



REPORT
—OF THE—
FRUIT GROWERS' ASSOCIATION
OF ONTARIO.
—
1888.

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TWENTIETH ANNUAL REPORT
OF THE
FRUIT GROWERS' ASSOCIATION
OF ONTARIO.

1888.

Printed by Order of the Legislative Assembly.



Toronto :
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1889.



A. McD. ALLAN, GODERICH,
President of the Fruit Growers' Association of Ontario.

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Annapolis
Agapanthus
Agawam .
Agriculture
Allan, A. M.
Alexander
Amber Queen
Annual Address
Annual Meeting
Appendix .
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TWENTIETH ANNUAL REPORT
OF THE
FRUIT GROWERS' ASSOCIATION
OF ONTARIO, 1888.

To the Hon. Charles Drury, Minister of Agriculture :

SIR,—I have the honor of submitting to you the Twentieth Annual Report of the Fruit Growers' Association of Ontario, a volume containing a full account of the meetings held during the past year, and carefully revised copies of all valuable papers contributed.

During the past year the Association has met at the city of Ottawa and at the town of Picton, and has had the effect at these places of increasing the public interest in the production of the best varieties of fruit. The discussions have been carefully taken down, and everything irrelevant struck out, so that I believe this Report of our work will meet with your approval.

It has been decided by our Directors to unite the Annual and the Winter Meetings of our Association, thus increasing the importance of our winter gathering, and at the same time husbanding our resources for other purposes.

An effort has been made during the past year to improve *The Canadian Horticulturist*, and to make it more efficient, and this effort seems to be much appreciated by our membership. Should the funds at our disposal permit, it is the intention to enlarge the journal for the year 1889 to thirty-two pages, as its present size is too small for the increasing number of contributions sent in for its columns.

I am, Sir,

Your obedient servant,

L. WOOLVERTON,
Secretary.

OFFICERS FOR 1889.

PRESIDENT :

Alexander McD. Allan Goderich.

VICE-PRESIDENT :

Andrew M. Smith..... St Catharines.

SECRETARY-TREASURER AND EDITOR :

Linus Woolverton, M.A. Grimsby.

DIRECTORS :

Agricultural Division No. 1.....	John Croil, Aultsville.
Agricultural Division No. 2.....	P. E. Bucke, Ottawa.
Agricultural Division No. 3.....	Rev. Geo. Bell, LL.D., Kingston.
Agricultural Division No. 4.....	P. C. Dempsey, Trenton.
Agricultural Division No. 5.....	Thos. Beall, Lindsay.
Agricultural Division No. 6.....	W. E. Wellington, Toronto.
Agricultural Division No. 7.....	M. Pettit, Winona.
Agricultural Division No. 8.....	A. H. Pettit, Grimsby.
Agricultural Division No. 9.....	J. K. McMichael, Waterford.
Agricultural Division No. 10.....	J. A. Morton, Wingham.
Agricultural Division No. 11.....	J. M. Denton, London.
Agricultural Division No. 12.....	Judge McKenzie, Sarnia.
Agricultural Division No. 13.....	G. Caston, Craighurst.

AUDITORS :

James Goldie..... Guelph.
Nicholas Awrey, M.P.P..... Binbrook.

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THE ANNUAL MEETING.

The annual meeting of the Fruit Growers' Association of Ontario, was held in the Court House, Hamilton, on Tuesday, the 19th day of February, 1889, at 8 o'clock p.m.

The President, Mr. A. McD. Allan, of Goderich, occupied the chair.

The minutes of the last annual meeting, as appearing in the Annual Report, were taken as read.

The Treasurer's report, duly audited by Messrs. Charles Drury and James Goldie, was read by the Secretary-Treasurer.

This report was received and adopted.

The reading of the President's address being in order, it was moved by Mr. W. E. Wellington, seconded by Mr. W. Holton, and resolved that it be deferred until Wednesday morning at 10 o'clock.

His Worship the Mayor, Mr. Wm. Doran, having arrived, made an address of welcome, in which he said that as head of the corporation of the city of Hamilton, he had much pleasure in welcoming so important an organization as that of the Fruit Growers' Association of Ontario. He regretted that the city had not at present a hall of sufficient size to accommodate such a large and important meeting as this, but a new city hall was in process of erection which would be a credit to the city, and he was sure it would be at any time at the disposal of the Association. During the thirty years of its history, since its first organization in this city in 1859, the Association had conferred great and lasting benefit upon the country at large. He could remember when, in the Niagara district for instance, very little interest was taken in fruit culture, but now, through the work of this body, that district had become famous as a fruit garden.

The President replied as follows:—Mr. Mayor: It is my pleasant duty to thank you for your very kind remarks of welcome. We have frequently met in this city, and some of the most successful of our meetings have been held here. That old hall, upon the site of which you are now erecting a new and elegant edifice, was almost sacred to some of us. It was there that the pioneers of this Association often met. There, I believe, was held one of the last meetings at which the late Charles Arnold met with us, one of those pioneer members. We are glad to hear such remarks from one in your position. We are pleased that the leading men in our country are taking an interest in horticulture as well as in agriculture.

A Committee on Nominations was appointed as follows: Messrs. M. Pettit, A. Alexander, and Robert Walker, by the Association, and Messrs. J. M. Denton and Thos. Beall by the chair. This committee submitted their report, which was received, and after the names had been voted upon *seriatim*, was adopted.

The report was as follows:—

President.—A. McD. Allan.

Vice-President.—A. M. Smith.

Directors.—Messrs. John Croil, P. E. Bucke, Rev. Geo. Bell, P. C. Dempsey, Thos. Beall, W. E. Wellington, M. Pettit, A. H. Pettit, J. K. McMichael, J. A. Morton, J. M. Denton, Judge McKenzie and G. Caston.

Auditors.—Messrs. James Goldie, and Nicholas Awrey, M.P.P.

