINE (Winona) read the following paper:

A FEW FACTS ON PLANTING AND GROWING OF PLUMS FOR TABLE OR MARKET AT GRIMSBY, FROM EXPERIENCE.

In giving my views on the growing of plums, I will only give these that are valuable for market, but still are good enough for home use for any person. A good list for market purposes as also for shipping are: Lombard, German Prune, Washington, Yellow Egg, Imperial Gage, Reine Claude, Coe's Golden Drop, Quackenbos, Niagara, Smith's Orleans, Duane's Purple, Pond's Seedling, Glass' Seedling, Bradshaw, Lawson's Golden Gage, General Hand, Victoria, French Prune. These for an orchard of 500 or 1,000 trees, I would divide about equally. For an orchard of 100 trees I would plant as follows:—Washington, Niagara, Lombard, Glass' Seedling, Yellow Egg, Reine Claude, Coe's Golden Drop, being very productive varieties for the number of trees, and the quality is good enough for either table, cooking or market; all of these I have found perfectly hardy and good bearers, good shippers and selling at highest prices. There are several plums claimed to be curculio proof, but I have none entirely free. There are

some that seem more free than others from curculio, such as Smith's Orleans, Columbia, Lombard. I find one of the great secrets of profitable plum growing is to plant the best kinds, give them good cultivation and plenty of fertilizing material to keep good growth in the trees; good cultivation and fertilizers being an enemy to the destructive diseases as black knot and rot. Even the curculio dislikes cultivation, grass and weeds being a hotbed for the insect, while neglect of cultivation is death to profitable culture. Constant bearing of our best quality of budded plums is very weakening and shortens the life of the tree. I also find that the stock that plums are budded on have great influence in the growth of the trees as also on the size of the fruit and ripening of the fruit in a very dry season. The Myrobolan or the French stock grows on trees about double the size of the Canadian wild plum stock, and also there are no suckers from the Myrobolan stock, while the Canadian wild plum throws up suckers from every root near the top of ground, wherever touched by plow or harrow, making it impossible to keep an orchard in any kind of condition; also the suckers take away the strength from the tree and fruit, and in a very dry season the leaves wither and drop, leaving the fruit unripened and bitter, consequently unsaleable and worthless, Therefore, for this section, plant trees budded in the French stock.

The greatest trouble in growing plums is the black knot, which I believe is spreading very rapidly in the northern and western part of Ontario. The only remedy that I know of is to be on the lookout for it the latter part of July and first of August, cutting out all found, as that is the time the knots are formed; all escaping notice then, to be cut off at once after the leaves drop in autumn. I also recommend good cultivation and plenty of fertilizers, which have an abundance of phosphoric acid and potash in the analysis, such as Brodie & Harvie's, of Smith's Falls, fruit tree fertilizer, which is complete for fruit trees of all kinds as well as grape vines, and of which I use several tons yearly. The knot in my orchard is very much less than three or four years ago, and I think it is entirely due to the use of the fertilizer, good cultivation and cutting knots off as fast as I find them.

The rot is also very destructive in some seasons, more especially in very warm, foggy weather. Such weather being peculiarly adapted to the spreading of that disease, and the fruit should be watched very closely at that time, and be picked off at once if attacked by rot, as the rot spreads very rapidly. One plum in a cluster, attacked by rot on one morning, may spread to the whole cluster before the next morning. The rot is caused I think by fungus growth striking the plum where stung by the curculio.

In marketing plums, a great mistake is made by picking all the plums from one tree at one picking and before they are ripened enough to be picked. Plums should not be picked green, and one variety will generally keep steady packing for a week or ten days, by just picking those that are ripened enough for shipping or market; and sell at very much better prices than picked in the green state.

My remedy for exterminating the curculio is to use a solution of Paris green and water, 3 oz. of Paris green to 40 galls. water and keep well mixed, spraying the mixture on the trees with a force pump mounted on a barrel in a wagon, spraying three or four times during the season; the first time just before the blossom is all gone, and again at intervals of a week or ten days, as the weather may be showery or otherwise; heavy rains washing a certain percentage off.

In conclusion I would like to impress upon the minds of all present that my list of plums given may not do to plant in all parts of Ontario, that they may not be all entirely hardy or as productive on all soils as in mine. I think all those among you who are in any way experienced in growing fruits will agree with me that fruits do not grow the same, neither produce the same in different soils and in different localities. Even at the short distance of one mile, or less, the change is quite marked in the quality of fruit, the growth of tree or vine, as also the productiveness. The list of plums that are really good plums is quite large. I am growing some thirty barrels, but as plums for profit I would not advise planting them. I find experience is the best teacher for planters, and the lesson is not to plant largely until you know just what is most suitable for your own particular soil.

RESOLUTIONS.

Moved by J. A. Morton, seconded by John Croil, That the Fruit Growers' Association of Ontario desire to express their appreciation of the kind attentions and courtesies extended to them by the Press of the city—Carried.

Moved by P. C. Dempsey, seconded by M. Pettit, That the Fruit Growers' Association of Ontario feel themselves under obligation to the County Council of the County of Wentworth, for the kind use of the Court House and rooms afforded them; and that the thanks of this Association be tendered the Council for their courtesy, and that a copy of the resolution be conveyed them through the County Clerk —Carried.

Moved by J. A. Morton, seconded by Secy. Woolverton, That the matter of the preparation of lists of apples for cultivation in this Province, be referred to a committee consisting of the Directorate—Carried.

Moved by M. Pettit, seconded by A. D. Lee, Resolved, that this Association do memoralise the Ontario Legislature, and urge upon them the necessity of enacting such laws as would encourage the protection of existing forests, and further assist farmers and others in planting shade trees as wind-breaks—Carried.

WM. SAUNDERS,

President 1882-1885.

SUMMER MEETING.

The Association held its Summer Meeting at Cardno's Hall. Seaforth, on Wednesday and Thursday, July 3rd and 4th, 1889.

In the forenoon the delegates were driven to the residence of Mr. Robert Gouinlock, where his grapery and farm were inspected. After lunch the delegates met in the hall.

President Allan appointed the following Committees:

On Fruit—T. H. Race, Mitchell; A. H. Pettit, Grimsby,

On Lists of Fruit—P. C. Dempsey, Trenton; Thos. Beall, Lindsay; P. E. Bucke, Ottawa.

Mr. M. Pettit, of Winona, read the following essay on

GRAPES FOR HOME USE, METHODS OF CULTURE, ETC.

The vine besides furnishing such delicious fruit, adds greatly to the attractiveness of home, even the name "vine-covered cottage" or "vine-clad hills" suggests that which once possessed can never be forgotten. The inhabitants of the vine districts of Europe plant vines wherever they go, you can almost pick out their homes here in our country.

The value of the grape and the ease with which it can be propagated, are two points not yet well understood by the farmers of our country.

No fruit is more refreshing and none more healthful. How much is it worth to have all of the grapes one wants for himself, his family and his friends, for even three months of the year, and is within the reach of nearly every man who owns an acre of land in Ontario. Some parts of the country are so favorable to this industry that success comes almost without an effort, but people are slow to learn that it may be carried on successfully almost anywhere. To profitably grow grapes for market only a few varieties are required, and to name those varieties suitable to all locations is a difficult question, as a slight difference in location, soil or culture will produce results so widely different.

The culture of no fruit perhaps gives rise to a greater variety of opinions than that of the vine. For this reason it is safer for those who intend planting to find which varieties succeed best in their own locality.

However, for market I would select the following varieties in the proportion to 1,000 vines: 100 Worden, 200 Concord, 100 Wilder, 200 Lindley, 200 Agawam and 200 Niagara.

Some may say, why are Delaware, Brighton, Salem, Moore's Early, or Pocklington, not included for the following reasons: Lindley will produce more to the acre than the Delaware, ripens at the same time and is more saleable, it will produce as much as the Brighton, and improve by hanging when fully ripe, while the Brighton fails in both color and flavor.

The Lindley and the Agawam fills the place of Salem in the market, are as productive, and not as subject to mildew, or liable to burst with rain. Moore's

Early can only be made to produce one-third of as much as Worden, and is not as good in flavor. Niagara fills the place of Pocklington in the market and is more productive.

There is little profit in testing new varieties, let others do it for you. We frequently hear the remark, that grapes can be profitably grown at one cent per lb. This entirely depends on the cost of production, which is a very important question with the grape growers, as we must admit that the days of strong demand and high prices are past, that the market is frequently overstocked. and prices rule very low. To profitably meet this it is important that we should carefully consider the cost of production.

If we get 3 cents per lb. for a crop and it costs 2½ cents per lb. to grow and market them, there is little more than amusement in the business, but if we reduce the cost of production 1 cent per lb. that would give $30 per ton clear profit.

Grapes like all other fruit, can be produced at less expense on soil that is easily cultivated. This makes the selection of a site for a vineyard important, when we consider the fact that the soil will be cultivated constantly for 30 or 40 years. Hill sides should be avoided or any situation that has much descent, as the yearly waste of the continually cultivated land will carry away the surfaee soil from the high points and deposit it at the bottom where it is least needed. Cultivation that is generally given to secure a good crop of corn or potatoes will place the soil in a suitable condition for planting grape vines. When preparing to plant make a trench where each row is to be placed, by ploughing two furrows throwing one each way, in the bottom of this trench make a deep furrow with a subsoil plough or what will answer as well, take the mouldboard off of an ordinary plough. Then plant two varieties in the same rows, a red and a black, or a white and red, or an early and late variety, six or seven feet apart in the row. By so doing, at the end of five years, when we will know much more about the market for grapes, you can have the privilege of choosing which variety you will keep and cut out the other when it has amply repaid you for the very little extra expense, as no more land, cultivation or trellising is required.

Do not place any manure or other fertilizer in contact or near the roots, thousands of vines are killed each season by doing so. After placing a few inches of fine soil about the roots tread it firmly, then more earth and tread again ; this firming the soil in planting is of vital importance.

After planting give good clean cultivation ; for cleaning and mellowing the soil, no implement answers better than a gang plough with about 2 feet long bar of iron bolted on the plough-head and braced from each side filled with holes so the clevis can be set to plough to or from the vines. By using short whiffletrees nearly all of the ground ean be stirred.

Plough well to the vines not later than August so the earth will become well settled to protect the roots from frost during winter. Allow no brush, rubbish, prunings, or anything of that description to accumulate about or near the vineyard. By burning everything of this kind you will keep your vineyard free from *thrip* and other injurious insects.

The question of pruning is a very unsatisfactory one to discuss on paper, no rules can be laid down that will profitably apply in all cases. So much depends on the strength of the vine, the age, variety, amount of vitality, whether it has carried a heavy crop the previous season or a light one, strength of soil, etc. As a rule too much wood is left. It is common to err in this direction ; the haste to get fruit quickly and plenty of it, are the chief causes of many a failure ; vines are allowed to overbear especially when young. The demands of the fruit exceed the

ability of the vine to supply them. The consequence is the fruit is late in ripening and a poor sample. The bearing canes for the next season's crop are not ripened nor the fruit buds matured, and it requires a year to recuperate.

Whoever attempts to confine the growth to some particular system does so at a loss. Systems may answer for a garden, but in growing grapes for market, prune out the poorest wood and save the best wherever it may be found. The more I look about and see the results of different systems of pruning the more I become convinced there is no science required, but simply to cut away enough of the vine to prevent overloading, leaving enough well matured bearing-wood to carry a fair crop, which on an average vine at full bearing is from 50 to 60 buds on the wood of the previous season's growth. To do this properly requires some experience joined with common sense.

In concluding I would say that I am of the opinion that if the people of our country could be induced to grow and eat more grapes, make and drink plenty of pure *home made* grape wine, it would be a greater step in the way of advancing temperance than the Scott Act or any other legislation can bring about.

In answer to questions, Mr. Cline stated that he did not think the Lawrence plum was so good as some others. The Niagara is a little earlier than the Bradshaw's. The General Hand is a very profitable plum. The trees will run from six to ten baskets each every year. The McLaughlin is a very fine plum, but not sufficiently so for a cropper. The curculio is decreasing with me. Paris green is my cure. Moore's Arctic ought to very far north where they can't grow anything else It is nowhere compared with the Lombard. Referring to a recent article in the *Horticulturist*, he said, a pound of Paris green to a hundred gallons of water was too strong, and would destroy the foliage of the trees.

Mr. A. M. SMITH.—The Munro Egg escaped the black knot entirely. It might be valuable for sections where the black knot is found.

Prof. SAUNDERS.—If Paris green is not kept agitated it might destroy the trees, even by using four ounces to a barrel of forty gallons, it gets so strong.

Mr. E. D. SMITH.—I can corroborate what Mr. Cline says.

Mr. RICE.—Prof. Cook, of our university, has made very exhaustive experiments in spraying trees, and says London purple is much better than Paris green, without the danger of killing the leaves, unless you get it too strong, He recommends half a pound to a hundred gallons of water. He says the bees are the best friends of the horticulturist, and the spray is not to be used till the trees are so far out of blossom that the bees have left them. Mr. Willard, of Geneva, recommends planting plum trees in the apple orchard, because the curculio likes the plum better than the apple. Fruit growers would thus concentrate the curculio so as to fight him right on his own ground.

Mr. PATTERSON.—After experiments with Paris green on apple trees, beginning with five ounces to forty gallons of water, I found that three ounces answered better than a larger quantity, by constant stirring. It might possibly be reduced still more. It is a decided benefit to apples. I have experimented by spraying half the orchard and leaving the other half unsprayed, and I have found there is at least fifty per cent. difference in quality and quantity in favor of the Paris green. I have not found the slightest danger, I have had cattle pasturing in the orchard a week after spraying without the slightest ill effect. I used hyposulphite of soda along with Paris green, putting eight ounces of the hyposulphite to forty gallons of water, and that year I had no apple spot at all; but it was not general in our part of the country, and I can't say it was entirely owing to the hyposulphite.

Prof. SAUNDERS.—I would not recommend London purple as a substitute for Paris green, for the latter is of more uniform strength, while I have found a difference of more than half in the arsenic contained London purple. Further, the arsenic is in a more soluble condition than it is in Paris green.

Mr. BEALL.—I think the difficulty often is in using too little water. I always use half a teaspoonful to a pail of water; not more than half an ounce to a pail.

Prof. SAUNDERS.—That would be half a pound to a barrel.

Mr. PORTER.—What is the earliest time that it is safe to put Paris green on the blossom?

The SECRETARY.—Within a week after the fall of the blossom. There is no necessity to spray apple trees with Paris green while they are still in bloom. After the blossom has fallen it is quite early enough, and then we are quite safe from injuring the bees. I believe plums might be sprayed even before the blossom is out, as it is the parent curculio we want to destroy. So that in both instances we can apply the Paris green without danger to the bees.

Prof. SAUNDERS.—I should not agree with the secretary in applying Paris green to the plum before it blossoms. In the first place it has not yet been shown how Paris green acts upon the curculio in the case of the plum; whether it kills the curculio or deters it from operating on the trees, from the fact of containing something that the curculio objects to. It is believed that insects have a sense analogous to smell, and that they were attracted by some odor or exhalation from the plant which leads them to travel in that direction till they find a food plant. In that case it may be that the curculio is not destroyed by the Paris green, but merely deterred from the trees that have this protective coating. Did you ever find the curculio killed from the spray of Paris green on the plum trees?

The SECRETARY.—I have it from very good authority, that it is the curculio itself that we wish to destroy, and that by spraying the leaves of the tree upon which he feeds he is destroyed.

Prof. SAUNDERS.—In my experience the curculio does not feed much at that particular time. I have occasionally found punctures on the leaves, but I never found them to be eaten to any great extent. Their jaws are not mandibles. If they eat anything it is by sucking the leaves; and I think the probability of their eating the leaves is very remote. I think it is sufficient to spray the Paris green just as soon as the young fruit begins to show. They begin to operate very quickly on the fruit, but not before it is large enough to be seen as a newly-formed fruit. I have never seen anything to lead me to suppose that the curculio acted on the blossom before the bloom was formed.

Mr. MCMICHAEL.—Would there be any chemical affinity in mixing sulphate of soda and Paris green, and destroying the fungus and the codling moth at the same time?

Prof. SAUNDERS.—I could not speak of that positively; but my impression is that the hyposulphite would not effect the strength of the Paris green solution in any way or make it more soluble. A little ammonia will make Paris green more soluble, and make it very injurious I should think, to vegetable tissues.

Mr. PATTERSON.—I have used both the hypo-sulphite and the green in the same barrel, and I found the Paris green acted as well as it has ever acted with me; and that year I had no apple spot, I cannot altogether attribute it to the hyposulphite. I have had greater success when I sprayed the earlier apples a few days earlier than late varieties. Select the time just after the apple is formed,

as long as the apple is upright. In a short time it will turn down. You cannot have such good results after that period as before. Where you have the time it is advisable to spray your orchard twice.

The SECRETARY.—I have just remembered my authority for spraying the plum before it blossomed—it was Henry Comstock. It accords with my own experience, because in those seasons where I have applied the Paris green to the plum trees early there has been success, and where it has been delayed until after the young plums were formed, there has been failure.

Prof. SAUNDERS.—It does not seem to be a matter of any importance except as touching upon that bee question.

After some words of congratulation from Mr. Rice, of Michigan, Sheriff McKellar was called in by the President to say a few parting words. He expressed his great pleasure at being present. Referring to the presence of Mr. Rice, he said Canada would like to annex the United States, and take in such men. He wished for freer trade between the two countries. We have no reason to fear competition with them in fruit; but besides that, they are our own kith and kin, and the closer our relations the better for us financially and otherwise. Instead of putting up barriers against one another we should cultivate the most friendly relations. Intercourse has done a great deal to remove prejudice. He had spent last winter in Florida, and he brought with him some specimens of the products of that country. [The Sheriff exhibited some curious specimens, chief among which was the material used for building, being a peculiar mixture of gravel and shells, which grows on the sea shore.]

Mr. P. C. DEMPSEY moved, seconded by Mr. Pettit, that the Fruit Growers' Association of Ontario feel themselves under obligation to the County Council of the County of Wentworth for the kind use of the rooms afforded them; and that the kind thanks of this Association be tendered the County Council; and that a copy of this resolution be sent them through the County Clerk. Carried.

After thanks to the press, moved by Mr. Morton, seconded by Mr. Croil, the convention adjourned at six o'clock.

REPORT OF FRUIT EXHIBITED AT HAMILTON MEETING.

Your Committee have to report that they have examined with a good deal of satisfaction the following list of fruits, namely:—Good specimens well preserved of the Baldwin, Seek no Further, Wagner, Canadian Red, Greenings, Bourassa, Northern Spy, Blue Pearmain, Vaudevere, Mann, Cooper's Market, Cranberry Pippin, Red Mackintosh, Golden Russet, Bellflower, Red Pound, Pewankee King, Ben Davis, Blenheim Orange, Cayuga Redstreak, Ontario, Walbridge, Maiden's Blush, Alexander, Swaar, Fallawater, Grimes' Golden, Hastings, Tallman Sweet, Fall Pippin, Twenty-ounce, and Swayzie Pomme Gris. We note with much pleasure that a number of the fall varieties have been kept until this date in a good state of preservation showing that the season of many of our fall varieties may be considerably extended by proper storage. Among the newer varieties P. C. Dempsey, of Trenton, shows a number, as follows: Adams' Pearmain, Bonum, Lord Burley, Golden Winter Pearmain, Hardadsturs' Pippin, Start's Golden and Cellini. Of these, Lord Burley is an apple of medium size, color red, with russett dots; quality good. Bonum, a small dessert apple, color dark red, with russet dots; texture fine, quality medium. Hardadsturs' Pippin, size medium, color yellow, splashed with red; quality medium. Start's Golden, small dessert apple, color yellow, of fine quality and handsome appearance. Cellini, an apple of fair appearance but poor quality. In addition to these apples, Mr. Dempsey shows a speciman of the Duchess de Bordeaux. This is a long-keeping variety and will not be in season till March.

A very excellent specimen of Golden Russet was shown by Mr. Taylor, grown in Mariposa. John Leonard shows a handsome specimen of seedling, not unlike King, but quality very poor. There is also a seedling from Humberstone township, county Welland, origin unknown; a large apple somewhat like King, but of finer quality and a better keeper. The tree is said to be a strong grower and very productive. L. Woolverton shows a collection of 15 varieties of apples, very fine specimans and all well kept.