A Fruit Committee was appointed by the chair, consisting of Messrs. W. E. Wellington, T. H. Race, and A. Alexander.

At a meeting of the Board of Directors, held subsequent to the election, L. Woolverton, of Grimsby, was appointed Secretary-Treasurer of the Association, and Editor of the *Canadian Horticulturist*.

TREASURER'S REPORT FOR THE YEAR 1887-8.

RECEIPTS.		EXPENDITURE.	
	\$ c.		\$ c.
Balance on hand last audit.....	499 44	Plant distribution	325 95
Members' fees	1,953 50	Directors' expenses	427 70
Advertisements	137 73	Express and duty	142 22
Back numbers and bound volumes	31 11	Chromo lithographs.....	337 60
Discount on plants, etc.....	7 50	Printing and stationery.....	83 71
Government grant.....	1,800 00	Audit, 1887-8.....	10 00
		Postage and telegrams.....	82 67
		Case for medals.....	6 00
		Small items	1 34
		Electrotypes	45 45
		Commissions	95 53
		Caretaking of rooms for meetings	6 00
		<i>Canadian Horticulturist</i> (including balance to Copp, Clark & Co.....	1,422 92
		Stenographer.....	176 15
		Salary secretary-treasurer and editor..	600 00
		Exchanges	1 00
		Balance on hand, Sept. 1st, 1888.....	665 04
Total receipts	4,429 28		4,429 28

We, the undersigned Auditors, have duly examined the accounts of the Treasurer of the Fruit Growers' Association of Ontario, and certify them to be correct, showing a balance of \$665.04 in the bank to the credit of the Association.

CHARLES DRURY, } Auditors.
JAS. GOLDIE, }

TORONTO, December 23rd, 1888.

 THE PRESIDENT'S ANNUAL ADDRESS.

The President, Alex. McD. Allan, Esq., of Goderich, delivered the following address at the annual meeting :

To the Members of the Fruit Growers' Association of Ontario :

The past season has been eventful to the fruit grower, and while we may offer congratulations upon the generally large crop, we are reminded that other elements are necessary to ensure profit. Probably we have never had a season in this province that shippers of apples lost so much money in as the past, and while doubtless the large crops of other countries contributed to the bringing down of prices in those markets where ours were disposed of, it is clear from the general returns of sales that the low prices are, to some extent, to be accounted for in other ways. Buyers too often aim at handling large lots rapidly, and hence we find often two or three brands of fruit in each barrel. If half or one-quarter the quantity had been handled by such buyers there would have been proper selection, evenness of brands, better packing and a remunerative sale. Competition is healthy and good in any business, but those who compete as purchasers of our fruit crop for export should first of all be sure that they understand their business. They must know when, where and how to buy, and especially what to buy. If the buyer does not know what the market he intends shipping to demands, how can he reasonably expect to supply customers there profitably? Those who made money the past season only handled the best selection of a few varieties; they also exercised care in having the fruit picked in proper season, and the packing was done by well recognised rule. To me it seems clearer than ever that buyers in order to succeed and at the same time do entire justice to growers must adopt a different system. They must buy only such varieties as they find will carry properly and suit the markets they deal with, and they must pay for the fruit, not so much per barrel for all fall varieties, and so much more for all winter varieties, but the value of *each variety* should be paid to the grower, and then only in accordance with the quality of the fruit, which can be judged by the labor and care expended by the grower in producing the crop.

The grower who has not cultivated, manured, trimmed his trees, kept his wood clean and healthy, and where necessary, thinned out the fruit, should not expect the same return from his orchard as the grower who has attended to these matters. Growers are still cultivating too many varieties. Exhibitions are responsible, to some extent, for this in offering prizes for large collections. I would not advocate a prize for a larger collection of kinds than ten, whereas most of the leading agricultural associations offer prizes for collections of twenty, and some even forty. The grower who honestly puts up such a collection, I venture to say, does not make profit out of his orchard excepting from a few kinds in the list. There is also an inducement to dishonest men to gather specimens over neighboring orchards in order to fill a large collection. The prizes should be so arranged as to bring out the best fruits for family use, local markets and shipping. When we come down to this we find but few varieties profitable, and hence probably a majority of the trees in many orchards are but cumberers of the ground. Looking at the yearly growth of competition in the fruit markets it is clear to me that the time has come when we must grow such varieties of the various fruits as we find succeed the best in the various sections, or in other words we must make specialties of growing only such kinds as we can bring to the highest state of perfection. If we consult the sale lists it is clear that certain sections can grow certain kinds much better than other sections, owing no doubt to a difference in climate and soil largely. The Annapolis Valley, Nova Scotia, has a specialty in Gravenstein, Ribston and Blenheim Pippins and King. The Island of Montreal and some sections of Eastern Ontario and Quebec can produce much finer specimens in Fameuse, Irish Peach and St. Lawrence than we can in the west. I doubt if any part of Western Ontario can produce as fine Blenheim Pippin as we find in the county of Wellington. And so on in every section we find specialties. The finest flavored grapes, outdoor varieties, are, in my opinion, grown in the Ottawa district, and the Collingwood district plums are richer than those grown in any district farther south.

Although the past season has been disastrous to many shippers financially, yet we find a grain of comfort in the fact that the exceedingly low prices obtained in Britain have enabled a much larger class of consumers to cultivate a taste for our fruit, who in future will doubtless be willing to buy at much higher prices rather than forego the luxury. If shippers follow next season with greater care in selecting and packing they may not only redeem their financial position by high prices but gain for themselves and the country a high reputation.

It is clear that apples have not stood shipping and storing as well as usual the past season, which may be accounted for to some extent by the dry season at the growing period when moisture in the soil is so much needed. The fruit had actually commenced to ripen before attaining proper size. Orchards under cultivation suffered less than those in grass, and where a top dressing of manure had been applied, the fruit was fully up to the average of other years in all respects.