E. C. Fearnside, of Hamilton, shows six varieties of the standard sorts, most of them fine specimens and well preserved. A very fine plate of Perry Russets was also shown by Mr. Holton, of Hamilton. A seedling shown by Joseph Dunn, of Orillia, is judged by your committee to be a seedling of the Fameuse. The apple is about the size of the Baldwin, more light colored, and in flavor distinctly Fameuse, and is worthy of being watched, and if found a good grower and productive, should be propagated. Three varieties of grapes are shown by M. Pettit, of Grimsby, Rogers No. 4, Salem and Vergennes. The first-named picked on October 1st and left in open baskets, retaining its flavor well and is but slightly shrivelled. Salem, picked September 5th, kept in open baskets, is as firm and plump as when picked, and in quality far ahead of the imported Spanish varieties. Vergennes is in an excellent state of preservation, quality first-class.

All of which your committee respectfully submit.

W. E. WELLINGTON,
A. ALEXANDER,
T. H. RACE.

Dr. HANOVER.—Would you remove the vine in the fall from the trellis, and protect it with straw or other material?

Mr. PETTIT.—That entirely depends on the locality. In our section we leave them on the trellis all winter; but in colder sections, where the wood winter kills, it would be necessary to put them down.

The PRESIDENT.—What is your experience with summer pruning? Some people think it is necessary to cut back very heavily for the purpose of ripening the fruit, as they say.

Mr. PETTIT.—I have practised it, and left the vines without, and I think there is very little difference. But where vines make very rapid growth, like Rogers 9, 3, and some of those, it is better, after they have made a growth of about three or four feet, to pinch the ends off. I don't think it advisable to go through and cut off much; and some vineyards that are not touched at all with summer pruning yield just as well as those that are summer pruned. One thing that is very necessary, after vines have made a growth of a foot, or even less—varities that throw out a good many suckers from the old wood, like the Champion, or some very hardy kinds,—to go through and break out a lot of these. Where the bud throws out two shoots, break out the weak one that comes out back of the main bud. Thus you get a better sample of grapes, and nearly as much fruit.

Mr. BUCKE.—Don't you find the new wood blows off a good deal if not tied?

Mr. PETTIT.—They soon catch hold if you hook the leaf on the wires. Where the bearing canes come straight up, then a heavy shower will break them down sometimes, especially the Niagara. For that reason we run Niagara canes horizontally on the wire instead of bringing them up straight.

The PRESIDENT.—Why have you in your vineyard only 100 Worden and 200 Concords, when the Worden is spoken of lately as being the more profitable grape—bringing a higher price than the Concord because it is sweeter, and because it is called for?

Mr. PETTIT.—The Worden is not nearly as good a shipper as the Concord. It bursts very easily; and there is a good deal of complaint, in my experience, on account of its coming through in bad condition; and it is not as long a keeper as the Concord—it gets very soft. Aside from that I think it would be more desirable. I get more per pound for the Worden than the Concord. I don't get as many pounds per vine. The Lindley is almost as early as the Worden.

Mr. BUCKE.—In the Otrawa District we look upon the Brighton as the leading grape—the bunches are so large and beautiful, and it is earlier than many. It would beat the Lindley every crop, for pounds.

Mr. A. H. PETTIT.—The Brighton succeeds very well with me on gravelly soil.

The PRESIDENT.—What varieties do best in this district?

Mr. GOUINLOCK.—I find the Rogers the best. The Lindley and the Roger's 3 have the highest canes and show the most fruit.

Mr. BUCKE.—Which grapes did you make best out of last year?

Mr. GOUINLOCK.—The Rogers.

Mr. PETTIT.—In any case there should not be more than forty or fifty buds on a vine that is full bearing, even supposing it had been bearing ten years.

Mr. BEALL.—It is very difficult to make people understand that the old vine should not have any more buds than a new vine.

Mr. PETTIT.—Less if anything.

Mr. BEALL.—The vine can only produce in proportion to the area of land it is on. You do not increase the space, and you should not increase the bud. Forty or fifty buds to the vine are enough to grow ten or fifteen tons to the acre if you have good luck.

Mr. PETTIT.—Ten to fifteen tons to the acre are something we hear of, but seldom see. When you get five tons to the acre you are getting a pretty good yield. Mr. Hogan, of Oakville, in his evidence before the Agricultural Commission, gave twelve tons to the acre, but it is something extraordinary if a man gets anything near ten tons, I should say.

A. H. PETTIT.—How many tons to the acre do you call a good crop from your vines?

Mr. PETTIT.—I never measured the ground as it is planted, and scarcely know, but I think ten by twelve requires something in the neighborhood of 430 odd vines. Well, if you get an average of twenty pounds to the vine, you are getting all that you can grow on them. All that you are getting, as an average, over that, you are taking out of your next year's crop—unless you have got a very strong growing vineyard, a soil very suitable, and everything in that way.

A. H. PETTIT.—If you plant ten by twelve and plant eight by seven, and reserve forty buds, won't you double your crop?

Mr. PETTIT.—You might for a season or two, while the vineyard is quite young, get more to the acre, but you lose just that amount in a few years when your vines get older. You can't produce so much with them close. The first vineyard I planted I put Concords nine feet apart, and a year or two ago we cut out every other one, I found they were not doing well, and I think I will get just as much from the same land from half the number of vines.

Mr. BUCKE.—How many buds do you leave on this year's wood after you prune in the fall, on each cane?

Mr. PETTIT.—From four to eight.

Mr. BUCKE.—In Ottawa we leave only two buds, and we get a good crop.

Mr. BEALL.—I had no intention of saying a man could grow ten or fifteen tons to the acre; but I said that you had buds enough to grow that much if you had good luck to do it; but I don't think you will have the good luck. I don't think any man ever raised fifteen tons to the acre. The most I ever got was 35 pounds to the vine, some eight or ten vines in a row.

Mr. BUCKE.—There is nothing better than earth to protect vines in winter; and we never use anything else in Ottawa. If any one will bury a potato in the ground in our climate, and put three or four inches of earth over it, in the spring he will find it has not been touched with the frost at all. If he took it up in the winter he would find it frozen solid, but the frost is taken out so gently in the spring that it does not injure the potato. So it is with the vine. If you put straw or anything of that sort on the vines there is also a danger of mice or animals of some kind.

Mr. RACE.—Is not the snow sufficient of itself?

Mr. BUCKE.—No, it wants soil.

The SECRETARY.—I should think Mr. Pettit's mode of pruning, though it works very well in our section, where it is not necessary to lay vines down, would not be so suitable where the vines have to be laid down.

Mr. PETTIT.—No; Mr. Beall's system would be better.

The PRESIDENT.—Will Mr. Beall explain his system?

Mr. BEALL.—I use only one arm. I cannot see there is anything gained in using two arms of a cane. They only reach half way to the next vine, if you have two arms, five feet each; you get just as much wood with one arm ten feet.

The SECRETARY.—The extremities are not so near the root.

Mr. BEALL.—That does not make so much difference, because when the vine is properly established you can grow the same quantity of fruit from end to end. I have satisfied myself that there is not the slightest necessity whatever to have the crop at the outer end of the vine; you can have it evenly distributed from the base of the vine to the top; and by growing one arm you have no trouble whatever in laying them down; they are all laid down in a row, one following the other right along. My man and myself can lay down and cover three hundred vines in a day. I stand on the body of the vine—that keeps the vine down; and I have an ordinary lath four feet long with a crotch in the end, and I have only one arm, but on that arm there are often four or five or six oblique arms, but those have perhaps only six or eight buds on them; these oblique arms are renewed every year or two—sometimes there may not be more than three or four on, but those will all follow along the same line, reaching along the wire. The man will follow on, and throw a little clay on; and I find the least possible quantity of clay succeeds the best. I do not care anything about covering the arm itself; it is only the young buds; and that will keep down sufficient.

The SECRETARY.—You do not cut all those oblique branches back every year.

Mr. BEALL.—Those are renewed at irregular periods; sometimes I let them run two or three years. I do not think I let any of them grow more than three years, then on those of course I grow buds. I try not to have more than fifty buds on each vine; and on the Niagara vine every bud should produce a pound of grapes; that will be fifty pounds to the vine. I don't say I succeed in doing it very often. I think it can be done, but I am not clever enough.

The SECRETARY.—How far apart would you have these oblique branches on the main arm?

Mr. BEALL.—Sixteen or eighteen inches apart.

The SECRETARY.—And the main arm you run ten feet from the root?

Mr. BEALL.—The main arm would run nearly to the next cane, and then the last oblique branch would run away over the other cane. The first from the base would of course run in the same direction, but under the other one. I never mutilate this main arm, except when I meet with an accident.

Mr. BUCKE.—You pinned down the oblique branch to take its place?

Mr. BEALL.—No. If one should happen accidentally to be in the right place I will leave it. In pruning we should have two objects; one, to grow bearing cane for next year, and the other, for bearing cane this year. We want always, in pruning, to look out for renewal canes, but not cut out the oblique arms that they protect. I would rather have a new cane any time than an old one.

The SECRETARY.—Have you ever tried the Kniffen system?

Mr. BEALL.—I consider this a combination of the Kniffen system and the Fuller system and every other system, because I adopt from every system. We have the spur system complete, then we have the renewal system complete.

Mr. GOUINLOCK.—How do you manage to cover the new wood; or does it stand.

Mr. BEALL.—No, it will all lie flat on the ground. The cane will twist over on its side. The cane of course is as large as my arm in some places. It requires very little clay; your canes have got used to it; they are always growing in this oblique direction. The arm itself is grown on the lower wire altogether.

Mr. PETTIT.—Very close to the ground?

Mr. BEALL.—Well, I would have the wires closer than I have mine. Mine are fifteen inches from the ground, and I fasten the oblique canes to the wires four or five inches—I find it is better, the nearer I can get them to the ground, so long as the grapes do not touch the dirt.

Mr. DEMPSEY.—The renewal system and the spur system, it seems to me, are badly mixed with Mr. Beall's explanation. With the spur system properly understood I have grown vines fifteen feet long, and produced fruit just as even at the base as at the extremity. There is no difficulty in doing it with the spur system. Every man producing grapes under glass is adopting the spur system. They prune the vine clean, and depend on the dormant eyes that are right at the base of each bearing shoot, for the next year's crop; and those vines are invariably grown at an angle of 45, so that they are easily laid down and raised up; and in the spring of the year, when you have discovered the place that appears to be slowest about starting the vine, you raise that portion and lower the rest of it. If the extreme end of the vine has taken to throwing out shoots vigorously, bring that close to the ground, and raise it where the shoots are not coming out vigorously; and then you cause the whole vine—to use a grape-grower's term—to "break" evenly. In combining the renewal system—from which we invariably get better bunches than by any other system that ever I saw—with the spur system, and leaving little shoots only about from four to six inches long, containing one bunch, clear from the base, and we can continue to renew that little spur, and we can maintain those old buds for years, for an indefinite period if you like. I have had them four inches in diameter and fifteen feet long, and kept on right year after year for twenty years, producing a good crop of fruit every year, and breaking even from one end to the other, where we had uot only to bend them around, but to twist them clear around once to get them down. The very system we practice under glass for cultivating grapes will do out of doors, but I like Mr. Pettit's system of pruning on two wires from the

horizontal arms running along both ways, or one way, if you like. We practice that because it saves a very large amount of labor in the summer. Going over a few acres of grapes where you have to raise them to cause them to break even, causes extra labor and expense. We can raise up shoots from the ground and strip clear till we raise them to the wires, and have one to run to the right and one to the left, and two branches to the first wire about two and a half feet high, and two branches to the top wire about five feet high. The advantage of this system is that the fruit and the weight of the branch bends them over so that they are inverted, and saves a great deal of pinching.

JUDGING FRUITS AT FAIRS.

Mr. Thomas Beall, of Lindsay, read the following paper upon this subject:

How Best to Secure Uniformity and Fairness in the Award of Prizes at Fairs.

There are several obstacles to be overcome before this most desirable object may be attained. Most of the Boards of Directors of our Agricultural Societies regard the exhibition of fruit at their exhibitions as a matter of the least importance. Indeed it is generally tolerated only because public opinion demands it, therefore the preparation of the prize list and the appointment of judges, the two most important matters in connection with this department of their exhibition, receive but little care or intelligent thought from them. "Uniformity and fairness" can scarcely be expected at any exhibition where such views are held.

The prize list for the numerous township and county exhibitions throughout the Province are all similar in character, almost the only difference being they are made longer or shorter to suit the amount of funds assigned to this department by each society. One of these lists is now before me from which I will take a few lines. "Best assortment of apples, not more than twelve varieties, five of each," but it is not stated whether they are to be summer, autumn or winter varieties. After giving a number of varieties of autumn apples I find "any other variety of fall apples," but there is no hint given whether they are required for dessert or for culinary purposes. A number of winter varieties are then named, concluding with "any other variety of winter apples." And again there is no indication as to the purpose for which they are required, whether for culinary use or for the home or foreign market. "Uniformity and fairness in the award of prizes" can hardly be expected under such circumstances.

With reference to the appointment of judges in this department the idea generally prevails with boards of directors that anyone can judge which of a half-a-dozen plates of apples of the same variety is the best, and as this is all that is required of judges (as they suppose) they cannot be induced to give the subject further consideration, therefore "any one" is chosen for that purpose. The result of such carelessness in conducting a fruit exhibition becomes fully apparent when the judges have completed their work and the public—the exhibitors and their friends—are admitted to the "show." The public, in the aggregate, are pretty good judges of a fruit show and they are not backward in giving their opinions freely when gross errors have been made. The blame is invariably placed on the judges, where, no doubt, it often belongs, but not always, for the wording of the prize list is often so ambiguous that the cleverest expert might be nearly as far astray.

A few instances which have come under my own observation will show how uncertain an exhibitor must feel as to his chances for obtaining prizes. Prizes were offered for "Swayzie Pomme Gris." Many plates were exhibited purporting to be of that variety, but all, with one exception, were little, half-developed Golden Russets which were awarded the first, second and third prizes between them. There was one plate, however, of Swayzie

Pomme Gris on the table, and they very good ones, but they were not awarded any prize. Prizes were offered for "Grimes' Golden." Two plates of that variety were on the table, one of which, an excellent sample, was awarded third prize, the other plate got nothing. The first and second prizes were awarded to plates *not* of that variety. At another exhibition the first prize for "any other variety of winter apple" was given to a plate of Alexanders and the second to a well kept plate of Duchess of Oldenburgh. There is much difference of opinion respecting the "season" of this variety. The judges in this case, who were three in number, declared it to be a winter variety; perhaps they were right. The list also called for "dessert apples for winter use." There could be no mistaking the wording of the prize list in this case. On the tables there was a very good display of winter apples. Competitors for these prizes: Golden Russets, Kings, Westfield, Seek-no-further, Wagner, Northern Spy, Grime's Golden and others. Several of these may fairly be claimed as dessert apples, but the three prizes were awarded, first to Alexander, second to Pumpkin's Sweet, third to Colvert. Evidently the judges thought that if the largest apples on the tables were not the best "dessert apples for winter use" it was not their fault.

On another occasion a sort of sweepstake prize was offered for the "best plate of winter apples on the tables." Knowing this special prize was offered, I had some curiosity to know to what variety they had awarded this prize and was much surprised to find it given to a plate of Tallman Sweets, specially so as there were many excellent varieties of winter apples on the table, notably some of the finest specimens of Golden Russets I had ever seen at any exhibition. Having an opportunity subsequently, I asked one of the judges why they had selected the "Tallman" as the best winter apple on the tables. His reply was, "because we believed the Tallman Sweet to be the best apple grown in this or in any other country." That answer was quite satisfactory, of course.

At one exhibition where a prize of $10 was offered for the "best collection of apples, correctly named, five of each variety and not less than sixteen varieties," it was awarded to an exhibit consisting of some twenty or twenty-five varieties and all *named*, viz., names were attached to each variety. There were not more than ten tolerable specimens in this lot and only four of these correctly named. More than one-half of the lot were nondescript seedlings without sufficient merit to be allowed a place in any sensible man's orchard. One of the three or four lots competing contained sixteen varieties, and all, with one or two possible exceptions, correctly named. The varieties were good and the samples well grown. The judges evidently awarded the prize to the lot having the largest number of names attached without regard to any other consideration. Can "uniformity and fairness in the award of prizes" be expected under such management?

But there can be no improvement in this respect as long as the present system of appointing *three* judges to act together in each division lasts. This system is bad in every respect. The judging of fruits at exhibitions requires the best horticultural skill that can be obtained. The idea which guides the boards of directors seems to be that by appointing three persons, each having a very little knowledge of the subject, the concentrated wisdom of the three is more than equal to that which may be obtained from one expert. But experience shows this is not the case. The judgment of the best of the three is often cancelled by the ignorance of the other two, and it frequently occurs that the most ignorant one of the three, who generally has the stronger will, gets everything his own way. When some gross error is quietly pointed out to one of the judges the reply is almost invariably, "Oh, I knew it was wrong and would have had it otherwise but you know I was only one of three and the others were against me." If either of the other two are spoken to the reply will be substantially the same. This system is unjust to exhibitors, to visitors and to all others concerned, and must be swept out of existence. Let the directorate appoint only one judge in each class or division and hold that *one* responsible for his work. Fewer mistakes will then be made and these more easily corrected.

The issuing of an intelligible prize list and the appointment of one expert judge only in each class will go far towards securing "fairness" at our exhibitions, but "uniformity" may not be secured until the judges can be supplied with some uniform standard of quality for all purposes, for all our fruits wherever they may be grown, without regard to

soil or situation ; and I would urge in the strongest terms that this association do at once cause to be prepared a catalogue of all such fruits as are generally grown in this province, and that it be so prepared that all the varieties, and of every kind, are compared each with the other for all the purposes for which such fruits may be grown. It will require much labor to prepare such a catalogue, but the labor and time required should be no obstacle to prevent the work being thoroughly done. This Association is largely subsidized by the Ontario Government for the purpose of giving all possible assistance to the public in fruit culture. The public, therefore, have a right and do claim such a catalogue at the hands of this Association, and I have no hesitation in stating, from enquiries frequently made of me at exhibitions, that no other work which the Fruit Growers' Association of Ontario, can perform will be so acceptable to the tens of thousands of fruit exhibitors throughout the Province as the preparation of such a catalogue, for then obtaining prizes at exhibitions will no longer be regarded as a lottery, and exhibitors will soon learn that " uniformity and fairness in the awards of prizes " at our exhibitions has been secured.

Mr. MORTON.—I think the strictures in regard to the judges are a little too stringent. We cannot draw the line absolutely and say what apple is a summer or fall, and what is a fall or winter apple. Some come so near the border-land that it is a matter of opinion how they should be classed. I was a judge at a fair where we gave the first prizes for the best six fall apples, and the best six winter apples, to two collections which both had King of Tompkins County in them. We began with summer and went to early winter; and then we went from early winter till the conclusion of the season. We cannot fix the date in one locality as we can in another. A judge from the south cannot draw the line for a northern county, because he does not know when those fruits would mature in that section. I have known a judge at one fair call a fruit Primate apple, and at another fair he said it was not Primate. We are all liable to mistakes. I don't think those small foibles should be pointed out. The thing that should be done is to get out a complete classified list. It would be useless repetition to divide the list into home and foreign. The same apple might be entered as home, foreign and dessert; and there are some dessert that are good for cooking. The list would be rather bulky to divide it into those classes. Some move should be made so that judging could be done by some common standard.

A. H. PETTIT.—There has to be wide scope allowed in judging. If all exhibitors were educated up to the one-judge system, and the prizes being given by points, it would give satisfaction; but it would be years before we would dare undertake it so fine as laid out in the paper read.

Mr. MORTON.—I approve of the one-judge system. Being secretary of our fair, I took the fruit department into special charge, and got Mr. Allan, the president here, as judge, and we have had him ever since, though there was some kicking at first. In the other departments we have not educated the people up to the one-judge system yet.

Mr. RACE.—Don't you often find exhibitors who say that Mr. Allan does not know anything about fruit? (Laughter).

Mr. MORTON.—Yes, and we find such in every branch. You find people telling you, you don't know how to run a newspaper.

Mr. A. H. PETTIT.—If the judges could place on cards the value of fruit—their market value, and their value for production, and some points on which they base their judgment—why they discarded one and gave the prize to another—it would be a good thing.