I believe apple shippers should do something in the way of experimenting with various sizes of packages. While in the past, doubtless the common barrel has been both more convenient and cheaper than any other form; I believe all those who have given the matter any attention will agree that a smaller package would be more serviceable in many ways. The half barrel has been tested and so far as I have known with much satisfaction. My own experience has been strongly in favor of the half barrel package. It is handled more easily and there is less danger of heating in the fruit. But these half barrels should be constructed so that in rolling the weight would come entirely upon the top and bottom hoops. For this purpose the Tomlinson package is superior in my estimation to anything I have seen, there being no bilge at all. The package should be made in the same way as ordinary cheese boxes.

There is room for some inventive genius to give us a more perfect package than we yet have, and the reward will certainly be a fortune.

Although some improvement has been made by railway and steamship companies in the handling and storing of apples, there is still room for improvement. One of the steamship lines plying between Montreal and Liverpool has, so far as ventilation is concerned, given the best accommodation yet prepared for apple shippers. Upon three of their vessels they have placed fans on deck. These fans are driven by steam for the purpose of driving down through large pipes an atmospheric blast to keep the compartment cool, and by the use of revolving ventilators the air is carried off around the upper part of the compartment. If that company would extend several of these air pipes around the compartment and perforate them where they pass through the bottom the cool air would be better distributed and would reach every part of the compartment. But there is another difficulty we find in most, if not all of the vessels. The space between decks allotted to fruit is too deep, when it takes ten or fifteen tiers of barrels to fill it to the top. Such a pressure is sure to injure the fruit in the lower tiers, and hence we see so many "slack and wet" in the sale lists. Certainly there are other causes for "slack and wet," but this is one that can readily be remedied.

Freight rates by through bills of lading should be considerably reduced, especially where large lots are shipped. Rates the past season were some higher than in former years. Our friends "across the line" had a decided advantage over us in lower rates by special contracts for large shipments.

A much larger trade in general fruits would be carried on with Manitoba and the Territories if rates could be reduced to a reasonable figure. Plums and early as well as late pears, grapes and tomatoes and apples would be shipped in much larger quantities than at present. Fruit cars, well ventilated should be provided similar to those supplied by the Grand Trunk in some sections, and the Canadian Pacific should convey such freight with more despatch than they do.

Express companies' charges are so excessive that only a very limited trade can be carried on at present, and ordinary freight is so slow and uncertain going to the far west that perishable goods such as I refer to could not be sent. At Portage La Prairie the past season I made a note of the following charges by the C. P. Ry., which will give an idea of what a luxury consumers must consider the products of our orchards and gardens when they are willing to pay a price to cover first cost, charges and profits. Grapes per

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100 lbs. from Toronto, \$3.25 ; tomatoes 73 cents per basket ; peaches, plums, pears and gooseberries 73 cents per basket. In other words, the charges are about as much as the original cost. Crab apples, which can be purchased for about \$2 per barrel in Toronto, are charged \$5.50 per bbl. for carriage on arrival. If these goods were sent by ordinary freight it would take about an average of fully twelve days to reach the Portage or Winnipeg.

It cannot be expected that much change will be made in rates west until competition is fully established with the C. P. R. Such competition as there now is gives an advantage to our American friends, who are enabled by lower rates to place fruit in Winnipeg for less money than we can. I am well aware that both our railway systems deny that such a state of affairs exist, and they quote the inter-State law to clinch this contention. But the fact remains all the same, and fruit-growers and shippers of Ontario have had thus far to "grin and bear it." If these railway and steamship companies would encourage fruit-growers and shippers by providing more perfect accommodation, better handling and storing of goods and guaranteed bills of lading to all points at a lower average freight rate, we would have no trouble in opening out new markets, which would necessitate the planting of much larger areas to orchard.

It is time to do something, if possible, to prevent many mixed brands of apples and badly packed as well as worthless seedlings and others from passing forward into British and other markets as the produce of Canada. Our good name suffers in this way, and unless a stop is put to it, fruit shippers and growers as well, will be looked upon as sharpers. Buyers in the markets are becoming suspicious already, and those who handle only choice brands feel that the injustice is affecting them in prices by gaining a generally bad name for our country. It has been suggested that an inspector, whose duty it would be to examine and mark every barrel upon its merits, would remedy the evil. It would also be necessary to hold the packers responsible for their work, as well as the grower for the condition of the fruit in the orchard, for that condition has much to do with its carrying and keeping qualities. A neglected orchard cannot produce fruit of as good points in flavor, growth, shipping and keeping qualities as an orchard that is well cared for. The price, therefore, to the grower should be subject to these conditions. Such an inspector would also correct the present very loose system of naming. I trust this matter will receive special attention at an early day in our discussions, so that some improvement may be made, and our good name as a fruit producing country be honestly preserved.

The present system of judging fruits at our exhibitions, if indeed I should dignify it as a system at all, requires a radical change. I believe we should, as an association, frame a code of rules for judging upon points. Many an exhibitor at our leading exhibitions thinks that judges take an unwarrantable liberty when they taste often varieties that are easily distinguished at sight ; but I ask is there not naturally often an important difference between two specimens of the same kind that have been grown under different circumstances, and is it not a most important part of a judge's duty to award the prize to the best ? I am a thorough believer in the flavor test of fruits. If we are to occupy the place of educators in this matter we must not pass over the fruit tables too hurriedly, judging by the eye instead of by points of merit. In other departments at our exhibitions advancement is being made. Why not in this ? In every case the points awarded by judges should be placed upon the plate or collection of fruit so that exhibitors may profit.

In the near future our association should follow the good example set by the American Pomological Society in revising our entire fruit lists for the purpose of simplifying nomenclature.