The PRESIDENT.—If we as an association are to do as it is intended under the Act we are to do—educate the public in this matter—we must take a step in

advance. We have been standing too long in one spot. I am very thankful indeed to Mr. Beall for having the courage to write upon this subject. To a very large extent I agree with his paper. The system of judging has been terribly abused, not only in the east, but all over; and all who have had any experience in judging fruits at our exhibitions must agree with what Mr. Beall has said. The difficulty of course is to find the remedy—to lay down the set of rules for our guidance. I believe in the first place, that our exhibitions have done a good deal of harm to fruit culture generally, by offering prizes for large collections—of apples, for instance. It has induced the growth of a large number of varieties, that are quite unprofitable for home use or shipment. Then there certainly is an inducement to parties that are keen for prizes, to pick up a few varieties in the neighbors' orchards, if they have not enough in their own to make up the forty, or twenty, or ten varieties called for. We have often heard of such things being done. Men who are in the habit of judging at our leading fairs have tried to introduce judgment upon points, adopting a scale of one to ten, ten points constituting a perfect sample. The Bartlett pear, for example, would bear as a maximum ten. The Northern Spy apple, there might be a question as to it deserving the full ten for the perfect sample. What we mean by a perfect sample, is as to how it appears, both as to size, coloring, shape, etc. The only question that might detract from its ten points, would be its commercial value, it takes so many years to come into bearing; but in judging on the ten points we take into consideration the healthfulness or growth of the tree, its bearing quality, its use. If we are judging for cooking alone, we judge it in that way; so for dessert; and commercial value comes in where we look upon that particular fruit for home and foreign markets. We must make a combination of these points of excellence in judging at our fairs, if we are to do justice to our duty and lead the public to cultivate those qualities they should. Planters going to an exhibition for information, and seeing the prize ticket on a collection of perhaps twenty varieties, will naturally conclude to plant out an orchard from that standard. If the judgment of the judges has been improper, it is a serious thing for that man. That collection might perhaps be largely summer and fall fruit; and ten chances to one the commercial value is not there, simply because there is not a sufficient number of the standard winter fruit in that collection. The collection to be perfect, must extend over the longest possible season in that particular locality, and must contain fruit for dessert and for cooking in the different seasons. Then it contains those varieties for the various seasons that have the highest commercial value. You will have to look also to each sample, and see that they are perfect and properly named. I believe judging on points is the quickest and easiest way to judge, whether it is one judge or three; and the points awarded on each sample or each plate, should be written upon a large ticket, so that the owner can see what it is considered worth by the judge or judges. If a fruit is incorrectly named, and the judge knows what the name is, he ought to change that; and if that sample is in a collection, that collection is short one variety, if the lines are drawn very close. In our Goderich Horticultural Society, we drew the line closer from year to year, giving exhibitors notice, and doing what we could to get them educated into the proper naming of their fruits, so that in a few years they could bring ten, twenty, yes forty varieties of apples correctly named. When we got them to that state of perfection, and found that there was a mistake, of course we cut out the improperly named sample, and the collection was short that variety. It is impossible to give one scale of points, so far as seasons are concerned, for the whole Province. That will have to be a local matter to a very large extent; for you will find an apple that in one section is a summer apple, in another section is an early—or possibly a

late—fall apple; and on the other hand, you will find varieties vary very much, a variety that here has no practical value in the local market, and is not esteemed for home use, in another section is esteemed highly, both for home use and home market. As to the one-judge system, I have advocated that for some time past; in fact I have made up my mind several times not to act as judge at any of our fairs except alone. I want to be responsible for any mistakes three are that I make, and not blame it on the other fellows. It is almost universal—in the west as well as the east—to blame it on the other two.

Mr. GOUINLOCK.—I believe this one judge system will be the best, because a great many just leave it to one any way. If he is posted in the matter it is left to him, and he can get out of it by laying it on to the others if he has made a mistake.

Mr. STEWART.—I would favor the one judge system if the man is expert in the branch he judges in. I have seen less dissatisfaction with one judge than with three. Several of the local fairs here have appointed but one judge.

P. C. DEMPSEY.—I can fully endorse nearly everything Mr. Beall says. Our committees usually, more particularly in those great fairs we have in some places, like to select judges on account of their social or political position being high. Too often those men obtain the position because they can make the largest blow politically, and know the less about fruit, or anything else pertaining to the advancement of our country. (Laughter.) At one of our fairs, for the last fifteen years, there is always a prize offered for Beurre d'Anjou pears. They have always had the same two men judging, and they are both appointed on account of their high standing in life, and they are certainly, in their profession, very clever men. Invariably there is a Beurre d'Anjou on exhibition; but the Howell pear got it. You could not get two pears as far apart in appearance. Those men awarded first prize for twenty varieties of apples to a collection containing several inferior local varieties unfit for home use or for market; in fact, worth, commercially speaking, nothing; while there were not less than ten superior collections for them to step over. Where we will get a remedy for this I can't understand. I am enclined to blame newspaper men. Why don't the press come down on such affairs? Why is it that in the fruit department we must have men that don't know anything about it—though the same committee would not appoint for the live stock department men who did not know a bull from a cow? Our press are to blame, because they are afraid to come down on those men on account of their standing in life. The first time I ever acted as judge of fruits, a prize was offered for a Pomme d'Or apple. Neither of the other judges, both old men and good judges, knew Pomme d'Or. It was ruled out. When the young man in charge of the department demanded of me why this was done, I told him there was no such thing in existence as Pomme d'Or apple; that was only a synonym for another apple. I referred him for my authority to LeRoy's dictionary of Pomology. There has never been a prize offered on that variety since. The prizes for articles at many of our fairs are offered to please prominent men in the district who grow those things. In one case the Concord grape was left out, and a prize offered for the Isabella because a prominent man grew it. A greater difficulty than judging comes in in preparing the list; it is prepared usually by men of little or no experience in fruit. I would much rather judge alone than with two others, because we usually have one of the two who is there judging for the first time, and we have to educate him out of thinking that he knows everything. The scale of points, as recommended by the President, involves a great deal of work, but the judge could get along in two-thirds of the time with the aid of a clerk. I favor the single-judge system.

Mr. RACE.—The scale of points is good, but the gist of the remarks made amounts to this—educate the people. As a newspaper man I came down pretty hard on judges who did not understand their business; and last fall I was frequently selected to go and fill those places I had condemned. At one place, out of seventeen plates labelled Wealthy and Wallbridge, I cast out eleven that were Colvert, or Canada Red. That resulted from dishonest agents who had gone through that section deceiving the people. This system of judging will have to be carried out till the people know one variety from another, and by adopting some universal scale of points, I think we will find the remedy for the many difficulties we have had in former years.

Mr. DEMPSEY cited a case where a man deliberately "fooled" the judges, and chuckled over it. In such a case he thought the exhibitor should forfeit all his prize money.

M. PETTIT.—Flavor should have greater prominence than size as an element in awarding prizes. At present the prizes often go the biggest articles, regardless of their quality,

Mr. RACE.—At one of the fairs where I judged I set aside a very large sample of the Alexander and gave the preference to the Cayuga Red Streak; and there was a great deal of fault found with me on account of the size and appearance of the Alexander. If we had had a scale of points we would have got out of the difficulty in that case. The Alexander has size and appearance, while the Cayuga Red Streak has quality, solidity and size. The people at the country fairs count too much on size.

A. H. PETTIT.—I would suggest that the prize cards be printed in this way: Commercial Value, 1 to 5; Productiveness, 1 to 5; Hardiness, 1 to 5; Perfection, of Growth, 1 to 10; correct nomenclature. Then every one would know exactly why the prize was awarded.

Mr. DEMPSEY.—That is a very important point indeed. We invariably take into consideration the market value, and this plan would show exactly what the value was. In judging fruit we need some character. Generally you will see the character developed in the skin; but we cannot carry that point very far, particularly in judging plates. In judging at the Provincial Exhibition we must remember we are judging for the Province of Ontario. Fruit from Owen Sound would not have color, while that from the Niagara district would be mature and well-colored. It is not so at the country fairs.

Mr. BUCKE.—What is "commercial value?" I have seen the Champion grape sold at a higher price than any other grape because it comes in early; and I have seen the Alexander apple sold higher than any other because it is large and well-colored. Is "commercial value" the price we get for the fruit?

Mr. DEMPSEY.—Last year the Golden Russet apple was worth just about half the expense of the barrelling, and the Alexander apple were clearing at the station at $2 a barrel. There was commercial value of the Alexander over the Golden Russet certainly. The commercial value of the Alexander is always high. The Twenty-ounce Pippin possesses a very high commercial value; it keeps very well in winter. I have seen it kept away late this last winter, and commanding perhaps double what the Baldwins do. Now, the commercial value of the Baldwin stands high on account of its appearance, but, certainly, it is a very poor cooker; and who on earth wants to eat one? So with the Ben Davis; it is very high, and it is a fair cooker, but there is nobody that wants to eat it. So with pears. The Bartlett is the superior pear, but there are many varieties that I would rather eat that possess no commercial value whatever. The apple that stood highest this

last year commercially with us was the Snow, because they were not spotted, and we got them off our hands before the market was thoroughly glutted with fruit; and the result was a little profit. This does not always occur. Next year we may get as big prices for our winter fruit, but, invariably, any long-keeping apple stands high commercially.

Mr. RACE.—You have given us to understand that the Alexander is a higher value than the Golden Russet?

Mr. DEMPSEY.—Last year was an exceptional year.

Mr. RACE.—If the Alexander will bring a higher price in the market than the Golden Russet, then that is to be the relative commercial value to these others.

Mr. BUCKE.—I think the association should take the apple list and select five to ten varieties each of summer, fall and winter apples, and reject the whole list but those ten—let the others go to the wall. I do not think it is necessary to have more than ten apples for any one season. Then the judge should be governed by the consideration of the locality where he is judging. For instance, in North Hasting, where they cannot grow a Greening or a Baldwin, the Alexander would be entitled to five for commercial value, while the Greening and the Baldwin would not be entitled to anything. How are we going to get at the commercial value of apples to suit every part of the country unless we localize them, and it would entail a great amount of labour that would be perfectly useless when you got it done.

The PRESIDENT.—In judging of commercial value we look upon those varieties that are grown more generally, and that have, the country over, a more general reputation. Hence the number of those varieties is very few.

Mr. RACE.—Let the market itself regulate the commercial value.

The SECRETARY.—It will be a valuable feature of our report for 1890, to have this discussion given broadcast over the country. If a good scale of points is prepared by this committee and approved by this association, it would be a most valuable thing to distribute to the different fair managers and secretaries throughout Ontario; and I would suggest that it be printed separately, with this scale of points, and sent directly to the fair managers in Ontario, so that they may have the option of using it if they choose, and handing it to those who are to be judges. I think it is going to be a great step in advance in the management of our fairs. I would move that the following gentlemen be a committee to strike a scale of points: the President and Mr. Thomas Beall.

Mr. DEMPSEY seconded the motion.

Mr. PETTIT suggested one committee on apples and another on pears, plums, peaches and grapes.

The SECRETARY.—Let the committee be a committee on apples and pears.

The PRESIDENT.—It is just as easy for the one committee to go over all the work, if those fruit lists that are now out were in and compiled, because we could tell pretty largely the fruits that are grown in the different districts. It is necessary to award points to the fruits grown in the different districts, and give them their general value in proportion to the district. Parties that are going to judge are going to judge according to the district they are going to plant in, and, of course, they are going to plant the varieties that have a large number of points. If we want to discredit a variety we give that variety a low standing, and the public are going to avoid that variety. I do not think the work of this committee can be done properly without the return of those statistics.

Mr. BEALL suggested that the committee have power to add to their number.

The SECRETARY.—I think we make a mistake if we make a large committee. If the scale of points is submitted to the Association for discussion before adoption, we will have an opportunity of modifying it as we choose.

The motion was then put and carried, constituting the President and Mr. Beall the committee.

CULTIVATION OF THE CURRANT FOR HOME USE AND FOR MARKET.

Mr. T. H. RACE.—I have given attention to the cultivation of currants for the last five or six years, and am persuaded the value of the currant for home purposes is not fully appreciated, in this section at all events. Three years ago one of our fruit men brought into town six baskets of currants, and had them standing at his door for several days unable to sell them, and I think he had to give some of them away. For the past two years I have had people coming from all parts of the county to see my currants. They talked so much about them that it created quite an interest in that section in connection with the currant, as soon as it became known that we had them for sale. I have about a hundred bushes, and they averaged about five quarts to the bush. My children sold them for ten cents a quart, and were not able to supply one-half of the local demand. Now I am satisfied I could sell any quantity, far more than I could raise in my garden. My method has been to plant the bushes about five feet apart in a row. I find they do better where they have plenty of room and air and sunlight. Plant them far enough apart so that you can get in among them to keep the ground clean. I have trimmed them out every fall, cutting out the older wood; and every second year I have placed beneath them a very heavy coat of hardwood ashes unleached. I place great value on ashes as a fertilizer for all kinds of small fruits. The White Grape and the Cherry are the two standard varieties of currants. I have gone considerably into the culture of Fay's Prolific. There is no currant I have met with yet that will compare with it for the first and second years of bearing; but if you allow the wood to become older than the third year, I think you will find your currant very much decreased in size; but if you keep the Fay's on two years wood I don't know that any currant will give you much more satisfaction. It is a currant that is very much admired, and it is from the production and the growth of that currant that I created such an interest in my section of the country. The first samples I had in my hand and showed them on the street, it was very hard to persuade the people that they were not some kind of grape, and many people refused to believe they were currants, because they had such a length of bunch and such a size of berry. However, on the whole, I could not say that the Fay's Prolific is on the whole a more profitable berry than the Cherry, nor is it as profitable a berry for home purposes as the White Grape, however, I do not think any collection would be complete without it. Another currant that I have cultivated during the past five years is Moore's Ruby. It is one that Stone & Wellington made a run on for some years. Its special value is its sweetness. I don't know that it is quite as heavy a bearer as the Cherry or the Fay's Prolific, but it is much more pleasant to eat off the bush. I have also grown the old Dutch Red; that is a very good currant, and the Marseilles. But I confine myself now to the White Grape, the Fay's Prolific, the Moore's Ruby and the Cherry; and for home purposes I don't know any person who would require a better assortment; and these properly

cultivated and kept in good shape, without allowing them to grow too much to wood, any ordinary size bush will produce from four to five quarts every year; they have done so with me. I am satisfied that the currant is of very much more value as a home fruit than has ever been supposed by the general public; and I am satisfied also that if a little more interest is given to it by members of this Association and recommended more to the public generally than they have done heretofore, that the currant is a fruit that will come into very general favor and very general use.

Mr. MORTON.—Does the Cherry currant bear well?

Mr. RACE.—It is a very good bearer. My soil is a clay loam.

The SECRETARY.—On a clay loam it will bear well; on a light sand it will not.

Mr. BUCKE.—Mr. Race has said nothing about the black currants.

Mr. RACE.—I have just ten bushes of the black currants, Lee's Prolific and the Champion. I have not found that the black currant is profitable to cultivate for sale, and all that I could recommend would be for any household just to have enough bushes to supply their needs. The black currant is a very valuable fruit for family purposes, and I just grow enough for my own use.

Mr. LITTLE.—In St. Mary's they are selling them by the bushel; they are much thought of and sought after.

The PRESIDENT.—The general report of the market is that the market is fully stocked with the black currant.

The SECRETARY.—They are a great deal of trouble to pick, and you do not get a very heavy crop; but I have been growing quite a large quantity of Black Naples, and I think at the price they bring they pay. You can get 12½ cents and more per quart, or $1.50 for a twelve quart basketful, and at that price, on rather a stiff soil, where they produce well, I think they pay a good profit. The heavy fruiting of my Cherry currants I attribute to the fact that I have been applying yearly wood ashes to the rows very freely. For home use I think Mr. Race is quite right in speaking highly of the White Grape. Of course if it were for market we would speak differently. He speaks of Fay's Prolific being a good bearer when it is kept back, so that there is young wood always formed. There is a verygreat advantage in keeping the currant wood heavily cut back. I cut back very heavily. I try to keep the old wood down and keep young wood springing up continually.

Mr. MORTON.—What we call suckers, that grow up, will they bear the next year?

The SECRETARY.—Yes.

Mr. BUCKE.—The red currant bears on two year old wood, the black currant on one year old wood.

Mr. MORTON.—I have found that the borer is worse in the Fay than any other currant.

The SECRETARY.—Keep the bushes well cut back and the borer would have no chance.

Mr. A. H. PETTIT.—You speak of the White Grape for home use only. Why?

The SECRETARY.—Because you cannot get any market for it. I cannot.

Mr. COLLINS.—I have had the Fay's for four years, and have not been able to gather any crop from it. I have been able to gather from the Cherry currant. The soil is heavy clay.

Mr. BUCKE.—I don't think anything can be too highly said of the currant. You can grow it in any section of Ontario, even at James's Bay. When I go past a farmer's place and don't see currants, I don't think there is much soul about that man. Anybody can grow it. Keep it well cultivated, let no grass grow amongst it, and in two years you will have a good crop. It grows quickly. The hardiness of the currant, and the magnificent crop it gives under good cultivation, place it in the front rank of anything we have in the garden.

Mr. LITTLE.—Except the strawberry.

Mr. BUCKE.—I think the white currant with milk and sugar is as good a dish as any one can raise. There is no "off" year with the currant. Last year we lost all our strawberries in Ottawa because of there being no snow.

Mr. RACE.—I got my first Fay's Prolific some six years ago from the late E. P. Roe, and the second year every limb was bearing heavily. You will find some of Fay's Prolific that are weaker in the wood than some other currants, and I found even a difference in the Fay's itself.

THE CURRANT FOR MARKET.

Mr. P. C. DEMPSEY.—We should understand what we want to grow it for before we select the location. If we want to produce a very early variety I prefer loamy land, warm land, sloping to the south, and we will have our currants ripen early, and the result is we have the first market. But for a late variety or producing our currants late, or enabling us to keep them late, we prefer a northern exposure and a nice clay loam if possible, a soil that requires under-draining. If we can preserve moisture four feet below the surface those currants will flourish, they will maintain their foliage till very late in the season, the result is we have our currants in the market after the market has been once supplied and the supplies have become exhausted, the result is about double what the early currants have brought. In point of culture I would endorse what has been said. Plant six feet one way by four the other. Give us plenty of room to cultivate in between them. I prefer the rows farther apart than five feet, and have them in a row. I prefer not too close pruning. We shorten them back and thin them out, but not as much as we did formerly. I found shortening them back had the effect of producing weakness in the crotch, even of Cherry currants. I grow for market almost exclusively, though we have other varieties, the Cherry currant and Versailles. I am unable yet to decide which I would have of the two; but we get more currants from the Versailles than we do from the Cherry, and the only difference I see is the Versailles is a longer bunch, and the berries on the extreme end of the bunch are smaller than those at the base of the bunch, that is about the only difference; but we find that when they are thoroughly ripened people buy them for manufacture into jelly, and we sell three or four times as many currants by letting them thoroughly mature. We manage to maintain the foliage and keep our currants until they get perfectly ripe, dead ripe, on the bushes. The result is purchasers have more jelly, they have better flavored jelly, than they would to have them when they are only about half or two-thirds ripe.

Mr. MCMICHAEL.—We are growing currants upon a gravel ridge upon a southern slope. By putting on pretty heavily of ashes we have been successful with red currants. The black we were trying first upon very rich land, and we only succeeded in getting wood, but by growing on this land we are successful with black currants also.

The SECRETARY.—I think it is a great mistake to grow the currant in the form that used to be recommended, the tree form, with only one main trunk, principally because of the currant borer. If one stem is affected by the borer, your whole bush is gone, or if your bush is broken down in that way it is permanently injured. I think the far better way is to grow it in bush form and to allow quite a number of shoots, as many as you think it should carry, to spring from the ground; but thin these out by cutting out the older ones, those that are perhaps three or four years of age. Cut these out completely, and the young, vigorous shoots every spring cut back at least one-third, sometimes half, in order to encourage a constant growth of new wood. In this way I am sure I can get far more fruit than I used to under the old, more careless way of trying to keep the stems a greater length of time.

Mr. BUCKE.—When you talk about cutting the bush back, you don't mean that you cut the branch out at the root?

The SECRETARY.—I do both. I thin out the stems and I cut back the new growth fully one-third early in the spring, or else in the fall. That tends to form a large number of new shoots which give bearing wood the following year.

Mr. DEMPSEY---The saw fly is very easily managed if we take it in time, but it is surprising if we neglect it a few days how quick they will take the foliage off the currants. When the currant begins to come in blossom---before it is really in blossom---give the bushes a little shower of Paris green diluted. We can use it very weak. It takes very little to destroy those worms when they are first hatched. After a while now and then a leaf will appear perforated, and by repeating the same process we can destroy them with Paris green while the currants are not on the bushes. We want to maintain the foliage in the fall in order that the fruit buds mature properly for the crop of next year. That is one great reason why people do not have a crop the next year. When there is no foliage the currants are poor and lack juice, while the failure next year is certain.

Mr. GOUINLOCK---All that Mr. Dempsey has said refers to the raspberry bushes too. If you allow the worm to strip off the leaves you won't have any crop next year. Last year I used Paris green and this year I see nothing of the worm.

The SECRETARY---I do not like using Paris green on currants, but I always use the hellebore, applying it it in the powder form. It is much less trouble than to mix it with water to carry about, and if the bush is treated in time it is a very simple thing to check the worm. You will notice that the worm begins its operations very low down, about the base of the bush, and if you are a little watchful you will observe a few leaves eaten down near the base of your bushes, and by a little examination you will see that the worms are beginning to work. I have a little sifter that has a handle and carries just what is convenient to carry in one hand, and the seive is fine in it, and by just opening the bush a little when damp, either after rain or after the dew has been heavy, then a little shake will distribute enough powder to poison the leaves sufficiently to thoroughly destroy those worms at the very beginning; and if you do that your bush is saved, and it is very little trouble indeed. You can easily pass along from one bush to the other and sift enough along the lower part of the bush to prevent the worm from making any headway at all. If you let the worms get scattered over the branches it is a much more diffieult task, and I suppose in a large plantation the best possible thing to use would be a spraying pump.

Mr. RACE—I have never yet seen a less expensive or more convenient method of sprinkling bushes than the one I use. I just take a common glass tumbler. If

the bottom is broken off so much the better. Fill that full of hellebore, draw a piece of book-muslin over it, take it by the bottom and go along, and you can sprinkle a hundred bushes with a very small quantity of hellebore in a very short time. I want to ask whether, if I moved the bushes in September after all the currants had been taken off, they would take hold and bear next year?

Mr. DEMPSEY---September is the best month for striking cuttings, and if for striking cuttings why not for moving the whole bush? I cannot see any advantage in applying the hellebore while the bushes are damp or applying it through a syringe. As I understand the way it acts upon the currant worm, they breathe through pores at their sides, and when the hellebore comes in contact with them they fall to the ground and they continue to grow less until they are fully exhausted in size or die that day. I have taken them when they had lost fully half their size from the effects of the hellebore and washed them a little in water and thrown them down, and they come to life and are just as lively as they ever were, and they will go back on the bush and eat the leaves again.

The SECRETARY—But if the leaves are poisoned when they come to eat them that will be a surer remedy.

Mr. DEMPSEY—But it does not take half as much. We mix the ordinary white hellebore with about five times its quantity of flour and we put on very little, and we treat them when the bushes are dry, and it is nicer to handle.

Mr. BUCKE—Very often the currant bush will ripen before the end of the season---that is to say before the frost comes, and the leaf will begin to turn a little yellow. Sometimes when the season is moist and cold that does not take place until after frost, but in a warm season often the currant bush gets ripe and the leaves begin to fall before the frost comes. As soon as you begin to see any leaves on the bush beginning to get yellow you can move your currant bushes, and the sooner you do it then the better, and you will have a good crop the next spring.

Adjourned at five o'clock p.m. till eight o'clock.

EVENING SESSION.

The PRESIDENT introduced Mr. D. D. Wilson, the "Egg King of Canada," who gave an address of welcome.

Mr. WILSON said he had been asked by His Worship the Mayor to welcome the delegates. He regretted that the storm had prevented many of the townspeople from attending. He touched on the various points of importance to fruit-growers---the production of first-class fruit, the selection of fruit for different localities, getting it marketed in good condition, the best mode of keeping it in a perfect state for the greatest length of time, and the securing of the highest price. Every fruit grower who would be successful must read, must think, must reason out for himself. It has been said that the man who makes two blades of grass grow where only one grew before is a public benefactor. Now, if this Association can educate only one man to grow twice the amount of fruit and of twice as good a quality as he has been producing in the past it might be said to be a public benefactor. We can all live and learn. Fruit culture has not reached perfection yet. The good book says: "As iron sharpeneth iron, so does the face of a man that of his friend;" and in this way we can sharpen one another by having discussions on certain topics where one man has given a great amount of thought to one line. Those who had come from a distance would come to the conclusion

from what they had witnessed in the past few days and during to-day that if this locality could not produce anything else it could boast of a superabundance of rain. (Laughter).

The PRESIDENT replied: We are always pleased to visit the various sections of this Province in the interests of fruits and fruit culture, flowers and forestry. We all share with yourselves of the town the disappointment on account of the weather in having a small audience. Had matters been different in that respect we would have had a fine gathering. Being a resident of the county of Huron I feel personally as the residents of the town feel. In the matter of fruit culture our county stands well to the front, especially in apple culture. The statistics show that very clearly. Our Association has various objects in view in travelling over this Province. In holding meetings in various sections of the Province, wherever we are invited for the purpose of special discussion we like to confine those discussions to matters of special interest to those localities. We are coming to that age in this Province when we must study specialties. We cannot expect in every section of the Province to grow all the fruits and make a success as far as the market value is concerned. Many of those fruits we can grow as a specialty for family use, whereas we cannot produce them for market value. We have come to the point now where we must make a more perfect study and dwell more upon specialties. We find those who make most money in fruit culture are those who devote their time to something special in the culture and something that their particular climate and locality are adapted for. We do not claim that we have arrived at the stage of perfection. We try to reap what information we can in the various sections. We are always willing to give out what we have had of experience in our own sections, but at the same time we ask those living in the sections where we meet and in the various lines of culture to speak at the meetings, because this is the way we gain solid information. There is many a man that comes to our meetings, here as well as elsewhere, who thinks he knows nothing special that will be of general interest or of any use. That is a very great mistake. Sometimes the simplest remark dropped from the youngest amateur we may have in any one line of culture may redound to the very large benefit of us all. Our meetings are open to all, and we feel that the time has come when the ladies ought to take a deeper interest in the matter of fruit and fruit culture and especially in floriculture than they have in the past. For instance, at Farmers' Institutes I have made a special point of introducing the matter of ornamental gardening on a small scale, asking farmers to indulge more in that class of work than they have in the past. We believe the ladies on the farms---our farmers' wives---are hard worked; they work harder than the farmers themselves now-a-days. The farmers have implements to save labor, whereas in the household there is not that advancement that there has been on the farm. The work is a repetition, morning, noon and night. It is monotonous. We ask our farmers to indulge more in ornamental planting---to plant, for instance, ornamental trees, flower beds and everything of that sort; and I believe that the cry that we hear over this Province from end to end---the question asked so often, "Why do young men leave the farm?"—would not be asked if matters of this sort were indulged in more generally, if home were made more pleasant and literature provided for young men and young women on the farm. I assure you that our Association, notwithstanding the inclement weather, feel satisfied because we find, as we always did, that we had good men with us, and as long as we know that the people themselves are satisfied, and feel that they are deriving some benefit, we are satisfied with our Association. (Applause).

QUESTION DRAWER.

Q.—Is it advisable to use tanbark between the rows of strawberries to keep the weeds down, and also to keep the berries clean? Is tanbark any good as a fertiliser?

Mr. LITTLE (Granton)—I have never used tanbark, but I have used well-rotted hardwood sawdust, and I have fonnd that by putting enough on it will keep down the weeds; and another year I have used coal ashes, and that is just about one of the finest mulches that I can find for the strawberries. No weeds grow where they are, and in the spring when they get a good dressing of wood ashes they are there for two or three years, just with pulling a weed here and there.

The PRESIDENT—I am afraid tanbark would have the same effect as fresh sawdust would of souring the soil, and as a fertiliser I am not aware that it has any particular properties that would make it serviceable.

Mr. LITTLE---I think it would sour the land and destroy the vitality of the roots of the strawberry.

APPLES FOR THE MARKET.

The PRESIDENT.—It seems to me more natural, looking at the apple culture for the past few years, to go a little back of the subject before touching on the subject itself. We continually hear the question asked in every part of the province now-a-days, "Why is it that we have so much inferior fruit in our orchards?" And it is a fact. I believe that our fruit is not what it was some years ago; and the question arises, What is the cause of this? That might be proved in a good many different ways. There may be a good many causes that I do not think of at present; but, generally speaking, I believe that a great many of the first principles of planting an orchard, and selecting, have not been adhered to. Underdrainage, for instance, is a very particular point that should always be attended to before planting an orchard. Then, in many of our old orchards we find the trees planted too close together. It is absolutely necessary that an abundance both of sunlight and air should penetrate every orchard; and the trees should be planted with regard to varieties, because they vary so much—some varieties being spreading varieties, such as the Rhode Island Greening and the King of Tompkins County, which spread tremendously, whereas other varieties might be planted somewhat closer that are more upright in their growth. I have laid it down as a principle to plant them even forty feet apart every way. It seems a long distance to begin with, but when you get an orchard in full bearing that is the time to find the advantage. I really don't think, upon the whole, that forty feet would be too far for general orchards of mixed varieties, as we generally plant them. Of course if we were planting an orchard of upright growers it would be too far. Again, our orchards are neglected as far as cultivation and manure are concerned. Many orchards are not touched for years in the way of cultivation; and as far as manure is concerned they are seldom visited with a load. Then the trees are not trimmed or kept clean. It is a common thing to go into our old orchards and find the trees covered with the oyster-shell bark louse, for instance, which is very destructive. No tree can produce healthy fruit where these points are not attended to. It is as necessary to feed a bearing orchard with proper nourishment as it is to feed the soil where you are growing annual crops of any other

description. It is too often that we find in bearing orchards, where they are cultivated, you find a crop of some other description planted there. That is trying to drag from that soil two crops at one time. It is not fair play with the trees at all. I think the time has come where it is actually becoming a serious matter that these points are not attended to. I am afraid the time is not far distant—for this country is getting pretty well aged all through so far as orchards are concerned—when we will be on the same road as they are in Britain—we will be complaining that we cannot grow apples, that the orchards are running out. It is simply our own fault, because we are not keeping up the fertility of the soil and attending to those rules that we do attend to in the culture of any other crop on the farm. I believe, if these points are attended to, there is no spot on the farm that will pay better than the orchard.

As regards the methods of culling, packing and grading apples for market, I believe, and I know I have a good deal of opposition in what I contend, that the whole system of buying fruit, for instance, is wrong. It is a system by which we fail to induce the grower to grow those varieties that are really wanted in our best markets. I believe that in buying fruit we should buy as we sell. We buy our fruit at present in almost all sections of this province at so much per barrel for fall apples, and without regard to kind or quality, and so much per barrel for winter apples. Now that system, according to my estimation, is wrong. We should buy according to kind, according to the absolute market value of each variety. We find, when we come to sell our consignments in Britain and other markets, that we must sell, as a rule, according to quality and according to variety. I have been thinking the matter over so far as the scale is concerned. Well, it would be a difficult thing for me to go at once and place a scale; but to give you an idea, I would place it something like this, I am speaking now only of thoroughly well-grown fruit, perfect fruit of its kind; I would take a scale something like this: for instance, take Ribston Pippin and Blenheim Pippin, those are two varieties of course you cannot grow in all sections, and they are not varieties that are valuable, that pay the producer, in many sections; still where they do grow to perfection you will find that they are excellent and profitable varieties to grow, and those are varieties that are highly esteemed in the British markets. Take these at an average of $1.50 a barrel; if you are paying $1 for Baldwins they will stand in about that average. King of Tompkins County would stand very much the same, perhaps five cents a barrel less than Ribston and Blenheim. Then the Northern Spy—taking that perfect, which the last few years seems to have been hard to find, owing to the fungus spot in the apple—but that, looking at the market in Britain, would be worth about $1.30 in the orchard. If we bought the American Golden Russet at the proper season for selling it, it would be worth the same; but unfortunately, when we buy that, we buy it at a season when we cannot get the proper price for it in the markets where they use it. They do not use that apple in the British markets till after the first of January. Of course they buy it when consignments are shipped there, but they usually store it till after the first of January. Therefore we have two apples that sell also from $1.20 to $1.25. Rhode Island Greening I would like to place a little higher than the Baldwin, because it is a better all-round apple, both for eating and cooking, than the Baldwin; but unfortunately in the British market they have not come to that state of perfection in the taste for our fruits that they look sufficiently well to quality, to intrinsic value; they look too much to color; hence they are not willing to pay as much for the Greening apple as they are for a highly colored apple; therefore Baldwin brings a higher price in the British market than Greening; but I believe the time is coming, and probably not far distant, when the Greening will bring a higher price in the market than

the Baldwin does. So that in placing a scale of points it would require a good deal of consideration. The scale would have to vary according to the season and according to the demand, but I would place it something in that way. It has got to be agitated, of course at the markets where we sell. I believe that is the proper way to buy, because then we are acting fairly and squarely with the producer, because we buy just in the proportion that we sell, and we are inducing that grower to grow those varieties that we actually want for the particular market that we are dealing with, and that is what we want to bring our growers to. Now we are not encouraging our growers to do that way; we are paying the same price all around for everything that is winter. Under the present system that grower is going to grow everything that is hard, for winter apples, because he is getting the same price all around, and the variety that will grow the most fruit is the variety that is most valuable to the grower; and it may be a variety that is practically worthless as far as intrinsic value is concerned.

The SECRETARY.—You did not refer to the Gravenstein.

The PRESIDENT.—I just referred to the winter apples especially. The Gravenstein in its season I place as the best early fall apple. Of course they they vary; you will find it early in some sections, and somewhat medium to late in other sections. The Gravenstein I consider the finest apple we have. The Duchess of Oldenburg I always place for an early fall apple; although in some places I would place it as a summer apple. You will find it in some catalogues placed as a summer apple, and in some other as a fall apple. The Duchess is an early bearer, and a heavy bearer, and it is always an advantage to thin that out early, and you can do that with advantage, because you can begin to use it for stewing when it is about half green. It comes at a time of the year when we feel that we want something in the apple line, and it is very palatable. I consider it the finest general early apple that we have, and an apple that I am confident, if we had proper facilities for shipping to foreign markets, would bring a large amount of money. It is an apple that growers, who make a specialty of growing an early apple for home markets, make the most of. For an all-round general apple I would recommend the Duchess of Oldenburg over anything that I know of.

The SECRETARY.—You did not mention the Roxbury Russet.

The PRESIDENT.—So far as we have gone, they place the Russets all on an even grade. Of course for long keeping generally you will get the Roxbury larger than you will the American Golden; and for late shipping the Roxbury will no doubt make more money; but as a rule, the way we ship, and the particular season we do ship and sell, we make no more money out of the Roxbury than we do out of the American Golden.

A DELEGATE.—Is the Duchess a good shipping apple?

The PRESIDENT.—It is not to ship a long distance. We would require a cold place to ship to the old country. I have shipped it and have succeeded in landing it in Liverpool in very fair order, and received a very fine price for it. It was in a season when fruit was rather scarce any way; but it is an apple that would "take" in any of their markets there, on account of its beauty if nothing else, because they have a great eye for beauty over there. Put anything up in a fine package and show it to them in good condition and fine looking and they do not seem to grudge the price at all; but anything inferior in appearance they don't want it at all. The British market is the worst market I know of for a poor article in fruit, but the best for a first-class article.

RODERICK GRAY.—I could grow Duchess two to one. They are a fine apple, nice to cook and nice to look at, and you can commence using them early, and what remains on the tree grow larger for standing.

D. D. WILSON.—The present system of buying is a very bad one. It gives no encouragement to the grower of fruit to produce a good article. In this neighborhood, generally, the buyer must have made up his mind he was going to make his profit out of the good fruit, for he could not make it out of the medium fruits. I think that by a proper selection, and by giving encouragement to producers to produce the most saleable apple; good color and good quality and good size; I think better prices could be paid than have been paid for that class of fruit, while not as high prices would be paid for a poorer class of fruit. The question is, How are you going to adopt any other mode? A man comes to the grower and says, I will give you a dollar a barrel, all round, for all your winter apples; and another buyer says, I will give you $1.50 for all these apples, and $1.35 for these, and $1 for these, and 80 cents for something else; the man that says he will give the dollar all round will get the apples, the probabilities are, and so the mode that is in vogue at present will be perpetuated. How are you going to correct it?

The PRESIDENT.—I can think of no way to remedy it except to wait till we ruin all those men who pay a dollar a barrel.

Mr. WILSON.—I have been in the habit of shipping apples till the last two years; and I got so disgusted with the mode of paying perhaps a dollar all round, that I gave it up. If the information of the president has given was spread around the country, would it not open the eyes of the community to the planting of trees that would give them the best results? Usually the poorer qualities of fruit produce more abundantly, and consequently a man that gets a dollar all round, makes more out of his poor fruit than he does for his better qualities. We will have to give more attention to the mode of packing and transportation. It is of the utmost importance that the goods you ship should arrive at its destination in the best condition possible. We have cold storage and refrigerator cars, and cold chamber in the steamer. There is another thing wanted; you want a cold chamber or cold storage when it lands; because fruit is like anything else, it wants to be kept at an even temperature or it deteriorates very quickly. The kind of fruit, the quality, the selections that are made before shipment, and everything of that nature must tend greatly to increase the profits to the producer. I believe our orchards are deteriorating very rapidly, and if more care and nourishment are not given to the soil than has been given, the orchards in this and other localities will be non-productive in a very few years. I do not know of anything that is produced on the farm that will pay better for care and culture and manure than the orchard. It will not produce if left to itself any more than a field of wheat will if left to its natural condition and the wheat sown over it. It must be prepared, cultivated, manured, underdrained; it must be put in good "tilth," and if that is done with an orchard you will get good results. I will give you my experience with an old orchard in this town. It was non-productive. Everything was very small; the trees were planted thickly. It would have paid me if I had cut half of them down. I pruned the trees. During the winter I manured it, and I kept manuring it each winter for a number of years. The third season I had an abundant crop; not only that, but apples about as large as you usually find on a young orchard; showing that all that that orchard wanted was plenty of nourishment at the root; it had the air and everything around it that was necessary, only it wanted something to give strength to make it fruitful, and that was the result. Out of that old orchard I have taken apples that when shown at the fair here have taken the prize. The orchard is too thick by one half now,

and the apples are not as good color as they would be if we had more space; but we can get the size and an approximation to the quality, only you want more air to give them better quality. I did not cultivate it; it was in grass and has remained so.

Mr. McMICHAEL.—I like the system of sowing in clover and then plowing under; the clover that is plowed under manures the land very nicely. It is in every way clean. For the larvæ of the codling moth I use bandages on the trees, scraping the bark off, and also use Paris green and keep them very much in check. For bandages I use old carpet about four inches wide: tack one end and wind the other around and nail it; and every couple of weeks go around and destroy the larvæ; get sometimes from 60 or 70 of the larvæ in twelve days with those bandages; about this time of the year till the first brood are gone, then leave them till the apples are ready; then destroy the next brood in the fall and put the bandages away until the next spring.

The PRESIDENT.—The point Mr. Wilson made regarding shipping is very important. Those are matters we are continually pressing on the railway and steamship companies; and it is the intention to hold a large convention either in Ottawa or Montreal—we hope in Montreal—next winter for one week. The convention is going to be held and we are using our influence to have it held in Montreal, for the reason that Montreal is the head centre of foreign shipping for Canada, and the headquarters of our large railway lines; and we want to get at them; we want to speak to them; we want to consult them on matters of this sort; we want to have a higher state of perfection in handling and shipping our goods, and we want a different accommodation entirely in the steamship lines from what we have had in order to land our goods in perfect order in the British and other foreign markets. Another important point that we have discussed often, and looked into, is the matter of handling fruits in the British markets; and that point impressed itself upon me very particularly when, about two months ago, there was an attempt to form a company in the city of Toronto, for the purpose of handling all lines of Canadian produce in the British markets; and I was astonished at first, but upon consideration I did not wonder at the opposition that was showered down upon us by the brokers in the different lines, the cheese brokers especially, and the fruit brokers of Britain. They used every influence that seemed within their power to kill the company. They did not want the business taken out of their hands for some reason or other, and we can easily guess at those reasons. They say that the formation of such a company was going to hurt their business, because the line upon which the company was going to handle the goods was different from the method adopted by the commission brokers of Britain, quite different. In the first place the company would not be allowed by their charter to be speculators in any sense of the word. They could not purchase the goods they were handling for producers or others, because they would handle for producers or any one who would ship to them. Therefore the brokers seemed to unite for the purpose of killing the company, and so far as the present season is concerned I am afraid that they have succeeded, largely on account of a little weakness on the part of one man, especially, in the city of Toronto, and I was very sorry indeed to think that a man of such prominence would give way, and I am afraid he has given way to the influence of the brokers in that respect. However, I think there is a possibility of the company going ahead yet; but it proved to me that there is a matter there that is well worthy of our consideration and the consideration of the producers of this country. The intention of the company was, in the handling of fruits, for instance, to deal almost entirely with the retail trade of Britain. Now, that is a point that hurts

the broker at once. He does not want us to do that. The broker wants to sell only to the wholesale trade, and the wholesale dealer has the control of the retail trade; the retailer then selling to the consumer. They used every sort of artifice for the purpose of delaying the operation of the company, in fact, killing the company outright; and I hope that either this company or some similar company working on the same basis, will yet come to the front for the purpose of handling the produce of this country. It is highly important that they should; and it is a matter that the producers of this country cannot afford to allow the broker of Britain to control any longer.