Experiments have been tried by many for the past two years for the purpose of destroying the codling moth. Various remedies have been employed, but up to the present I have not been convinced that any of them has accomplished the desired end so well as Paris green. Although some scientific men denounce this remedy as a fraud or useless, those who have given it a practical, persistent trial have over and over reported strongly in its favor. I am fully satisfied after several years of careful experiment and observations that the curculio has been actually destroyed by the persistent use of

this poison. At first my opinion was that the insect was not killed, but that possibly some odor which we could not discover, but which was distasteful to the curculio drove it away. Now, however, I am satisfied that the curculio feeds liberally not upon the juices of the young plums alone, but also upon cherries and early apples. Anyone can be satisfied of this by placing a few insects in a glass case with specimens of Duchess of Oldenburg apple. They will in a few hours eat into the apple. I have often observed small holes eaten into plums and apples which I supposed were caused either by birds or ants, but later experiment and observation convince me beyond a doubt that the "little Turk" has at all events in most instances been the cause. There is no question but the use of Paris green has ridden many sections of this pest, and I hope its use, judiciously, will be continued in the fight with the codling moth.

The orchard planted under directions of a committee of this Association on the Model Farm at Guelph is practically useless for our purposes, owing chiefly to the fact that the grounds selected were not underdrained before planting as we directed. Another should at once be set out under more favorable circumstances.

If we cannot succeed at once in convincing the authorities at the helm of State of the necessity there exists for the introduction of some simple text book on agriculture and horticulture, perhaps they can be induced, as a stepping stone in the right direction, to require that practical horticulture be introduced into all our school grounds. Get the children interested in the trees, shrubs and flowers and they will grow up to bless those who introduced this new era, for such teachings and tastes will have a marked effect for good through after life. While governments are doing so much to advance the interests of other classes in the community surely the tillers of the soil should not be neglected, nor should means be spared to educate the children of this country up to a true appreciation of this most interesting and refining science. I fear there is much in the present educational system that has the effect of drawing our best young men away from farming life and I do not wonder that leading agriculturists are taking the matter up at institute meetings.

Large quantities of hardwood ashes are being shipped out of this province yearly to be used, after reducing, by fruit growers and nurserymen in the neighboring States. Surely this excellent fertilizer is equally valuable to us. I know nothing better in the spring of the year than the use of unleached ashes sprinkled liberally over the trees of our orchards. Enough will stick in loose bark, mosses and other growth to form a lye with rains and wash the trees completely. Try it and be convinced.

Since our last meeting I had the pleasure of visiting the North-West and British Columbia. In passing through the western or north-western portions of this province, although largely of a rocky nature, I was impressed by the eagerness with which the dwellers there seek for information and assistance in the fruit-growing industry. There are many fertile tracts throughout the District of Algoma, where fruits have been grown. In the Sault Ste. Marie and Bruce Mines sections I observed healthy specimens of Spy, Golden Russet, Ben. Davis and others, mostly in dwarfs. The trees looked healthy and have in several instances borne fruit. The various crabs grow well and produce abundantly, the fruit being exceedingly beautiful in color, and I don't think I ever enjoyed the flavor of a well ripened crab so much as here. I was glad to observe that many are growing apples from seed, and in one orchard at Sault Ste. Marie I observed some fine specimens of fruit of fair quality. Duchess of Oldenburg, Tetofsky and others of this class succeed well. There is an abundance of wild plums, grapes, currants and gooseberries all through the woods. Black currants are magnificent for size of bunch and berry, resembling the black currant to be found so plentifully in the Western prairies, and some specimens I found which had been cultivated for some years were excellent in quality. Passing through the thousands of beautifully wooded islands in the Lake of the Woods, and going up Rainy River we find a large tract of heavy timbered rolling land, resembling the original forests of Western Ontario. I found some very fine specimens of the apple in cultivation in the vicinity of Fort Frances. Among them as fine a specimen of Spy as one could desire. Residents there inform me that they find no trouble in growing many varieties of the apple and pear. From this north to Rat Portage the woods abound with grapes and gooseberries especially.

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But when we pass into the great prairie land we cannot indulge even in a hope of fruit growing until the forestry question is settled. And yet I believe there is there, notwithstanding the severity of the winter climate, a certainty of successfully growing some of the early, hardy, large fruits, for the fact of wild specimens of the grape, plum and cherry being found in many sections indicates that by improving these a better selection can be produced, and by the ameliorating influence of forestry others can be introduced with profit. Along the Assiniboine and Red Rivers in Manitoba there are at least three kinds of plums, red, blue and green, the latter resembling the Green Gage both in tree as well as shape of fruit. It will be most interesting to follow the history of that country up to the time when the effects upon fruit trees will be noticeable by the protection and other influences of an extensive planting of such forest trees as will grow easily and rapidly. As that country becomes populated and the lands cultivated, tree growth will be found indispensable in preserving moisture. At present the thick matting of prairie grass suffices, but after a few years of grain cropping it will be found necessary to use manure for the purpose of preserving the present fertility of the soil, and it is just here that large and frequent belts of forest trees will be found of incalculable service to that country. The intelligent and energetic people of that country will not be slow to take up this matter in earnest, and throughout Ontario we must benefit by such example, for we have large areas divested years ago of forest that are becoming less fertile yearly. Forestry will, in my humble judgment, do more for that country than any other influence, or industry, for its influences for good are almost legion. The casual traveller even thinks of it in the monotony of the prairie so thinly dotted with the pioneer settlers. But no one can help feeling impressed with the coming greatness of that country when population pours in. Already—

We hear the tread of pioneers,
Of nations yet to be,
The first low wash of waves, where soon
Shall roll a human sea."