BEST THREE VARIETIES OF STAWBERRIES FOR THE HOME AND MARKET GARDEN.

The PRESIDENT—Mr. Little is probably the highest authority we have in Canada on strawberries. He makes a specialty of testing every variety of strawberry he lays his hands on, and I think he succeeds admirably in laying his hands on everything in the strawberry line.

Mr. JOHN LITTLE (Granton)—There is not a variety of strawberry that has come before the public for the last fifteen years but what I have tested, and some of those were not worth the ground they were put on, and the money and the time we lost; nevertheless, I am still at it. They are sent to me from everywhere, I have had plants sent to me this year from ten states for testing, and if I was going to plant to-morrow I would not plant any old varieties. You will ask me why? because if you get a strawberry that will be three times as large as the Crescent, you would surely want to grow that in preference to the Crescent, no matter how valuable it might be otherwise. There is a new variety that has come out—the Haverland—that was a seedling of the Crescent, and it will come to pick just as early as the Crescent will, and it is nowhere to be compared with it, I have picked them on the 17th June, with all the first blossoms gone, and they were a wonder to all who saw them in St. Marys. I never have to go further than that, I sell everything I raise in the strawberry line in St. Marys, and I get an advance beyond those that ship here and yonder and everywhere. Then there is the Warfield—a very valuable berry, that will yield more, and larger, double what the Crescent would in its palmiest days. Then there is the Eureka. I had that from Birk County, Ohio, four years ago; and I had the privilege of letting it go to friend Woolverton and Mr. Lyons, and he wrote me last year. having fruited it two years, that out of one hundred varieties he had nothing to compare with it except the Bubach, and that did not produce as much or as large. There is something singular in connection with the Eureka; I never, since I got them, mulched them, and any that have got them can testify to their root matter. No frost ever took them out of the ground yet, while others, that would probably have half a dozen roots, would be right on the top of the ground, and these have held there just as if anchored all through the summer and winter.

The PRESIDENT—Would you vary between the market and the home garden?

Mr. LITTLE—I would make no difference; for if a berry is valuable for one, it would be for the other. Most of them all, with care, will ship. For instance, the Wilson is not ripe when it is shipped, neither are some of the other ones that color early.

Mr. GOUINLOCK—What about the Jessie?

Mr. LITTLE—The Jessie is a favorite mostly everywhere it is planted. I went to Wisconsin two years ago just to see the Jessie growing, and I saw them lying there in piles, of a third picking, just as large as plums. But you will find men here and there that do not give them the attention that they ought to give; they will stick them into the ground, and if they do not grow it is the fault of the originator, and men are combined to palm things upon the community that are worthless; but I give you my word that I never saw in my life anything to exceed the Jessie for fruit—and I have seen many good things in the strawberry line—unless it would be the Eureka, and that is a wonder to every one that saw it.

The SECRETARY—You have a seedling yourself—the No. 10—that I got some fruit off this year, and it is a very fine berry—a large berry.

Mr. LITTLE—Yes, it is one of the good things too; but John Little doesn't say much about his own fruit. (Laughter.) Different soil and different treatment makes a difference in the fruit. The habit of the Haverland with me is to let its top down. The color of that will take a buyer's eye anywhere; it is a beautiful orange color, and a man or woman in going to buy a strawberry don't ask whether it is good or bad or indifferent, if it is large enough. You will find that, go where you will, about the strawberry; they will buy the fruit and eat it, and so will every child that sees it.

The SECRETARY—You think a good deal of Bubach's 5?

Mr. LITTLE—Yes, it is a good berry, but it won't ship; are a grand berry, and the foliage is just complete. The Manchester is a famous berry, but it will not fruit, and sometimes in fruiting time the foliage will rust, but it will come out in the spring as clear as a dollar.

The SECRETARY—What do you think now of the Itasca? It is not proving as good as it did.

Mr. LITTLE—No, but the Logan is; it is a good bearer, and a fine size. The Itasca is a failure so far as the fruit is concerned. The plant is a fine one.

The SECRETARY—We have better modes of planting strawberries than those mentioned in the paper. The easiest and quickest way I have found to plant a large number of strawberries, is for two persons to go on, one with a spade and the other with a basket of plants; and the one who has the spade simply puts it in the soil, runs the spade in a slanting direction, and raises the handle a little, just sufficient for the other to put the plant under the spade and spread out the roots there and hold them in the proper position while the other one withdraws the spade; the earth falls back at once on the roots of the plant, and he presses his foot upon it, and the thing is done. They can walk along that way very rapidly.

Mr. LITTLE—You will be told there are some varieties of strawberries that are imperfect, while other varieties are perfect. How are they fertilised? They will tell you that strawberries are fertilised by the bees. I believe that myself. but there was neither bees nor wind this year, but two days, to fertilise the strawberry, and there is the Crescent seedling—and it is just about one of the worst to give you a crop—a perfect fruit; and the Manchester is another; and there was but two days that the bees could work and carry the pollen from plant to plant. Now how will you account for that, and all these which you call pistilate varieties give perfect fruit this year? I maintain it is not all with the bees, that sometimes even when the bees are there they have not time to do their work properly; and yet this year there was neither bees nor sunshine when all the

flowers were gone, and yet I had just about as perfect a crop of fruit as ever I raised in my life—that is, what the frost left. Now, how do you scientific gentlemen account for that?

Mr. MORTON—You must recollect that bees are not the only insect nature has prepared for the cross fertilisation of flowers.

Mr. LITTLE—They are the only ones that are said to fertilise the strawberry.

Mr. MORTON (of Wingham)—I am perfectly satisfied of this, that any insect that is found in the locality of a flower that bears pollen, that insect must carry away a certain amount of pollen, because the insect was built that way for that specific purpose. I am of opinion that the bee plays a less important part in the fertilisation of the strawberry plant, than does a small little beetle. I have found as many as half a dozen upon one flower. Now, my bees do not operate on the strawberries to any great extent. They will go there, but they don't linger very long; they busy themselves with other flowers, they would rather go elsewhere; but those small beetles are there, and I have no doubt there are other insects that visit those flowers. It does not make any difference whether it is the bee or any other insect—if it comes near a flower that is provided with pollen, it will transmit it to other flowers. There are insects that will work upon pollen when the weather is so bad that the bee will not work on it. You will find a number of blossoms of the Crescent's seedling that apparently bear what I would call pollen. You will find hermaphrodite flower on the Cresent seedling, but the stamens are less numerous than on what are known as perfectly flowered strawberry plants. The supposition is that the pollen-bearing stamens are not present in sufficient proportion to make the perfect fertilisation crop. I will tell you why I think that is correct. I have grown Crescent seedling under glass—taking plants that I knew were Crescent seedling—and have covered them over with glass so that no wind could get at them, and no insects—at least I thought there were no insects. Well, the crop was certainly imperfect, and I found that a great many of the berries were defective, in consequence of the seeds on one side dropping, and the receptacle of the berry was imperfect, therefore I found there was not sufficient fertilisation.

Mr. LITTLE—I never saw anything or any insect to visit the strawberry bed except the bee. I never saw an insect except it would be the crown borer, bother the strawberry.

Mr. MORTON—Those berries that you mentioned, how are they classed?

Mr. LITTLE—They are all classed pistillate; and on the Haverland I had not an imperfect berry.

Adjourned at 10 p.m., till 10 a.m. to-morrow.

The President took the chair at 10.30 a.m. on Thursday, July 4.

QUESTION DRAWER.

Q.—How can large plants or small fruit trees be kept growing when too large to move into bigger pots or boxes—that is, when you cannot get a pot large enough to hold them?

Mr. STEWART.—When plants get root-bound, or the soil gets all filled so that they cannot have much growth, I wash the soil away from the roots and re-pot them with fresh soil. You can sometimes use liquid manure. Once or

twice a week that would help them considerably. The best way is to wash the soil clean from the roots and put them into fresh soil. If you are going to put them into a larger pot I would leave the soil on the roots.

Q.—Should raspberries be manured with stable manure every year, or would not bones be better, alternating years?

Mr. BUCKE (of Ottawa).—Raspberries require a great deal of manure, and I find it better to mulch them heavily with stable manure in the spring, and after the crop is done to dig it in. I have never tried bone manure, although I fancy the mulching is what they require as much as the manure. I would repeat the stable manure every spring and fall.

Mr. DEMPSEY.—That is what we have done, and we find the most satisfaction We have tested bone manure too, but mulching helps considerably.

DELEGATE.—I thought the stable manure would make them grow too thriftily.

Mr. BUCKE.—In Ottawa we do not pinch the canes the same as they do here. We prune them back in the spring. We let them grow as high as they like; they sometimes grow eight or nine feet.

The SECRETARY.—You lay them down in the winter?

Mr. BUCKE.—Sometimes we do, and sometimes not. We grow them tall so as to lay them down. They grow thinner.

Q.—Would not half inch bones be more profitable than bone dust, on account of adulteration?

Mr. DEMPSEY.—There is another question involved in that; is it really bone dust after it is adulterated? I have bought for bone dust a great deal of plaster in my time; but the finer the bones are ground the better. I have seen the result of fine ground bones—not half inch bones—for five years after applying to garden crops. Apply first half a ton to an acre. You can start off that year and produce a good garden crop, and all you have to do for five years is to fight insects; and I believe it is the cheapest fertilizer to-day in the market. Buy the bones, and buy a bone mill, and grind them yourself.

Mr MORTON.—For appreciable result I don't think half inch bones would be of much utility in the garden. I would not use them. In buying bone dust you should buy from a respectable firm. If you buy because it is cheap, you are apt to get it nasty. If you put bones into the ground they will remain a long time before they will decay. I have bones I pick up every year, that have been in the ground for ten years. The way I do, I buy the bones and ship them to the market and have them ground for me, and I believe they send me back the produce of what I send down. I use bone dust in preference to stable manure for my raspberries.

Mr. DEMPSEY.—Where can you get bones ground?

Mr. MORTON.—In London or Toronto. You can get it done at Lamb's blacking factory in Toronto.

Mr. BUCKE.—If you can get your bones reduced by steam it is a great deal better than getting them ground. In Ottawa we have a pork manufactory, and after they have taken out all the bones they put them under a high pressure of steam and reduce them so that the largest of them you can crumble between your finger and thumb. You apply that on the soil, and you have the genuine article; but you must be careful how you put it on, because it is pretty strong.

Q.—What is the best remedy for cabbage worm?

The SECRETARY.—Pyrethrum powder, I think, either applied as a powder, or diluted in water. Apply it with a puff.

Mr. MORTON.—I think the best is Paris green. I am not afraid, because the amount we use is not large. I don't see any danger from the use of Paris green, because the injury done by the cabbage worm is done while the cabbage is small, and all those leaves drop off and are cut off, anyway. They are no part of the heart. Before the cabbage is headed out you mark a leaf, and you won't find that in the head at all. I don't think there is any danger from absorption of poison. But I have found very good results from ordinary road dust thrown upon them pretty plentifully. The trouble with pyrethrum is that you cannot always get it pure and fresh, and you have rather variable results from its use.

Mr. LUCKE.—There is no danger from Paris green if it is done with the hand of a man that understands what he is about; but if you recommend Paris green to the general public you are going to get into trouble, because they will apply it too heavily.

The SECRETARY.—And what they will use for cabbage they will use for cauliflower.

Mr. RACE.—Mr. Mitchell's method is to use his finger and thumb. (Laughter). I adopted that means the last two years, and I have been successful in growing cauliflowers. I found I could get through the patch and pick off the worms in about as little time as by using any kind of powder.

Q. What is the best remedy for the striped bug of the cucumbers?

Mr. MORRIS.—I use for cabbage worm five pounds of sulphur to fifty pounds of land plaster and twenty pounds of wood ashes, screened all together. I go over three times in the season. For the squash and cucumber bugs I use the same material. You don't have to put it on the plant, but only on the ground, and I guarantee that every bug will skip that place. Sometimes I sprinkle it on the plant, but as soon as I put it on the ground I see every bug crawl away.

Mr. DEMPSEY.—For squash and cucumber bugs I use nothing but pure sulphur. We use sulphur for mildew on grapes under glass, but it is not the sulphur applied to the mildew direct; but when the rays of the sun strike the sulphur there is a certain amount of sulphuric acid rises, and this is evidently what destroys the bug. As soon as the sun shines the bugs will start very quickly—thy can't seemingly endure it.

Q.—What is the best remedy for lice on rose trees?

The SECRETARY.—I should think the kerosene emulsion would be the best thing here.

Mr. BEALL.—What is meant by lice?

The SECRETARY.—The aphis.

Mr. BEALL.—I have never seen the aphis on the roses.

Mr. MORTON.—Strong tobacco water is the thing I have been most successful with, and I like to mix it with soapsuds, and boil together, make an infusion of tobacco sweepings which I get from the cigar factory, and make a good strong decoction, and syringe the plants with it. I have tried pyrethrum and do not like it so well. Whale oil soap I have tried, but it is an awfully stinking thing, and the odor remains on the buds long after. In the earlier part of the season I sometimes mix the whale oil soap with the decoction.

Mr. PETTIT.—Is there any danger of making the tobacco soap too strong?

Mr. MORTON.—I don't think so. What I gave last was actually black. I use about a quart of tobacco—pure leaf, no stems—to a pailful of water.

Mr. DEMPSEY.—I have used a pound of black tobacco to an old-fashioned pail of water.

Mr. RACE.—I use half a dozen cigars to a pail of water.

The SECRETARY.—I use half a pound of soap and a gallon of water to two gallons of coal oil, diluted with I think thirty parts of water If you pour in the coal oil while the suds of the soap and water are in a boiling state, it will immediately mulsify. It is better to stir it while you are pouring the coal oil.

M. DEMPSEY.—A very cheap remedy, where people have only a few rose bushes, is to cover the bush with the old hoop skirt, put paper over it, and burn tobacco under the bush.

Mr. RACE.—I can give you a cheaper method than that. When I am asked to take a drink I say, "No, thank you, I will take a cigar." I take those cigars home, and by spring I have quite a lot of them. I take half a dozen cigars to a pail of water.

Mr. ELLIOTT.—How do you apply these solutions?—because I notice these insects are invariably on the under side of the leaf.

Mr. MORTON.—Not the green aphis. The thrip is under the leaf.

Mr. ELLIOTT.—A good many of these insects are on the under side of the leaf, where the vegetable matter is soft and juicy, and it is very difficult to get at them.

The SECRETARY.—The lice cluster on the upper side of the stem, but the rose hopper on the under side of the leaf. For the rose hopper the best thing is to puff the pyrethrum powder up from beneath on the under side of the bushes when the bushes are a little damp. I have found that to rid the bushes of the hoppers in a very little time.

Q.—Please state the preferable situation for the raspberry—whether in the shade or exposed to the sun. Which are the best varieties?

The SECRETARY.—I think decidedly have an open exposure for the raspberry; I have found the Schaffer, for instance, growing exceedingly well under the shade of peach trees; but I don't think that would be the rule. As for varieties, I think the Marlboro for early, and the Cuthbert for the main crop. I value the Turner very highly also. For black, perhaps the Souhegan and the Gregg.

Mr. BEALL.—Do you think the Marlboro is a fine-flavored raspberry?

The SECRETARY.—No, but it sells well, and it bears very well with me.

Mr. MORTON.—Shade is not preferable for the raspberry; I would want an open exposure. They sometimes do well on the north side of a fence, if the fence is not too high; but I would rather have open ground. For home consumption I would prefer Turner and Cuthbert; Marlboro I would not have for home consumption, although you can get a good big crop of them. Two reds are enough for any man; one is enough for home consumption, because they are dreadful things to run. Schaffer's Colossal is my favorite; I am rooting out all my reds and putting in Schaffers. I have about a hundred of them in my garden, but in blacks I recommend the Tyler rather than the Souhegan. Gregg for late; and the Ohio is a very good one if you want to try a few berries, because they hold out better than the others; I think those three, to come after the Schaffer, and I would advise you to plant at least one-half of the whole number Schaffer, and your choice out of those two reds would cover the ground. Golden Queen I think is going to be valuable. Caroline I would not have. I have no trouble with the Cuthbert through the winter. The Cuthbert does not bear so heavy a crop as the Turner, and it is not so nice for the table. The

Schaffer is the finest for canning; don't can with any sugar, and put the sugar in when you put them on the table, and you will have the flavor of the fruit. The same with strawberries. Brinkle's Orange is one of the finest berries that there is, but it is not handy enough with us. We would have to lay it up and cover it up.

Rev. Mr. MACAULEY.—I find the Golden Queens very strong growers. They bore some the same year they were put down, but they were a little later coming on than the Cuthbert, but I think they are quite as prolific as the Cuthbert. The Cuthbert is not anything like as strong a bush; and I am a little afraid that while the Cuthbert bore very well last year, though it was their first year down, they are not going to hold out this year with the Golden Queen.

The PRESIDENT.—What is your soil and exposure?

Mr. MACAULEY.—It is the shady side of the garden, and it is a kind of clay loam in which there have been a few loads of sand mixed in order to lighten the soil; richly manured with stable manure.

The SECRETARY.—I have one or two dozen Golden Queen that were bearing last year, and my opinion agrees with that of Mr. Macauley. It seemed to be even more thrifty than the Cuthbert. The Cuthbert berries have not been doing as well lately. I have two or three acres of them, and they have not the healthy look they should have the last year or two, and I am rather afraid they are going to fail to a certain extent; but I have not noticed that with the Golden Queen, so that I am inclined to think it is a thrifty bush.

Mr. DIXON.—I would like to get a few of the best varieties of grapes for home use—say three—for this locality.

Mr. PETTIT.—I would say Moore's Early, Worden, Lindley, Delaware, and Brighton. For a white grape I think Lady would answer better for home use than anything else.

Mr. RACE.—I have tried the Moore's Early, and I have thrown them all out. It is impossible to grow enough wood unless you get the ground very rich; and even after that it is not a good bearer in this section. The grape I have the most satisfaction with is the Worden, the Lindley No. 9, the Agawam No. 15. I never tried the Rogers 44, but it is growing in the town. So far as the growth is concerned I would prefer the Niagara to any other white grape.

Mr. PETTIT.—Do I understand the Agawam will ripen with you?

Mr. RACE.—Yes, it ripens every year with me. The Agawam ripened last year a little north of my place. I intend to confine myself to these three varieties—the Lindley, Worden and Niagara. I don't know a grape that will grow better here than the Champion, but it is no good after you grow it.

Mr. MORTON.—I would recommend the Wilder No. 4 instead of either the Niagara or the Agawam. I would say Worden, Lindley and Wilder.

Mr. RACE.—The Salem will do better in this section than the Wilder.

Mr. MORTON.—It mildews.

The PRESIDENT.—It is evidently pretty hard for a person to pick out the three best from the different speakers. If I were judging from my own experience, and what I know of this section, I would say for this section Worden, Lindley and Niagara.

Q. What is the best way to cultivate cedar hedge?

The SECRETARY.—They will grow without much cultivation after the first year, in my experience. A little work with the hoe and spade the first year.

The PRESIDENT.—The cedar hedge is one of the most satisfactory hedges you can plant, upon condition that you can get good small stocky plants when you put them down. The Norway Spruce is a very handsome and satisfactory hedge. I trim the cedar every second year, giving them freedom then to get a good growth. The cedar will bear trimming better than the Norway Spruce after the first year.

DELEGATE.—Will it require much water?