Shelter belts of abele, poplar, soft maple, arbor vitæ and many other trees would be suitable for orchard purposes. In planting there I would have the orchard upon the north of the shelter belt, upon the same principle as that practiced in the State of Maine. In the early history of that State it is said that the Pilgrim Fathers and their descendants were accustomed to plant large orchards in small clearings in the forest on southerly slopes. These orchards flourished and bore fruit abundantly. But as the forest was cleared off the orchards died, and now, instead of planting upon southerly slopes, the successful orchardists select northerly slopes. This coincides with our own experience, namely, that it is not so much the severity of midwinter that kills our trees as the alternate freezing and thawing in spring. By providing a shelter from the rays of the sun the orchards of Maine are noted to-day even for Baldwins as well as other varieties not more hardy and which would not succeed upon southerly slopes. Judging therefore by this experience it seems more reasonable to plant orchards upon the north side of shelter belts. The reasonable conclusion to be drawn from such a method is that the heat of the sun in early spring induces the upward flow of sap, night frosts burst the sap vessels and the tree dies.

Passing through the Rocky Mountains I had no opportunity to examine tree or shrub growth further than what the eye could discern in passing. Indeed the time is so occupied in admiring the grandeur of the scenery that one cannot afford time to contemplate the practical in the way of horticultural specialties. Between the massive forest covered mountains, the headlong rushing rivers and innumerable mountain streams and falls, the scene is even too grand to permit of description by the writer's pen or the painter's brush,

With the odors of the forests,
With the damp and dew of meadows,
With the curling smoke of wigwams,
With the rushing of great rivers,
And their wild reverberations,
As of thunder in the mountains.

British Columbia is certainly a country abounding in mineral and forest wealth. But the day is coming when fruit growers in that province will compete strongly with us in the markets of the North-West. Peach and grape culture can never be carried on successfully along the coast as the nights are too cool to allow proper ripening of these fruits. But along the Fraser river and in many inland valleys and ravines they can surely be grown to perfection. At many of these points I found that melons and tomatoes are grown in perfection, which surely indicates safely that peaches and grapes would succeed.

Apples, pears and plums can be grown wherever sufficient soil is found to plant, and while they attain a much larger size than such fruits do with us and also a fine color, they are much softer and not so marked in flavor, nor do they keep as well. But they can be grown in large quantities and properly packed in small packages would carry well into the British and far eastern markets for late fall and first of winter use. An association similar to ours has been formed in that province whose good work will soon be felt as a power in that favored climate.

I am sure the unanimous sentiment of our association is with them hand and heart.

ALEX. McD. ALLAN.

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THE WINTER MEETING.

The Winter Meeting was held in the City Hall, Ottawa, on Wednesday and Thursday, the 8th and 9th of February, 1888.

President Allan being delayed in arriving, the meeting was called to order by the Vice-President, A. M. Smith, Esq., who announced the presence of Messrs. Gibb and Brodie, members of the Montreal Horticultural Society. He sincerely hoped these gentlemen would take an active part in the discussions, as he felt assured the members of the Association could not fail to derive much valuable information from a relation of their experiences in fruit growing.

President A. McD. Allan having now arrived, assumed the chair, and the first topic for discussion was opened by the reading of the following paper by Mr. A. A. Wright, of Renfrew.

EXPERIENCE WITH RUSSIAN AND HARDY NATIVE FRUITS IN THE COLD NORTH.

I regret that owing to circumstances which I shall explain later on, I am not able to give you as definite information as I would like but such as I have I give you. In 1883 I made arrangements with Prof. Budd, of Ames, Iowa, to send me a collection of 200 Russian apple trees one year old from the bud. These came duly to hand and consisted of thirty different varieties, viz., 60, 102, 143, 153, 161, 260, 269, 275, 277, 316, 327, 402, 407, 540, 608, 722, 1260, 2 M., 3 M., 5 M., 8 M., 14 M., 26 M., Yellow Transparent, Russian, Cardinal, Grand Sultan, Belle de Boskoop, Canada Baldwin and five without any name.

As I was President of our local association, I distributed them in groups of five, to as many of our members as cared for them, and the remainder to various friends of horticulture in our immediate vicinity, giving only five to each. In nearly every case the parties desired and obtained five different varieties. This manner of distribution was a great mistake on my part, as you will readily see, for although I kept a carefully preserved list of every tree given to every individual and attached a correctly named label to each and every tree, and gave the strictest injunction that the number or name of each tree should be carefully preserved by them, and that an annual report of their success or failure should be given to me, yet, with very few exceptions, these injunctions were entirely neglected, and all my pains, trouble and expense were of comparatively little value. Had I given each individual five trees, all of one variety, then I would have known just what varieties lived and what ones failed.

For example: Mr. Fraser, according to my record, received one each of Belle de Boskoop, Russian, 275, 327 and 153. Two of these grew and have done exceedingly well, and are now bearing very fine specimens of early fall fruit. Now, the question arises, which two are living? This, we cannot tell, as he apparently made no effort whatever to preserve the numbers given him.

All the other Belle de Boskoops distributed, as well as all the others marked Russian, have failed; hence we have good grounds for believing that the two he has living are two out of the remaining three, 275, 227 and 153, but exactly which two we cannot say. This, you will admit, is not very satisfactory, as it is altogether too indefinite to be of any great value. It is on this account that I cannot speak too positively on some of these fruits.

This much, however, we can say, that from the importation of 1883, as well as those made yearly since that date, we have come to the conclusion that not all the Russian varieties are hardy in the colder sections of the north. That very careful and judicious selections will have to be made, and that on no account should we neglect to make constant selections from amongst our own native seedlings.

We may state, however, that the following are promising varieties :

469, Grandmother (Babuschkino).
233,
153, Transparent Naliv (Skvosnoi naliv).
387, Gold Peasant (Dobruj krestianin).
236, Antonovka.
336, White Transparent (Skvosnoi bielui).
164, Heidorn (Polosatoa Heidorna).
161, Longfield (Langerfeldskoe).
215, Kustoe.
413, Cross (Skrijapel).
2 M., Hare Pipka (Saitchia Pipka).
2 M., Royal Table (Finstlicher Tafelapfel).

Among the Russians : Switzer or No. 304, 469, 233, 153, 387, a variety marked Anis, 236, 336, 164 and Red Russian. Favorable reports have also been sent in of 2 M., 5 M. and 161, and one favorable report on 215, 413 and 469. The Yellow Transparent having been reported on so frequently as perfectly hardy it is scarcely necessary to mention it here.