The PRESIDENT.—No; in my section I never water at all unless it is particularly dry season when you plant.

Mr. STEWART.—The cedar makes equally as good a hedge as the Norway Spruce. The Norway Spruce stands well for maybe ten years, but after a number of years I find it begins to decay a little; but you can prune the cedar for any length of time. I never saw a cedar hedge that was decayed. I don't think they require much cultivation.

The SECRETARY.—I think it would be a mistake to use the Norway Spruce around the door-yard for a hedge. It is too strong a grower. The cedar is a much slower grower, and therefore is much better adapted for a small hedge, and can be kept pruned into better shape; but if it is for a hedge that you can allow to grow up large, as a screen, certainly the Norway Spruce would be best. Nothing could be better for a screen for buildings, barnyards and other places you wish to hide, than the Norway Spruce.

GOOSEBERRIES—THEIR CULTURE AND PREPARATION.

Mr. P. E. BUCKE (Ottawa) read the following paper:

Having been requested to write a paper on some one of the small fruits, I have selected the gooseberry.

There is no doubt, though this fruit is one of the most valuable it is also one of the most neglected on the list. It is difficult to find the reason for this unless it may be that it is more subject to the attacks of the saw fly than the currant, and consequently the leaves and plants are destroyed before the pest is detected, when grown by amateurs.

In no country has this fruit received so much attention as in the British Isles, where it has been fostered by special exhibitions, by premiums and prizes until the small worthless hedge-row plant—infinitely more insignificant than either of our two native kinds—has been cultivated into an exceedingly fine dessert fruit of the richest flavor and texture.

The attempt to introduce the English varieties into this country, and the failure in doing so, owing to the mildew, which is produced by the unsuitableness of this climate which destroys the fruit and foliage is too familiar to all cultivators of this plant to need any notice from me. It is now conceded we shall have no really first-class berries until we begin *de novo* and work up our native fruits as have been done in the Old Country. From the two varieties we may confidently expect the same gratifying result that has been there (in Britain) obtained.

The Houghton, Smith's and Downing are all advances on the native stock, and it is not improbable that any one of these may be in the direct line of future success, though a cross between the smooth swamp berry and the prickly high land variety would give the initial start to a new and hardy strain, which could subsequently be improved, upon the Van Mons system, with high cultivation or by an admixture with the finer sorts by hybridization. The first object to be gained in a plant perfectly capable of resisting mildew.

Why the gooseberry is so little written or spoken about it is hard to say; its value is undeniable. Either for stewing in the green or half ripe state, and for canning or preserving it has no rival in my estimation. It has an acid of its own which the system

seems to crave for during the long winter and spring months, before the fresh fruits of early summer can be gathered. Its season is longer than any of the fruits used only in their ripe state, besides which it is handled without loss or damage from carriage and will remain bright and fresh for many days after it is gathered. The price obtained is remunerative, being from twenty to forty cents per gallon. The bush itself is perfectly hardy, resisting the cold of winter and the drouth of summer with as much indifference as a telegraph pole. It may therefore be cultivated in northern regions where the raspberry and strawberry would utterly fail.

Owing to the little attention given to its cultivation the market is never overstocked. Even with the varieties we now have, and a superior berry would open out a much wider range. The bushes come quickly into bearing, the crop is annual and abundant, they have no "off" years, it is only required to keep the soil well cultivated so that no grass or weeds are allowed to choke the plants. It must be remembered that if a full crop is expected plenty of manure must be added to the soil annually, or as occasion requires. It will not do to expect everything and give nothing in return.

The great natural enemy of the gooseberry is the saw fly, or as it is usually called the currant worm. This insect usually attacks the gooseberry a day or two before it appears on the currant bushes. No attempt should be made to cultivate this fruit until a supply of hellebore or Paris green has first been secured to meet the attacks of this dreadful destructive pest. It would be well if the first application be made to the bushes just as the blossoms begin to open in early spring, before any sign of the insect appears. There is no insecticide that can compare with Paris green. This remedy is so dangerous in the hands of unskilled manipulators that I hesitate to name it in a mixed audience, least it may be misapplied. The proper way to apply it is to put a small teaspoonful of green into a pail of water—a tin pail should be used as the green sticks to a wooden pail—keep the mixture well agitated and apply with a common hand whisk or a bundle of twigs tied together.

Water adds greatly to the weight and bulk, but I would strongly object to mix the poison with any dry material, as is done when applying it to potatoes. Care should be taken to keep the green in properly covered boxes, placed out of the reach of children, and to see that the vessel from which it is used is thoroughly cleansed each time after it has been employed.

The gooseberry is not so readily propagated by cuttings as the currant. It is therefore found necessary to mound up the bush with rich earth, or peg down the branches, when they will readily take root if brought in contact with the soil. This should be done as soon as the crop is gathered, and the earlier this is done—say the end of June—the better, as at the time mentioned if the berries are picked green for tarts and stews they can readily be disposed of. When the crop is removed the ground is gone over lightly with a digging fork and loosened, some old, well rotted manure is added if necessary to the soil. The branches are then placed in contact with the fresh mould. By the end of October, if the season is moist, the branches are cut off and taken up with care, the ground having again been first loosened with the fork, so that the bark may not be striped from the young roots. The plants are then divided with a sharp pair of pruning shears, any twigs that have roots on them will strike freely. These are set in rows for one or two years when the plants are ready for sale.

New varieties of gooseberries are produced from seed. The finest of good shape are selected when ripe, these are rubbed between the hands with dry sand, to separate the seeds, which should be sown in a bottomless box set in good rich earth. The young plants will appear the following spring. They must be kept free from weeds. When they show a few leaves they are pricked out four inches apart in rows, those with the largest leaves and of the most thrifty appearance being selected. Perhaps three or four plants in every hundred may show signs of improvement, the rest are rejected. Those retained are then planted out to fruit. When the berries appear the best are again selected for further experiment. It will thus be seen that raising new varieties from seed is rather a tedious job, to which two drawbacks are added. First, with all one's labor no real advance in bush, bearing, berry, size or quality of fruit may be obtained; and secondly, if something really valuable is produced there is no means of protecting the

discovery, so that the party originating it may reap all the advantages that should accrue to him for the time and labor expended. Before any plant becomes an unqualified success it has to be tested on various soils and in different climates, and therefore has to be placed in many localities, whilst undergoing the process of trial, the plant may get into unauthorised hands and so be lost in a great measure to the discoverer. Should he, however, succeed in sending it out unpirated, so soon as he begins to sell, the methods and appliances nowadays for propagating plants are such that experts will buy the first few plants at a high price and in a year or two will undersell the originator with his own production.

This is not a paper on "Protection," but I think this Association should lend its aid in endeavoring to devise some means for securing to an originator of new and useful varieties of plants a full and unqualified property in them to himself for a certain number of years.

Hitherto the Smith and Downing were the leading gooseberries on the market practically free from mildew; to-day I show specimens of the "Autocrat," a new berry a long step in advance of either of the former both in size and productiveness. It has never been known to mildew, though in my ground I have utterly failed with the White-Smith and several other foreign varieties.

The bush is healthy and thrifty, the foliage is of darker green than those mentioned, whilst the plant is of a stiffer, stockier growth. Our secretary, to whom I sent plants a couple of years ago (and also Mr. Robinson, of Owen Sound) can probably testify to its merits. Mr. W. W. Hilborn, of the Experimental Farm, who has seen it growing with me is quite interested in this new candidate for public favor. It is altogether likely the Autocrat will be placed on the market next spring, as a limited number of plants have been propagated.

The SECRETARY showed a specimen that he had grown at Grimsby from a plant sent by Mr. Bucke. In thriftiness of growth, and in every respect, it is everything that is claimed for it. He was sorry Mr. Bucke was going to change the name of the King Conn to the Autocrat.

Mr. BUCKE.—Mr. Hilborn asked me to change the name. It was suggested that it would take better under another name.

Mr. BEALL.—I am very much afraid Mr. Bucke is introducing an old variety by a new name. I am perfectly satisfied I have seen them ten or fifteen years ago. I thought I saw it at Peterboro' when our meeting was held there.

Mr. BUCKE.—I do not claim it as a new berry, but I think it is a berry that should be grown in this country. We cannot find the origin.

Mr. BEALL.—Why not bring it out under its proper name?

MR. BUCKE.—It has no name. I call it the Conn from the man I got it from, but it has no name.

Mr. BEALL.—If it gets into a good speculator's hands there will be thousands, and tens of thousands sent all over the country for a high price, when it might be obtained perhaps for one-tenth part of the money.

Mr. BUCKE.—That is what we want.

Mr. BEALL.—Then, in a year or two we shall have the Government coming down upon us, saying, "We have done a great deal to protect farmers from frauds, but here the Fruit Growers are defrauding them themselves."

The SECRETARY.—Does Mr. Beall think it is an English variety?

Mr. BEALL.—I do.

The SECRETARY.—But the English berries all mildew in this country—or, at least, most of them.

Mr. BEALL.—Some of them; and that may mildew too.

Mr. LITTLE.—The Industry is not free from mildew.

Mr. BUCKE.—I have no desire to defraud anybody, but I want to see that berry propagated.

Mr. BEALL.—I can find many persons who will say that the Whitesmith will not mildew. I grew the Whitesmith for fifteen years in succession constantly, and had enormous crops, and not a sign of mildew; but, by-and-by the mildew came and destroyed everything. One year I planted two or three bushes of Whitesmith, and they are all mildewed. I gave a dozen to my daughter-in-law, and they are planted out in her garden; there was no protection given; she is a very poor gardener; they have been neglected continually; but they have borne excellent crops every year, and not the slightest sign of mildew. They are the bushes out of the same nursery rows.

Mr. BUCKE.—We have sent this around—to the Secretary, to St. Catharines, to the Experimental Farm—and we want to see if it will mildew.

The PRESIDENT.—I have tested a good many varieties of English gooseberry, and I have found that they mildew, and I have been very loth to recommend any one to go into the culture of those varieties to any extent; but we find sectional differences with gooseberries as we do with other fruit. I have seen several English varieties around Stratford succeeding admirably, with no sign of mildew whatever. There is one point Mr. Bucke brings up in his paper, as to the Association protecting the originator of a fruit for a certain number of years. So far as I am concerned—and I think I voice the feelings and the principles of the Fruit Growers' Association—I say our principle is not that. We like to see a certain amount of protection; we like to see an individual that has energy to go into the cultivation, and propagation, and introduction of something new— an improvement on some fruits we have—we like to see them succeed and make money; but our object is more to introduce and recommend varieties of the highest excellence for the different sections of our country; and we want to see growers obtain those varieties at the lowest possible price. Where we have varieties that are of a high state of excellence, and generally useful in the country, we want to see them propagated largely by our nurserymen and spread over our country; and we want to see our growers get those varieties that are best suited to their particular section or location, at the lowest possible price. I, for one, do not feel like offering any particular line of protection in that respect, but leaving the matter to take its usual course. I feel a desire—as I believe the rest of us do—to see anything that is good come to the front as rapidly as possible.

Mr. DEMPSEY.—With respect to introducing a gooseberry that we are satisfied is an old variety under a new name, I can see at present no objections to it. We have only to look down the list of names of some of the best pears we have in cultivation, and we see a great many synonymous names attached to them; and that goes to prove that those varieties of fruit have been sent to the different parts of the world, and there the labels were lost, and new names have been given to them; and those names are following them, but we have the same fruit still. The Bartlett pear, for example, is not the Bartlett at all; and as honest Britons I have always argued that we should not call it the Bartlett; because it originated in England, and was imported from England by a man of the name of Bartlett living in Boston With respect to protection, I differ materially from our President, In protecting the person that produces new fruit you protect the farmer and everybody. We heard yesterday of apples sold by nursery agents for Walbridge and Wealthy, that were not those varieties. That was because there was no protection allowed the originator of those varieties. Now, if the originator of a new fruit had an exclusive right to propagate and send out, he could hand it over to a nurseryman to propagate it; he could propagate it just as fast as fifty or a hundred nurserymen would, and no danger of those frauds at all; and the farmer would be protected as well as the producer of the new fruit. I can assure you that producing new fruits and new flowers is the most discouraging business, from a financial standpoint, that anyone can undertake. I have spent a lifetime in this way so far, and have not much more life, I think sometimes, to spend; but the balance will be spent the same way. I have succeeded in originating some very fine fruits indeed. I have got some on hand; but really, for all that has ever slipped out of my hands I have not had a dollar yet. (Hear, hear). Now, I have been working for whom? For the protection of those miserable—I may say thievish—

nurserymen. They are not all that. (Laughter). I am proud to say there are a few honest ones but I tell you that as a rule, those men that are so anxious to speculate on another man's labor, will do it without character, because they lack it. I contend that for ten years after a man begins to send out a new article it should be his right; no other person should be allowed to send it out except himself. Now, we heard a lot about Fay's currant. I can show you the old Red Dutch currant on my premises, bought for $1.50 a plant, and the man pretends to be one of the most respectable nurserymen in the State of New Jersey that sent it to me. So it goes There is not a class of people in the world that is defrauded so much as fruit growers; and there is not a class of people that get defrauded by another party more than the farmers get defrauded sometimes by nurserymen. I agitate protection because I want it. If I had had a little protection, I could hand you, I believe, the best pear you ever saw in two years; but I am holding it; and what is the use of holding it? I hope to see the day when we will have a little protection for it. I believe that the best apple we have, taking all things into consideration, for dessert apple, I have produced; but I ain't going to get anything out of it at all; it is out of my hands, and it has been sent out this year; and I am sure that some people that buy it at a high price won't get the article at all, just for the want of this protection. So here are two sides to this question; and we want to look at the side that is likely to protect the farmer, or build up the character of the nurserymen by removing that temptation from them.

Mr. BUCKE.—Why should not a man have profit in his plant as well as in his book? Mr. Dempsey has spent nearly his whole lifetime getting up new fruits. What has he got for it?

The PRESIDENT.—I do not see any difficulty in this matter at all. I stick firmly to what I have said already. I know Mr. Dempsey has originated a large number of varieties of fruits. He has got a pear now equal, if not superior, to anything we have in cultivation, as far as I have seen of it; and I believe that Mr. Dempsey is going to make money out of that. I hope he will make a fortune out of it; he deserves to; he has got a grand pear. It is a cross between a Bartlett and the Duchess d'Angoulême, and it bears the qualities of both, with the points of excellence in both; and I believe the originator of a fruit of that sort has the protection within his own hands, by propagating and selling direct from his own grounds; and our Association then steps in; we know that man; we know that he is propagating that, and we can recommend that; but as far as throwing any further protection than that around the originator, I do not see how the Association can step in there at all. We want to propagate that fruit. When Mr. Dempsey asked me what he should name it, I told him to call it the Dempsey pear.

Mr. BEALL.—Would it not be a nice thing for you, Mr. President, to approach the Government of Ontario, and get them to get Mr. Dempsey to propagate enough to give one to each member of our Association in 1891, and to pay Mr. Dempsey for the same, $2 a-piece.

Mr. LITTLE.—I don't see how Mr. Dempsey would reap anything out of that, because there are men that would not think anything of giving $5 a tree for Mr. Dempsey's pear in a few years.

Mr. DEMPSEY.—I would jump at that offer that Mr. Beall is talking of.

The PRESIDENT.—Ladies and gentlemen,—I do not see that there is anything else before us. The regular programme as printed is complete. Every question has been discussed; and although the audience has been very small on this occasion, still, so far as I can see, they have been an appreciative audience, and we have had some good words from those located around Seaforth; and I hope they have all benefited by our presence here. We certainly have benefited by the information we have received. We are extremely obliged to the residents of Seaforth for providing us with this Hall and general accommodation, and we hope on some future occasion we will reach this section again.

Mr. ELLIOTT hoped that those who had attended would go home and put into practice what they had learned.

The Association adjourned at noon, to meet in winter at Windsor.

REPORT OF COMMITTEE ON FRUITS SHOWN AT SUMMER MEETING AT SEAFORTH.

Your Committee have examined the following fruits, roses, etc., shown by members of the Association and others, and beg to report thereon.

The Secretary showed a very fine specimen branch of the Great Biggarreau cherry, fruit fully ripe, also a branch, not quite so heavily laden, of the Napoleon Biggarreau fruit, only partially ripe. He also showed a specimen branch of the Yellow Spanish cherry, the bearing qualities of which do not appear sufficient to commend it for general cultivation, though it is in flavor quite equal to the other varieties shown.

The Secretary also showed specimen branches of the Fays and Cherry currants, nearly ripe, and attractive samples of the Logan, Jessie and Fi.ches Prolific strawberry; also very fair specimens of the standard varieties of gooseberries.

Mr. Bucke, of Ottawa, shows a few specimen varieties of gooseberries, among them being the "Conn" or "Autocrat," evidently a berry of great promise judging from its size and bearing qualities, and freedom from mildew.

Mr. Gowanlock, of Seaforth, shows some very good samples of Fays, Cherry and White Grape currants in a green state, and several varieties of gooseberries, among them the Industry; free from mildew and of good size.

Mr. Morton, of Wingham, shows some very excellent specimens of the Crown Bob gooseberry in a green state, and Mr. D. D. Wilson of Seaforth shows two bunches of last year's grapes, Roger No. 15 and No. 44, preserved in sawdust at a low temperature. The fruit showed no signs of decay nor shrivelling of the skin.

In roses Mr. Thomas Beall, of Lindsay, makes an attractive display, showing among his collection specimens of the Duke of Edinburgh, Madame Plantier, Le Rhein, Jules Margottin, (fine rose with splendid dark foliage), M. P. Wilder, Eugene Verdier, Caroline de Sansal, Coquette des Alpes Lena Turner, Cabbage, Common Moss, and a few other varieties of more or less merit for outdoor cu[illegible]. Taken as a whole Mr. Beall's collection deserves more than a passing notice, and your committee h[illegible] commend his efforts and success in the cultivation of this the "Queen of Flowers."

The Secretary also showed a very choice collection comprising the Paul Ne[illegible]a France, Sir Garnet Wolesley, M. P Wilder, Madame Plantier, Gabriel Tournier, Anna de Diesbach, and Alfred Colomb, all desirable roses, and a number of other varieties of lesser merit.

A few specimens of unnamed roses were also shown by Mr. Gowanlock of Seaforth.

T. H. RACE,
A. H. PETTIT, } Committee.

Seaforth, Ontario.

ALEXANDER McD. ALLAN,

President 1885-1889.

APPENDIX.

ADDITIONAL PAPERS.

FRUIT GROWING IN THE NIAGARA DISTRICT.

The following paper was read at the Lincoln farmers' institute gathering, held at Smithville on January 9th and 10th, 1889, by Mr. A. M. Smith of St. Catharines:

The most of us recollect the time when fruit growing for profit, or as a staple crop, was confined to a few localities and individuals, the general farmer taking no interest in it. But now, in many sections of our country, it is becoming one of the leading industries, and instead of importing a large amount of fruit to supply our home market, they are well supplied with fruit of our own growing. Besides this, we annually export half a million dollars' worth of fruits to other countries, and the production and demand, too, is constantly increasing. The quality of our fruit, particularly apples, is second to none in the world, and the increased facilities for transportation, together with the improved methods of preserving fruits for shipments long distances, such as canning and evaporating, is opening up markets hitherto unaccessible to us. The settling up of our vast territories where fruit can not be grown successfully, and which will demand our supplies, all indicate that this industry is but in its infancy; that it is one which demands our attention, and that the discussion of subjects connected with fruit growing at meetings of this kind should interest every farmer, whether he be a fruit grower or not. About thirty years ago, when I first began the fruit and nursery business at Grimsby, fruit growing for profit was scarcely thought of. Such a thing as shipping fruit, even to our own towns and cities, except in the shape of sun and kitchen-tanned dried apples, was entirely unknown. When I planted 5,000 or 6,000 young trees in my first nursery the old farmers shook their heads and said, "The boy must be crazy, what in the world will he do with them all? We don't want them here—we have already more fruit than we can use." But a few of their more hopeful sons thought there might be something in fruit growing, and they planted out young orchards and some small fruits, and grafted up some of the old trees, and what has been the result? We got the express company to establish an office there and commenced shipping small fruits and peaches to our own towns and cities, which had hitherto been supplied with these luxuries from the States; we induced buyers to come from the States to buy our apples, which they soon found were superior to their own; we began sending some to the Old Country, and in a few years Grimsby township alone was sending away $30,000 to $40,000 worth of fruit annually, and Grimsby became famous as a fruit-growing section, and the business has now spread nearly all over the Niagara district. But I was to say something about "Failures in fruit-growing among farmers; their cause and remedy." You know that men in some respects are a good deal like a flock of sheep; if one of the flock jumps over the fence into the clover, the rest will follow pell-mell without regard to consequences. If one man happens to make a lucky hit, or falls into a good thing to make money, his neighbors are pretty sure to follow, whether they know anything about the business or not, and consequently it is overdone, or those who don't know anything about the business "get left." This has been especially true of fruit-growing, and has been the cause of a good many failures. Not that the business has been overdone, except perhaps in a few lines and instances, but because so many have gone into it that know little or nothing about the business. I stated before, and you know the fact, that Grimsby and the Niagara district have become famous

for fruit-growing. Men in other parts of the country and in some of our cities have heard that farmers have got rich off of a few acres of land in a few years, and they have fondly imagined that if they could jump into Grimsby or somewhere near it, they could soon fill their pockets and retire. Men have left good grain and stock farms, and others good businesses in the city, and invested in Grimsby or Niagara land, not dreaming but what all land there was fruit land, and thinking that all they had to do was to invest a few dollars in trees, dig holes in the ground and plant them, sit under the trees for a few years, and the fruit would drop into their laps and the money roll into their pockets. But many of them have had the illusion dispelled; they have found out that all of Grimsby or Niagara is not fruit land—except it might be fruitful in growing frogs, or in material for making bricks—and even where suitable land has been secured they have found out that trees will not grow by simply sticking them in the post hole and leaving them to take care of themselves. They did not understand the business, and the same is true of a good many farmers who live in fruit-growing sections and fail in growing fruit. They don't understand that the following rules or conditions must be observed in order to be successful, and this is the main cause of their failure: First, they must have soil and climate adapted to fruit-growing. Second, they must have varieties of fruit adapted to that particular soil and location. And then the trees planted should be carefully planted, cultivated, pruned, protected and fed. To illustrate: I have seen farmers who have decided to go into the fruit-growing, select the poorest field they had on the farm for the purpose, because it was more convenient to the house, or because they wanted others for pasture, for growing roots, or for some other purpose. And these same men generally consult some travelling tree agent in regard to what varieties they shall plant, or select from the stock of pictures which he carries, instead of consulting some reliable horticultnral work, or some man who is posted and knows what will succeed in that particular locality. These men invariably get the varieties that the agent wants to get rid of, or that he can make the most money out of, whether they are adapted to the locality or not, and they are not over particular in planting out their trees. Instead of digging holes large enough to straighten out all the roots and fibres, and then carefully filling in and preparing the earth around them, or, if it is dry, throwing in a pail of water to settle the soil about them, they dig a small hole, crowd in the roots, throw on a little dirt, and if they die blame the nurseryman or the weather for it. Their after-culture is sometimes a crop of grain sown around them, and sometimes they are left in sod, instead of being hoed and cultivated as they should be. As for the pruning and trimming they get—well, that is generally left to the animals on the farm, and it is done by horse or cattle power until there is little left of the struggling tree. Is it any wonder they fail? But you say, perhaps, that careful cultivators sometimes fail—even those who have complied with all the requirements I have mentioned. Granted, and so do careful cultivators of grain and other products sometimes fail from causes beyond their control, but as a general thing where you find failures, there has been one or more of the rules mentioned violated. I have seen, and had in my experience, good selections of soil and varieties made in grape vines and small fruits, and had them carefully planted, cultivated and trained, and they did splendid the first season, but they were all destroyed the first and second winters after planting for want of proper protection or covering to the roots; and I believe that this is the cause of more failures in the growing of small fruits and grapes, and even peaches, quinces and some varieties of plums, pears and apples, than we are aware of. Take some of the winters we have had in this section during the past five or six years! When

there has been very little snow, and what there was blown away from the fields by the wind, and not much moisture in the ground to counteract the effects of the frost, and the thermometer 10 to 16 degrees below zero, and the ground frozen three to four feet deep, is it any wonder that the tender roots are injured or killed? I have seen the roots of blackberries and grapes, quinces, and young walnut trees even, killed by the frost, while their tops were apparently uninjured. I have even taken cuttings from these same grape vines and propagated them, thus showing conclusively that the tops were sound; and I have seen vines and trees throw out leaves in the spring, and then die and wither away, and on examining the roots found them dead and rotten. The remedy for this is to cover the ground around the trees and plants in winter. A slight covering of coarse manure straw, cornstalks, evergreen brush, or anything to hold the snow to keep it from blowing off, will be a protection, and where these are scarce, a crop of rye sown early in the fall among trees and vines affords an excellent covering, and it may be turned under in the spring, and will make a good fertalizer also. But the most permanent protection is a good evergreen hedge that will stop the force of the wind and keep the snow from blowing off. I have a hedge of Norway spruce on the west side of my place, and about five years ago I planted a vineyard along the east of it. The vines grew well the first summer, but the following winter was a dry, severe one, with very little snow, and the result was that three or four rows of vines beyond the protection of this hedge were every one killed by the frost, while those near it and under its protection all came out sound and have grown nicely, and never fail to produce an abundant crop. A neighbor adjoining planted a vineyard on similar soil the year following, and has given them just as good cultivation and care, all but the protection, and to-day he has not a healthy vine except a few in a low place in the field where the snow has drifted in and protected the roots. I have seen similar results even from the protection of a row of currant bushes. A few years ago I visited a young vineyard belonging to Peter Wright, in Stamford, a portion of which was almost entirely destroyed by freezing the previous winter, but the remainder had been planted with alternate rows of currants, which had broken the wind, retained the snow, and saved the young vines. I could cite similar cases amongst peach, quince and dwarf pear trees. In one instance tomatoes had been grown in a peach orchard and the vines raked off and thrown around one row of trees, and the adjoining trees had been plowed around and the ground left bare. We had one of our dry, bleak winters, with very little snow, and nearly every tree where the ground was bare was killed, and those that were protected with the tomato vines came out all right. I saw a remarkable instance this last season in an apple orchard belonging to Mr. D. Vanduzer, of Grimsby, which I can attribute to nothing but the protection of the roots. There had been a strip left for a road through his orchard alongside of a row of Baldwin apple trees, on which the grass had grown for several years, extending up to the trees; the opposite side had been cultivated, and the ground had been left comparatively bare the previous winter. On the side where the grass was, a healthy growth and a good crop of apples all along the row, while on the opposite side there was scarcely any fruit and the leaves had a sickly appearance. We all know that our fathers had no difficulty in growing any fruits they planted. I have dwelt upon this subject of protection at some length because I believe it to be of importance, and the want of it to be the cause of a large proportion of the failures in fruit-growing. I would like to say a word or two about feeding trees and plants. None of you would expect to be successful breeders or stock-growers without a judicious system of feeding your stock; nor would you expect to be successful in growing grain or any other crop without sufficiently fertilizing the soil, or giving the plants suitable

plant food. Yet farmers in the treatment of their orchards seem to forget the need of this when they crop their orchards year after year and don't give them half manure enough to feed the crops they are taking off, forgetting that the trees require the full strength of the land, and should have a double supply of nourishment instead of being robbed of what little they have. Is it any wonder that we hear of orchards failing to bear? The remedy for these kinds of failure is easily seen. Don't rob your trees of the food that belongs to them, and instead of carrying it away in hay, grain and other crops, give them an extra supply in the shape of barnyard manure, unbleached wood ashes, bone dust and other fertilizers.

CO-OPERATION BETWEEN THE FRUIT GROWERS' ASSOCIATION OF ONTARIO AND THE FARMERS' INSTITUTES.

The following paper was read by the secretary of the Fruit Grower's Association of Ontario, at the Central Farmers' Institute, Toronto, February, 1889:—

For some time past I have been advocating closer sympathy and co-operation between the different branches of work which come under the care of the Department of Agriculture, and now that we have a Minister of Agriculture who takes a deep interest in furthering every movement which fosters the prosperity of our Canadian farmers, what may we not hope for in the near future? Nothing I am sure, short of the elevation of the farmer to a position of affluence and respectability, equal to and perhaps surpassing that of those who are engaged in the so called learned professions.

One of the grandest movements of the day for accomplishing this end is the establishment of farmers' institutes for the education of farmers in scientific agriculture. The Agricultural College is doing a grand work for the young men of Ontario, but to diffuse education still more widely we must carry it to the very doors of the farmers, and meet them where they will feel free to question what is said if it is not in accord with their own experience. And this is exactly the work of the farmers' institutes.

The Fruit Growers' Association of Ontario has been trying to accomplish the same end, but, of course, limiting its attention to the cultivation of the garden and orchard, and the care of wood lots. For thirty years we have been meeting two or three times a year in the various parts of Ontario collecting and disseminating useful information on these subjects, and I claim that in that time we have stored up in our annual reports, and in the pages of our useful journal *The Canadian Horticulturist*, a vast amount of most useful information, just such as every farmer should be in possession of. Yet although we have grown in numbers from a membership of about a dozen to over two thousand in number, still our two or three meetings each year, are wholly inadequate for the rapid diffusion of that knowledge among those who are not members of our Association, and who consequently do not receive our report.

I am aware that many persons will argue that the farmer should devote himself entirely to one line of agriculture, and to that only. I grant that such a plan might tend to bring about the highest state of perfection in the agricultural profession, yet mixed farming will often be found the most expedient; giving

returns from one department when others fail. I claim that in very many cases farmers are so situated that it would pay them, from a purely commercial point of view, to take up some one line or other of fruit culture. Personally I would prefer that all farmers would wholly avoid this line of industry, and leave it wholly to those who, like myself, have devoted their whole farms to fruit culture, and make a specialty of it only. No doubt that, on the whole, such a division of labor is most advantageous; farm crops and fruit crops often come in conflict and one or the other must suffer neglect, Nevertheless, a farmer may be situated near a good market for fruit products, or he may have ground so well adapted for garden crops, that an acre devoted to small fruits, vineyard or orchard, may net him more ready cash than twice or thrice that amount of land in an ordinary field crop. In such a case, all that he lacks, in order to make the most of his ground, is to have reliable information concerning the best varieties to purchase, the proper culture of the plants or trees, and the best method of handling and marketing his fruits.

Even for home uses only, I claim that every farmer should have a fruit garden of liberal extent, so planted as to give a bountiful supply of fresh fruit of various kinds, for the use of his family in every month of the year. This is no impossibility, for it is quite possible to have luscious pears on the table for dessert during nine months of every year, and small fruits in succession for at least four months of the summer, and by a proper selection of varieties to have the health-inspiring grape, fresh and plump, during eight months of the year.

Now, such particulars as these, are those to which our Association has given the closest attention and which we are endeavouring by every means at our disposal, to make public, in accordance with the object for which it was originally formed, as is set forth in article 3 of our constitution, which reads as follows:—"Its objects shall be the advancement of the science and art of fruit culture by holding meetings for the exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting arranging and disseminating useful information, and by such other means as may from time to time seem advisable."

It has been proposed that we dispose of at least one meeting of our Association proper, and that our directors, of whom there is one for each Agricultural division of Ontario, should each be prepared to attend as many meetings of farmers' institutes each year as possible, and give a paper or an address on such subject in practical fruit culture, as shall appear best suited to the locality in which the meeting is held.

These subjects treated by our best practical fruit specialists, and accompanied by the usual cross-questioning, at some fifty or sixty meetings of institutes every year, will I am sure, tend toward advancing the fruit industry of our country, an industry the importance of which may be imagined when we note that according to the last report of the Bureau of Industries, the value of the fruit exports of Canada in the year 1887, alone, amounted to the sum of nearly $1,000,000.

I may add that this plan has been experimented upon in a small way during the past year, and our directors, as far as they have gone out, have been most heartily welcomed by the farmers, who have taken a very lively interest in the subjects of their addresses.

It was moved by Mr. Clarke, seconded by Mr. Campbell, that the thanks of this meeting be tendered to the Fruit Growers' Association of Ontario for their offer of assistance in the work of the Farmers' Institute as set out in the paper of Mr. L. Woolverton, just read, and this meeting desires to express their thorough appreciation of the benefit that will accrue to the Farmers' Institutes by such assistance. The motion was carried.

SPRAYING WITH THE ARSENITES.

The following paper was read at Toronto, August 26, 1889, before the Society for the Promotion of Agricultural Science, by Professor A. J. Cook, of the Agricultural College, Michigan:—

Nine years ago, at the first meeting of this society, I presented a paper upon the use of Paris green as a specific against the codling moth.

In that paper I gave the results of careful and elaborate experiments, which settled two facts which were very important in economic entomology: First that Paris green was efficient as a preventive of the ravages of the codling larva; and secondly, that such use was entirely safe in respect to poisoning the fruit. To-day, less than a decade from the date of the discovery of this remedy, this method to combat the worst insect pest of the apple grower is generally adopted by the more intelligent orchadists of our country. Its value is now universally conceded. Easy and cheap methods to apply the insecticide are now known and generally adopted.

For several years myself and others have been experimenting, in hopes to find that this same insecticide was equally efficient to destroy the plum curculio. For six or seven years I have sprayed plum trees once and even twice with no apparent good. Test trees, close beside the trees sprayed, and that were not treated, were as free from attack as were the trees that were sprayed, and the trees treated were no more exempt from attack than the others. Thus I was convinced that this insecticide was of no value in this curculio warfare. Several of my horticultural friends, in whose ability to experiment and observe correctly I had great confidence, had tried this remedy with *very satisfactory* results. In 1888 I studied this matter very closely, and concluded that as the plum is a smooth fruit, with no calyx cup like that of the apple, in which the poison may lodge, and as the curculio lays its eggs anywhere on the smooth rind, the poison would be very easily washed off, or even blown off by the wind. I thus concluded that my want of success was very likely due to a want of thoroughness. In 1888 I sprayed certain trees three times, at intervals of eight days, and omitted to treat other trees close along side. The benefit from spraying was very marked.

I also found that carbolized plaster—one pint of crude carbolic acid to fifty pounds of plaster—was quite as efficient to repel the curculio as was the arsenites. This was also applied three times. The season was very dry, and there were few or no rains to wash off the insecticides. This year I repeated the experiments both with the London purple and with the carbolized plaster, but with no success.

All the trees were severely attacked, and all the plums lost. This year we had almost daily rains, which were frequently quite severe.

I believe I am warranted in the following conclusions: The arsenites and carbolized plaster will protect against the plum curculio if they can be kept on the tree or fruit. But in case of very frequent rains the jarring method will not only be cheaper, but much more effective. Again, as our wild fruits are more cleared away we must have plums in our orchards to protect the apples from the curculio. When apples are seriously stung they become so gnarled and deformed as to be worthless. It will pay, then, to set plum trees near by or among the apple trees. Then we will escape mischief among our apples from the curculio, and will only need to spray our apples once, to destroy the codlin moth, and can treat the plum trees three or four times with Paris green or carbolated lime in case we have only occasional showers, or can jar the trees when the rains are very frequent. For the apples we can use London purple, one pound to 200 gallons of water. For the plums we must use Paris green, one pound to two or thee hundred gallons of water. If the corbolated plaster is preferred, we use one pint of crude carbolic acid to fifty pounds of land plaster. This is thrown freely over the trees so as to strike every plum on the tree, which is being treated.

Another very important practical point has been suggested by the past season's experience with these insecticides: I refer to the danger of applying them before the blossoms fall. Bees are quite as susceptible to these poisons as are the codlin larvæ and curculio. In their good work of collecting nectar and fertilizing the blossoms, they are very certain to take the poison as well, if the trees have been sprayed. Of course there is no excuse for spraying at so early a date, as neither the curculio or codlin larvæ commence their attack till the blossoms fall. Thus for the object in mind, as well as for the safety of the bees, delay should be insisted upon. I think we as scientists and all educated men should pronounce vehemently and with one voice against spraying our fruit trees with the arsenites till the blossoms have all fallen. We should even go farther: We should secure the enactment of laws which would visit any such offence with fine and imprisonment. Such laws would prove a ready and active educator.

In the past season, many bee keepers have lost severely from the neglect of their fruit growing neighbors to observe this caution. I will only mention two cases: Mr. John G. Smith, Barry, Illinois, writes: "One of my neighbours owning an orchard of about one hundred acres of apple trees, sprayed the trees with Paris green and water just as they were in full bloom. The result is that ten or twelve bee keepers are ruined." The imago no less than the larvæ and pupæ were destroyed. Mr. J. A. Pearce, Grand Rapids, Mich., was also a heavy loser from the same cause. His bees likewise died in all stages of development.

It is well to remember and to urge that this loss is not confined to the bee keeper, for the fruit grower as well as the apiarist needs the bees and their work to insure his best success. It only requires, then, that our people know the truth, to insure against loss in this direction.

INJURY TO THE FOLIAGE.

Another practical question of no small moment in this use of the arsenites refers to injury to the foliage of the trees treated. In an elaborate series of experiments the past season, we desired to learn the effect on different trees of the different arsenites, and whether the date of treatment and atmospheric

condition had any influence. The following is a tabulated statement of the experiments:

Date.	Variety Treated.	Poison used.	Date of second application.	Time after treatment.	Weather.	Effect.
May 20..	6 plum trees...	Lon'n p'ple 1 lb to 200 gal.	June 5..	Ten days	Rain 21,23	No injury.
May 20..	2 cherry trees..	" " "	" ..	"	"	" "
May 21..	4 apple "	" " "	May 23..	"	"	" "
May 23..	5 cherry "	" 1 lb to 150 gal.	" ..	"	"	" "
June 7...	3 willow "	" 1 lb to 100 gal.	June12..	"	.....	" "
June 7...	3 elm "	" " "	" ..	"	.....	Some.
June 7...	3 h. maple"	" " "	" ..	"	.....	"
June 7...	5 apple "	" " "	" ..	"	.....	"
June 7...	5 cherry "	" " "	" ..	"	.....	None.
June 7...	5 plum "	" " "	" ..	"	.....	Some.
June 12..	3 elm "	" " "	June17..	"	.....	Much.
June 12..	3 plum "	" " "	" ..	"	.....	"
June 12..	3 apple "	" " "	" ..	"	.....	"
June 12..	3 cherry "	" " "	" ..	"	.....	None.
June 24..	3 apple "	" " "	.....	"	Rain 25th.	Very bad.
June 24..	3 peach "	" " "	.....	"	"	" "
June 24..	3 plum "	" " "	.....	"	"	" "
July 5...	5 peach "	" 1 lb to 200 gal.	.....	Five days.	.....	Great injury.
July 8...	2 peach "	" " "	.....	"	.....	" "
July 8...	1 cherry "	" " "	.....	"	.....	Slight.
July 8...	1 pear "	" " "	.....	"	.....	Some.
July 10..	1 pear "	" " "	.....	"	.....	"
July 10.	3 peach "	" " "	.....	"	.....	Very bad.
July 10..	1 plum "	" " "	.....	"	.....	Quite bad.
July 11..	2 peach "	Paris gr'n, 1 lb to 100 gal.	.....	"	.....	Slight.
July 11..	2 peach "	" " 200 gal.	.....	"	.....	None.
July 11..	2 peach "	" " 250 gal.	.....	"	.....	"
July 11..	2 peach "	" " 300 gal.	.....	"	.....	"
July 11..	2 peach "	London purple water.....	.....	"	.....	Great injury.
July 15..	3 peach "	W'te ars'ic 1 lb to 300 gal.	.....	"	.....	" "
July 15..	3 peach "	Lon'n p'ple 1 lb to 200 gal.	.....	"	.....	" "
July 15..	3 peach "	Solution analine	.....	"	.....	None.

I think we are warranted in the following conclusions: first London purple is more injurious to the foliage than is Paris green; and white arsenic—arsenious acid—is more harmful than is either London purple or Paris green. This is doubtless owing to the soluble arsenic which is quite abundant in London purple, and almost absent in Paris green. In experiment No. 29 (see table) it will be noticed that the colored water after London purple fully settles is very destructive to foliage, while analine (see experiment No. 32) is not at all harmful. This agrees with the experiments of Prof. C. P. Gillette, made in 1888, where white arsenic was found very destructive to foliage.

Secondly, peach foliage is especially susceptible to injury, and cherry foliage the least so of any of the kinds treated.

Thirdly, it would seem that London purple and white arsenic, used just before a rain, are more harmful than when used during a drought. We not only saw greater injury when a rain followed spraying within two or three days, but secured the same results by spraying, soon after treatment, with pure water. This also accords with the view that the injury comes from the presenee of soluble arsenic.