I must now also state for your information that our Provincial Association sent me in 1884, for testing on my own grounds, thirty-seven varieties of Russian apples and two Vladimir cherries. On these I can now make the following report : 1st. That the Vladimir cherries are both living but have not yet fruited, but I am in hopes that they may be coming season ; they are apparently quite hardy. 2nd. The following were the varieties of apples sent : 160, 580, 164, 3278, 317, 97, 355, 153, 387, 233, 240, 171, 369, 970, 248, 384, 398, 909, 204, 157, 934, 00, 285, 122, 575, 352, 244, 1227, 153, 978, 238, 219, 153, 352, 222, with Peter the Great, and Red Russian. Very few of these are promising ; any that are, will be found in the list already given.

I shall now merely add that I wrote Prof. Budd stating that very few of the Russians sent had proved hardy with me ; and, in reply, he stated that he expected nothing else, that he had purposely sent mainly long keeping varieties instead of selecting only from the hardiest, in the hopes that some of them would prove hardy enough for our climate, and if they did, we would then have a valuable acquisition to our list of fruits. It is only fair to mention this lest some of our friends should get discouraged and refrain from testing any of these imported varieties. This, we should not do, but on the contrary, should be guided by the wise Scriptural injunction, "To try all things, and hold fast to that which is good."

Mr. GIBB (Abbotsford, P.Q.)—I am afraid there has been a good deal of misunderstanding both as regards names of varieties and the propagation of the same variety under different names. There is in reality no such apple as the Red Russian, and there are several of which I could not fix the numbers. I have always been opposed to the system of propagating by numbers ; 7 is supposed to be 9 or 1, or something of that kind ; 143 is 608, and so on. Then as to the hardiness of these. Of course the collection sent by Dr. Regel was received by him from ten sources in Russia, and also from Sweden and Germany, so that it was really a collection of German and Polish fruits and fruit from the older districts. If you take the District of Kasan, where the temperature is 9 below zero, and compare it with Ottawa,—which, I am told, is 3 degrees colder than Montreal, and which has less shelter than we have there—taking Ottawa at $16\frac{1}{2}$, there is a drop of $7\frac{1}{2}$ in favour of Ottawa. It really represents something more than that, because the Observatory at Kasan is sheltered. So, then, there is $7\frac{1}{2}$ degrees of difference between three months at Kasan, where orcharding is the great business of the community, and the city of Ottawa. Another thing is that no such difficulties exist here. I have just received the last bulletin of the Experimental Station at Minneapolis. There, desiring

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try the Russians at their worst, they planted them in good, rich soil, in a deep, open prairie exposure. Out of forty-three not one stood. I may say that in good soil they grow to twenty-three and twenty-six inches; but, however, the winter of 1886-7 was exceptionally severe, and not one of them started. We can test the hardiness of the greater proportion of our apples by comparison with the Duchess. I have seventy-five varieties of these Russian and German apples, and a number of the Germans seem not specially hardy, but with me the Russians are models of hardiness. I am not speaking for the west, nor for a climate colder than my own, but where I have a full exposure I find them very much hardier than anything like Fameuse. Then, when you come to ask me about the fruit, I speak of course with a good deal of hesitation, because Longfield and Yellow Transparent are the only ones I have fruited in any quantity. Of the six I think most of, I should take for the first Yellow Transparent, or Charlottenthaler. The Yellow Transparent is not one of those that proved hardy, but it is sometimes as early as the 20th of July, and usually the 1st of August. An apple I think a good deal of from what I have seen of it in the west—not from my own orchard, but I saw it in a number of orchards in Wisconsin—is the Golden White. Another is that known as the Raspberry, an apple below the medium size, almost small, but a very bright red and of very fine quality. The season of ripening is about that of the Early Joe, or a little later. Then Titovka has done very well. I have seen it in the west and fruited a few specimens from my own trees, but was away and did not see them. It has a capital record. Of Longfield I had, I suppose, last year two bushels. It is a strong grower and a very rambling, almost creeping tree, a heavy bearer and the fruit of good quality. Arabka (of Ellwanger and Barry) is not an apple of fine quality, but it is fair, good enough for most markets, and a large, handsome, productive apple, peculiarly colored. In regard to the name of these fruits I hope before very long to be able to place in your hands lists. It appeared in the last list of the American Pomological Society, and ought to have been in the report of the United States Department. I have, in my own orchard, the same name from several sources in Russia, planted side by side on the same day, and I hope to be able to solve the difficulties here presented.

Mr. WRIGHT.—I would not like anyone to become discouraged in regard to Russians on account of anything I have said, because it is very much colder where I live than at Mr. Gibb's place of residence. With us the thermometer goes down to 40° below zero, and, besides, in an inland part of the country, such as where I live, the frost comes very much earlier, and it catches the buds when they are quite tender. I may say, in fact, that anything that will grow with me will grow anywhere. I find the Yellow Transparent the hardiest apple I have, with the exception, perhaps, of the Peach of Montreal. I find it hardier than the Duchess.

Mr. BRODIE (Montreal).—Next to the Duchess I should consider the Golden White, of which Mr. Gibb has spoken, and the Charlottenthaler, which are very much alike. I have not put any of the Longfields on the market yet, and, with me, Titovka has not borne or made very good growth. I have had the Golden White seven years planted and it has yielded apples almost the size of Alexanders, better in quality, but not keeping so well as the Alexander. It comes in season just after the Duchess. It is not as firm an apple as the Alexander, though Dr. Hoskins says he can keep it on into the winter, but they ripen earlier with me than with the doctor in Vermont.

Mr. MARKWELL (Ottawa).—My experience is that in this section of the country the Duchess grows better than any other variety, and is the best for the market.

The PRESIDENT.—Do you find them different in flavor, or keeping quality and color?

Mr. MARKWELL.—I usually find them better in color and size, and I think in keeping qualities also. They seem to be hardier.

Mr. JOHNSTON (Dominion Statistician).—I belong to Nova Scotia, and am interested in orchards. I have one of about thirty acres. The names that are mentioned here are not those of kinds we use there to any extent. I do not know that my experience would be very valuable, for I have not taken much active, personal interest in the matter. My more particular reason for being here to-day is to learn from the members of the Association what is being done in the line of apples, being from the nature

of my position in the Civil Service, interested in knowing that which is of importance to the country at large. In examining these matters I find that since Confederation there has been a very large increase in the export of apples to England and the United States. In Nova Scotia especially we have cultivated the English market very much; and it seems to me that anything that is done to develop apple growing must be of great benefit to the country at large. I do not know, indeed, that we have any line in which there is more promise than in apple growing. I find that in 1868 we sent about \$44,000 worth of apples to England; we now send \$700,000 worth. At the beginning of Confederation we sent to the United States \$35,000, as compared with \$400,000 worth now. During the whole period we have sent to England over \$4,000,000 worth; and to the United States \$1,250,000 worth, not mentioning other places. It seems to me, therefore, that from an association such as this, which is developing the kinds of fruit best adapted for home consumption and the foreign markets, I may not only gain some little information which I can put to practical use in my own orchard, but may also acquire knowledge which I may be enabled in various ways to distribute to different points, so that greater interest may be taken in fruit growing.

Mr. HILLBORN (Dominion Experimental Farm).—My experience in this section of the country is not yet very large, as I have only been here a year. We have planted about 175 varieties, but have not had time, of course, to know what they will do, as they were only planted last spring.

Mr. WYLIE (Carleton Place).—Being only an amateur, I have not much to say before a society like this, consisting of old and experienced fruit growers. I have been trying several kinds of apples in my garden, and I find any of these Russian varieties quite hardy as far as I have tested them. I have the Duchess and the Yellow Transparent, which I have only fruited one year, and also the Tetofsky. I have also the Montreal Peach, and some other kinds, which I have not yet fruited.

Mr. WHILLAMS (Smith's Falls).—I, like the gentleman who preceded me, am only an amateur and beginner, and came here more to receive information than anything else. I have experienced difficulty in getting fruit sufficiently hardy to stand the climate of eastern Ontario, and which will keep in the winter. I recently came across a seedling apple which I thought worthy of being presented to the Society. The tree from which it was produced was about thirty years old, and was grown in a field in the vicinity of Brockville. The seedling is perfectly hardy, standing in a cold position, and the fruit is as you see it. It does not spot, and I think it would prove a good shipper; the skin is rather thick. I may say that the specimens presented are not a fair sample of the apple; this year the apples are not their usual size, and when I spoke to the party who had them about presenting specimens here, I found they had been thrown into a box in the cellar, and these are only culls, not first class samples—below the average. I think in an ordinary year samples could be selected fully one-half larger than these. The apple is very nicely flavored, and it seems to me it would be very valuable as an addition to the list, the more so as it keeps very well.

The SECRETARY.—How long does it keep?

Mr. WHILLAMS.—I should say until April, anyway. The samples were just taken out of a box in the cellar.

The PRESIDENT.—Grown under hard circumstances?

Mr. WHILLAMS.—Yes; as hard as possible; the tree is fully exposed both to the west and north, and little cared for; the farmer who has it does not value it very highly—he thinks a good deal of the Peach apple.

The PRESIDENT.—Do you know how the mercury averages?

Mr. WHILLAMS.—Two weeks ago in our vicinity it was 40 below zero, and I think it is a more trying climate than that either north or south of us. When you get to Brockville there is the valley of the St. Lawrence, and here you have the valley of the Ottawa. The climatic conditions there are sufficiently severe to test any apple; I believe an apple that will stand the climate there will stand anywhere.

The PRESIDENT.—Have you tested any of the varieties spoken of here to-day.

Mr. WHILLAMS.—Only the Duchess and a few of the better known varieties. With

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that exception and the Golden Russet, we have hardly any winter apple—we look upon the Wealthy more as a fall apple. The Golden Russet does not bear very well, but it will live.

Mr. BUCKE.—Did you say you got the tree or the seedling from Brockville?

Mr. WHILLAMS.—The apple was brought from about ten miles from Brockville, and the seeds planted, and from the seeds the tree was produced. This is one of the trees; the other is a very good apple too, but it killed itself bearing in two years.

Mr. G. O. CASTON (Craighurst).—I do not belong to this part of the country, but where I live we have a pretty cold climate, sometimes as low as 35 below zero, though I don't think we ever reach 40. But there, as well as in many other parts of the country sixty miles north of us, many varieties have been tried which we cannot do anything with. I am considerably interested in these Russian varieties, and I hope we may get some of them that will prove as hardy as the Duchess and good keepers. But the trouble with them is that they are fall apples and not long keepers. I was going to ask Mr. Gibb for a list of the longest keepers among the Russians he has tested. If we can get an apple with the good qualities of the Duchess, early bearing and hardiness, and one that will keep until spring, it will be the most profitable apple we can get hold of. I don't think it is well to have too many fall apples in our part of the country, for they are no use there. What we want is an early apple and a long keeper, and if Mr. Gibb or any other gentleman can tell us of the longest keepers among these hardy Russians it will prove of interest. I think, in a good many parts of the country, it would be a good idea to raise seedlings. I find many varieties that will not thrive by planting a tree from the nursery will thrive if top-grafted upon another variety. If you can take some hardy seedling and graft them on, I think they would yield finer specimens of fruit in that way than they would on their own stem. I think that an apple to stand the climate in the colder parts of Canada will have to be very much like the Duchess. I think there is a good deal in the texture of the wood; it requires to be like beach, close and hard in the grain and smooth in the bark, which is the case with the Duchess.