Fourthly, it would seem that spraying soon after the foliage puts out, is less harmful than when it is delayed a few days, or better a few weeks. For ten years I have sprayed both apple and plum trees in May, and for several years with London purple; and often used a mixture as strong as one pound to one hundred or even fifty gallons of water. Yet in most cases no damage was done. This year I sprayed several trees in May, using one pound to 100 gallons of water with no damage. In June and July spraying the same trees with a mixture only one-half as strong did no slight injury This fact, if fact it be, accounts for the few reports of injury in the past, even with a stronger mixture, and the freqeunt reports of damage within a year or two, even with a dilute mixture. Then the spraying was confined to May; now it reaches to June, or even to July.

Fifthly, London purple may be used on apple, plum, cherry, pear, and most ornamental trees, but on these should never be stronger than one pound to two hundred gallons of water, If the application is to be repeated, as it must be for the curculio, to prove effective, or if it is to be used in June or July, Paris green should be used, in the same proportion as above, or else we should use only one pound of London purple to three hundred gallons of water. I now think that this necessity is more due to time of application than to the fact of increased quantity of the poison.

Sixthly, if the arsenites are to be used on the peach, to defend against the curculio, Paris green only should be used, and that not stronger than one pound to three hundred gallons of water. With the peach the poison is not only absorbed, coloring the tissue purple or brown, but even the petiole or stem of the leaf is weakened, and the leaf falls. Thus in several cases where we used London purple one pound to two hundred gallons of water, or white arsenic, the peach leaves all fell off. White arsenic colors the tissue the same as does the London purple, showing once more that it is the soluble arsenic, not analine, that does the mischief.

Seventhly, the injury done to the foliage is never immediately apparent. It usually shows somewhat the second day, but the full injury is frequently not manifest till the fifth day, and often not till the tenth.

POISONING THE PASTURE UNDER THE TREES.

Another important practical question which I have tried to settle this season—1889—concerns the danger of pasturing under trees which have been sprayed with the arsenites.

A gentleman wishing to spray his orchard, in which he was pasturing seventy-five hogs, consulted me as to the wisdom of doing so without first removing the swine. I told him I believed there was no danger. I said use a mixture, one pound of London purple to two hundred gallons of water, watch your hogs closely and if any seem affected remove all at once, and I will be responsible to the amount of twenty-five dollars. The gentleman did so and reports no damage.

In the following experiments I used the mixture of twice the strength which should be used, that the experiment might be the more convincing. I used one pound to one hundred gallons of water. In every case the spraying was very thoroughly done. Care was taken that every twig and leaf should be drenched.

In tree No. 1 a thick paper was placed under one-half of a rather small apple tree. The space covered was six by twelve feet, or seventy-two square feet. The paper was left till all dripping ceased. As the day was quite windy the dripping was rather excessive. In this case every particle of the poison that fell from the tree was caught on the paper. Dr. R. C. Kedzie analyzed the poison and found four-tenths (.4) of a grain. Tree No. 2 was a large tree with very thick foliage. Underneath this tree was a thick carpet of clover, blue grass and timothy just in bloom. The space covered by the tree was fully sixteen feet square, or equal to two hundred and fifty-six square feet. As soon as all dripping had ceased, the grass under the tree was all cut, very gently and very close to the ground. This was taken to the chemical laboratory and analyzed by Dr. R. C. Kedzie. There was found 2.2 grains of arsenic. Now as our authorities say that one grain is poisonous for a dog, two for a man, ten for a cow, and twenty for a horse, there would seem to be small danger from pasturing our orchards during and immediately after spraying, especially as no animal would eat the sprayed grass exclusively. To test this fully, I sprayed a large tree over some bright tender grass and clover. I then cut the clover carefully, close to the ground and fed it all to my horse. It was all eaten up in an hour or two, and the horse showed no signs of any injury. This mixture, remember, was of double the proper strength, was applied very thoroughly, and all the grass fed to and eaten by the horse. This experiment was repeated with the same result. I next secured three sheep. These were kept till hungry, then put into a pen about a tree under which was rich juicy June grass and clover. The sheep soon ate the grass, yet showed no signs of any injury. This experiment was repeated twice with the same result. It seems to me that these experiments are crucial and settle the matter fully. The analyses show that there is no danger, the experiments confirm the conclusion.

Thus we have it demonstrated that the arsenites are effective against the codling moth, that in their use there is no danger of poisoning the fruit, and when used properly no danger to the foliage, nor to stock that may be pastured in the orchard.

FORESTRY.

The following paper was written by Dr. J. W. Beall, Prof. of Botany and Forestry, Michigan Agricultural College.

Why not Plant a Grove?

These few pages on forestry have not been written to secure the applause of those who see little use for a bulletin unless it contain some new truth brought out by conducting careful experiments. On the contrary, they have been prepared with the view to help awaken an interest in the subject by calling attention to a few simple facts in the plainest way possible, and then to give some elementary hints on the selecting, planting and management of young forest trees in groves and screens.

Of the three greatest interests of our country, manufacturing of all kinds ranks first, agriculture second and forestry third.

"The evidence is ample and conclusive that we are making fearful inroads on our forest stores. We are cutting off a much larger crop than can possibly be replaced by natural growth within the period when at the present rate, we shall have cleared the original forest off the ground. We are wasting our forests by the axe, by fire, by pasturage, by neglect. So far as timber is concerned, we are eating into our capital with little care for the future."—Dr. E. J. James in Forestry Bulletin No. 2 of U. S. Agrl. Dept.

We legislate to protect birds and wild game, and appropriate money to encourage a large number of worthy objects, but for "our forests, from which we are drawing a larger amount in natural wealth than from any other source of supply, or from all other sources together, we have so far done practically nothing to protect or cultivate.—Dr. E. J. James.

If something profitably cannot be done in connection with this great subject of forestry, then it is very unlike any other question of great importance.

We feel confident that there are many important points in connection with forestry which should constantly receive a good deal of thought from many of our best citizens.

The writer is now supposed to be passing one of the thousands of good farm houses situated in any of the older settled counties of the State, when the following conversation ensues:

B. "I see the snow drifts have not yet all disappeared."

C. "No, and we haven't had much snow this winter either, and there has been less strong wind than for some years past. Generally, of late years, when there is a heavy fall of snow it is soon so unevenly distributed that we have little idea of how much has fallen. It piles up along the north and south roads, and blows from some parts of the east and west roads. The wheat field has many bare spots, while in other places the drifts are deep."

B. "What do you suppose has brought about this change?"

C. "Since I cut off that piece of timber down there and brought to view the farms over west for a couple of miles, the wind has frequently swept over my fields with a great deal of force, sometimes making things fairly jingle, and when cold the air seems to penetrate the smallest cracks in my pens, sheds and barns. The pigs squeal, the cows give less milk, the horses shiver and even the hen-coop is too freely ventilated. I believe the animals at such times eat more grain and fodder than they do when there is less cold air in motion. The house, too, gets colder in the night than it used to when there were few strong winds. I am sure I have to lay in a larger supply of firewood than I used to."

B. "You seem to take in the whole situation at a glance."

C. "I have seen many changes in my life. When I came to this neighborhood much of the land was still covered with a dense virgin forest. As one block of woods after another disappeared, I noticed the winds became more frequent and penetrating, but what could I do? and what could my neighbors do? We needed the land to raise more wheat and to feed more stock, and we got something for the timber which helped to pay off mortgages."

B. "There is a partial remedy for checking the fierce winds which drift the snows in winter, shake the apples from the trees in summer and lodge the grain before it is ripe."

C. "Yes, I know it. We can let the young trees grow up along the fences of our fields, and we can plant trees west of our farm buildings; but then it would be a great deal of trouble and cost a good deal to plant trees, and we should have to wait so long for any favorable results."

B. "The cost is much less than most persons imagine, and when once started they keep growing year by year, and before you are aware of it, the little trees have grown upwards and spread outwards. Suppose you were to plow a strip a rod wide and ten or fifteen rods long, either in a straight line, in a curve or in an irregular shape. That would not cost much. Then harrow it well as though you were fitting the piece for corn."

C. "Then I should have to go to the woods and find some good trees, dig them, cart them to the house, dig deep holes, set the trees, stake them, mulch them, wait a while, see half of them die and the others would look pale and stunted."

B. "I think you could do better than that. Of course you must arrange the fence so as to keep cattle, sheep and horses away from young trees. Let us see about a plan for a wind-break or for a small grove. You can put in as many kinds of trees as you like, the more the better, if you want to try experiments and think you would like to study them and learn their habits, but if you want trees that will grow fast, that are likely to remain healthy and furnish protection, you need only one, two or three species which are best adapted for the purpose. We can't afford to go to the woods and dig trees. We can buy them cheaper."

C. "Buy them! Why, a nurseryman will charge me twenty-five to fifty cents apiece for his evergreens. I can't afford that."

B. "Procure small trees; they will cost much less; they can be more easily planted; will be more likely to live and after a few years they will very likely catch up and overtake trees which were larger at the time of planting. The foundation of your screen will consist of evergreens. If others are added which are not evergreens, they should not be put in blocks each sort by itself, but mixed more or less in checker-board style with the evergreens. And the evergreens may as well be mixed if no others are planted. You will want to set them in rows, straight, curved or crooked in one way four feet apart, and three or four feet apart in the row, so they can be as easily cultivated one way as corn and potatoes. There is little risk in setting too thickly, and the trees will sooner shade the ground.

"R. Douglas & Son, Waukegan, Illinois, will send by mail:

"White pines, 3 years old, @ $1.00 per 100, or $8 per 1,000.

"Norway spruces, 3 years old, @ 75 per 100, or $6 per 1,000.

"At about the same price, you can procure any or all of the following: European larch, white ash, American elm, black cherry, black locust and many others, remembering that for good screens half or more of the trees should be evergreens rather equally distributed over the ground. W. W. Johnson, Snowflake, Antrim Co., Michigan, will doubtless send young trees at the above prices. A single row or two rows will make a good screen, but you will be better pleased with a wider strip of trees."

C. "I will send a postal card right away and get the price lists from those two men. It won't cost much to start a screen in that way. Tell me more about setting the trees, as you seem to know concerning such things."

B. "The trees arrive about the time you are sowing oats. Open the packages, and place the roots in damp soil in the shade, not forgetting that the roots of trees are unfitted by nature to stand the air. In the wind or the sun or in dry air, or in the open air, roots will live just about as long as a black bass will live out of water; not much longer. Prepare some thin mud in a pail filling it a third full. In this mud place the roots of the trees one sort at a time. Of course you have staked or marked out your ground. Dig a small hole with a spade and let the boy drop a tree in the hole; straighten it up; replace the soil, not omitting to step your full weight with one foot each side and near each tree before leaving it. This is important, as it packs the soil close to the roots, helping it to retain moisture, and preventing the air from entering. One after the other, all the kinds are planted."

C. "Then what?"

B. "If you are now careless and lose all your interest in the subject, and keep busy at something else, you will very likely leave the young things to look out for themselves. The grass and weeds will choke them, and your little enterprise will cause deep regret, every time you think of it and prove the laughing stock of all your neighbors."

C. "I am not that kind of a farmer, to drop a thing before I give it a fair trial."

B. "Then you will cultivate this land as you do your best cornfield, with level culture, only continue to cultivate all summer."

C. "What shall I do next?"

B. "Keep on cultivating during succeeding years, as long as a horse can get through the rows, perhaps four or five years or more, then the trees will not need it any longer. From time to time you will very likely pick up some other kinds of very small trees, or shrubs from the neighboring woods, and set them in among the others in the grove. If the cultivation is attended to, and the land is not too wet, you will be surprised at the rapid growth of the trees."

C. "Why can't I mulch the ground all over with straw from the old stack and save all further trouble?"

B. "It is not a good plan, and if you try it you will be disappointed. Cultivation is much better, and with the trees near the house, it is but a light chore to cultivate each time. If black walnuts, chestnuts, butternuts, hickories and oaks are desired in any places, plant the nuts where the trees are to remain."

C. "Thank you. I feel sure now that I understand the plan. It is so much cheaper and easier than I had supposed, that I am going to plant a grove, even a small one started this year will be much better than a larger one long delayed and perhaps never planted."

B. "In older States like Massachusetts farms already bring a better price if they contain some suitable groves or lots of young thrifty timber. As the grove improves with age, you will be reading every good thing you can get on forestry. You will take a deeper interest in the work of the State Forestry commission. You will want to see their last report and all that may be issued in the future. You will have a good right to consider yourself as one of Michigan's most enterprising farmers. You will be planting for study as well as for producing a grove to shield animals or growing crops from the severe winds. You will be an experimenter, a pioneer in a good cause, and the longer you live the more will you see the importance of a knowledge of forestry."

"What is the custom in this neighborhood in regard to pasturing woodlots?"

C. "Every one turns in his cattle, sheep, horses and hogs or one or more kinds of these animals. It affords some feed, and cleans out lots of rubbish and makes the woods look like a park."

B. "Yes, and it lets in the light, and with the light grasses will slowly creep in, affording more pasture, to be sure, but this will check the growth of larger trees and small trees are not allowed to follow on to take their places. The man who has much interest in the future of his reserve timber lot will not use it for a pasture."

Reader, if not already done, will you not plant a grove this year, or do something to induce some of your friends to plant one? The writer will be glad to give any further instructions in his power on this subject, and would consider it a favor to receive a postal card from any who contemplate a grove.

March 20, 1889.

STATUTORY PROVISIONS.

It is provided by the Agriculture and Arts Act, 49 Victoria, chap. 11 (1886), that the Fruit Growers' Association should be a body corporate, comprising not less than fifty members, each paying an annual subscription fee of not less than $1; that it shall hold an annual meeting at such time and place as may be determined upon; that the retiring officers shall at such meeting present a full report of their proceedings; and of the proceedings of the Association, and a detailed statement of its receipts and expenditure for the previous year, duly audited by the Auditors; that the Association shall at such meeting elect a President, a Vice-President, and one Director from each of the Agricultural Divisions of the Province (mentioned in Schedule A following), and the officers and Directors so elected shall appoint from among themselves, or otherwise, a Secretary and a Treasurer, or a Secretary-Treasurer; and that the Association shall also elect two Auditors.

Vacancies occurring through death, resignation, or otherwise in the directorate of the Fruit Growers Association, shall be filled by the Board of Directors.

The officers shall have full power to act for and on behalf of the Association, and all grants of money and other funds of the Association shall be received and expended under their direction, subject nevertheless to the by-laws and regulations of the Association.

A copy of the Annual Report of its proceedings, a statement of receipts and expenditure, a list of the officers elected, and also such general information on matters of special interest as the Association have been able to obtain, shall be sent to the Commissioner of Agriculture within forty days after the holding of such annual meeting.

SCHEDULE A.—AGRICULTURAL DIVISIONS.

1. Stormont, Dundas, Glengarry, Prescott and Cornwall.
2. Lanark North, Lanark South, Renfrew North, Renfrew South, Carleton, Russell and the City of Ottawa.
3. Frontenac, City of Kingston, Leeds and Grenville North, Leeds South, Grenville South and Brockville.
4. Hastings East, Hastings North, Hastings West, Addington, Lennox and Prince Edward.
5. Durham East, Durham West, Northumberland East, Northumberland West, Peterborough East, Peterborough West, Victoria North (including Haliburton), and Victoria South.
6. York East, York North, York West, Ontario North, Ontario South, Peel, Cardwell and City of Toronto.
7. Wellington Centre, Wellington South, Wellington West, Waterloo North, Waterloo South, Wentworth North, Wentworth South, Dufferin, Halton and City of Hamilton.
8. Lincoln, Niagara, Welland, Haldimand and Monck.
9. Elgin East, Elgin West, Brant North, Brant South, Oxford North, Oxford South, Norfolk North and Norfolk South.
10. Huron East, Huron South, Huron West, Bruce Centre, Bruce North, Bruce South, Grey East, Grey North and Grey South.
11. Perth North, Perth South, Middlesex East, Middlesex North, Middlesex West and City of London.
12. Essex North, Essex South, Kent East, Kent West, Lambton East and Lambton West.
13. Algoma East, Algoma West, Simcoe East, Simcoe South, Simcoe West, Muskoka and Parry Sound.

CONSTITUTION OF THE ASSOCIATION.

Art. I.—This Association shall be called "The Fruit Growers' Association of Ontario."

Art. II.—Its objects shall be the advancement of the science and art of fruit culture by holding meetings for the Exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem advisable.

Art. III.—The annual meeting of the Association shall be held at such time and place as shall be designated by the Association.

Art. IV.—The officers of the Association shall be composed of a President, Vice-President, a Secretary, or Secretary-Treasurer, and thirteen Directors.

Art. V.—Any person may become a member by an annual payment of one dollar, and a payment of ten dollars shall constitute a member for life.

Art. VI.—This Constitution may be amended by a vote of a majority of the members present at and regular meeting, notice of the proposed amendments having been given at the previous meeting.

Art. VII.—The said Officers and Directors shall prepare and present to the annual meeting of the Association a report of their proceedings during the year, in which shall be stated the names of all the members of the Association, the places of meeting during the year, and such information as the Association shall have been able to obtain on the subject of fruit culture in the Province during the year. There shall also be presented at the said annual meeting a detailed statement of the receipts and disbursements of the Association during the year, which report and statement shall be entered in the journal and signed by the President as being a correct copy; and a true copy thereof, certified by the Secretary for the time being, shall be sent to the Commissioner of Agriculture within forty days after the holding of such annual meeting.

Art. VIII.—The Association shall have power to make, alter and amend By-laws for prescribing the mode of admission of new members, the election of officers, and otherwise regulating the administration of its affairs and property.

BY-LAWS.

1. The President, Vice-President and Secretary-Treasurer shall be *ex-officio* members of all committees.

2. The directors may offer premiums to any person originating or introducing any new fruit adapted to the climate of the Province which shall possess such distinctive excellence as shall, in their opinion, render the same of special value; also for essays upon such subjects connected with fruit-growing as they may designate, under such rules and regulations as they may prescribe.

3. The Secretary shall prepare an annual report containing the minutes of the proceedings of meetings during the year; a detailed statement of receipts and expenditure; the reports upon fruits received from different localities; and all essays to which prizes have been awarded, and such other information in regard to fruit culture as may have been received during the year, and submit the same to the Directors or any Committee of Directors appointed for this purpose, and, with their sanction, after presenting the same at the annual meeting, cause the same to be printed by and through the Publication Committee, and send a copy thereof to each member of the Association and to the Commissioner of Agriculture.

4. Seven Directors shall constitute a quorum, and if at any meeting of Directors there shall not be a quorum, the members present may adjourn the meeting from time to time until a quorum shall be obtained.

5. The annual subscription shall be due in advance at the annual meeting.

6. The President (or in case of his disability, the Vice-President) may convene special meetings at such times and places as he may deem advisable, and he shall convene such special meetings as shall be requested in writing by five members.

7. The President may deliver an address on some subject relating to the objects of the Association.

8. The Treasurer shall receive all moneys belonging to the Association, keep a correct account thereof and submit the same to the Directors at any legal meeting of such Directors, five days' notice having been previously given for that purpose.

9. The Directors shall audit and pass all accounts, which, when approved of by the President's signature, shall be submitted to and paid by the Treasurer.

10. It shall be the duty of the Secretary to keep a correct record of the proceedings of the Association, conduct the correspondence, give not less than ten days' notice of all meetings to the members, and specify the business of special meetings.

11. The Directors, touching the conduct of the Association, shall at all times have absolute power and control of the funds and property of the Association, subject however to the meaning and construction of the Constitution.

12. At special meetings no business shall be transacted except that stated in the Secretary's circular.

13. The order of business shall be: (1) Reading of the minutes; (2) Reading of the Directors' Report; (3) Reading of the Treasurer's Report; (4) Reading of prize essays; (5) President's Address; (6) Election of officers, and (7) Miscellaneous business.

14. These By-laws may be amended at any general meeting by a vote of two-thirds of the members present.

15. Each member of the Fruit Committee shall be charged with the duty of accumulating information touching the state of the fruit crop, the introduction of new varieties, the market value of fruits in his particular section of the country, together with such other general and useful information touching fruit interests as may be desirable, and report in writing to the Secretary of the Association on or before the fifteenth day of September in each year.

The President, Vice-President and Secretary shall be *ex-officio* members of the Board of Directors and of all Committees. The reasonable and necessary expenses of Directors and officers in attending meetings of the Board of Directors and of Committees shall be provided from the funds of the Association.

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* For discussion on this paper see page 71.

ILLUSTRATIONS.