Mr. WRIGHT.—I wish to draw attention to the remark about top-grafting—that a variety which, when planted under ordinary circumstances, will not grow, may be top-grafted upon a hardy seedling and will then grow. That is also my experience.

Mr. GIBB.—If I had been asked the question last week, "Are there any apples that will prove late keepers," I should have said "Yes." After attending the meeting at Ottawa I should be inclined to say "No." When you come to a climate where the summer heat is much greater than here, the apples which will be more or less keepers here will not be keepers there. The one thing I am not positive of—and, therefore, I would not make a statement—is how long these apples would keep in this country. There is one thing which, I think, might be done in some parts of the country as it is in Russia. Some of their apples are late, because they are picked just before they are ripe and shipped to market, and in that way they are keepers. Of course, of the apples I have not fruited we cannot speak.

Mr. McNICHOLL (Ottawa).—I have nothing to advance in this matter of apples, not having had any experience myself with them, but from observation I can endorse what has been said in regard to the Duchess. I was surprised on coming to Ottawa to see the fine appearance of the Duchess here. I had seen very attractive specimens before coming here, but I think what I have seen here are even more attractive than those in the west. I think anything that will equal the Duchess in hardiness and quality will do first rate in this part of the country, or this part of eastern Canada. It is very attractive and the flavor is very good, and I think if the fruit growers can, by their exertions, develop an apple superior to it they will be conferring a great boon upon Canada.

Mr. BUCKE.—We have with us here one of the first Directors of the Fruit Growers' Association, Dr. Hurlburt, who can, no doubt, give us some information.

Dr. HURLBURT (Ottawa).—I have been very much interested in what Mr. Gibb has said in regard to these hardy Russian fruits, and was very much pleased when I heard he had made one or two trips to Russia, because I found, when in Europe a good many years ago, that in some of the northern latitudes there were not only apples but other varieties of fruit which might be cultivated to advantage in Canada. Of the fruits to which Mr.

Gibb referred, however, I have had no personal experience, and I therefore prefer not to give any opinion upon them. At some future stage of the meeting if any subject with which I am familiar comes up I shall be very glad to say a few words.

Mr. GREENFIELD (Ottawa).—I am happy to say that since the last meeting here there has been a great change and development in fruit growing in the Ottawa valley; if we only continue for a few years we shall be quite independent and have plenty of fruit of our own. The greatest trouble we had was to find fruits that would stand the climate, but at last the Tetofsky came in, and it has proved very valuable for this climate; it is hardy and early, coming in about ten days before the Duchess, and it is a good bearer. The Duchess, too, we find an excellent apple, and one that stands the climate well, and then, again, we have the Wealthy. I have grafted several trees and I find that they bear a great deal better than the standard trees, and yield finer fruit. I have tried St. Lawrence, Red Astrachan, and Fameuse, and several others, but none of them will stand the climate. They may stand one or two years, but will eventually die out. I hope further progress will be made and that we shall soon have some good fruit in this country.

Dr. HURLBURT.—I have had some experience in growing hardy apples. My experience has been that it is not so much the fruit as the tree. You get a good standard tree, perhaps one that has grown up in the country, or that has been got from a colder climate, and I think the fruit is as safe as it was further west. I have had experience from along the St. Lawrence, south of this, away to Hamilton. There are several varieties of trees which everyone who has cultivated apple trees knows will grow better in a cold climate and produce an apple of much better flavor than they would further south. I often found this through the colder latitudes in the northern part of Europe. I have found this to be the case with an apple we call the Bitter-Sweet, which, especially for cooking, has a much better flavor here than in Western Canada or the Northern States. My experience has been that it is far better to have dwarf trees, and have them sheltered by other trees. I believe if these hardier varieties could be introduced and cultivated here, and have them well sheltered, and, as far as possible, dwarf trees, that a variety could be cultivated here equal to any part of Ontario.

Mr. BRODIE.—How did you protect your dwarf trees from being crushed down by the snow; mine were crushed all to pieces.

Dr. HURLBURT.—Well, perhaps mine are sheltered from the snow; I have no difficulty that way; there were no snow banks around me.

The PRESIDENT.—Perhaps it was to the driving of the snow to which Mr. Brodie referred.

Mr. BRODIE.—Of course we have a good deal of snow, though I don't know that we have any more than Ottawa; but generally around our line fences, especially if we have a wind-break, it gathers. I have often seen it on the level two feet deep across a farm two acres in width. Down in Quebec I am sure it is two feet on the level where there are no trees at all, you can only see the top of the fences, so our dwarf trees would be covered completely in that part of the country.

Dr. HURLBURT.—Snow covering a tree will not injure it; it will protect it. Perhaps in the places Mr. Brodie refers to the wind is not broken by woods or anything else. I find that if you pack snow around the trees, and it remains there, it is a protection to the tree, not an injury.

Mr. BRODIE.—I find we have to dig out our trees; as the snow thaws it gets heavier, and the branches break right down.

A MEMBER.—I happened to give an agent travelling around last year an order for a few dwarf trees, and he told me that dwarfs did not live long. Now, I would like to know, if there is any truth in that?

The PRESIDENT.—I am not aware that there is any truth in it at all.

The SECRETARY.—I suppose you mean dwarf apples.

The MEMBER.—Yes.

Mr. BUCKE.—We are expecting great things from the Experimental Farm. They are making collections of fruits and trees, and in a few years we shall have valuable knowledge. But there is one thing attention should first be called to, and that is a collection of seedling apples grown in the parts around here, down the Ottawa River and

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the St. Lawrence. Some of our finest apples have been originated at Lyn, near Brockville, and I think the Experimental Farm will do a good work by making a collection of these seedlings. In regard to the snow, I think there is no danger so long as there is no crust upon the snow; if there is, as the snow comes down, it breaks the trees. Sometimes in setting small trees, people stand something around to afford them protection from the snow until they are high enough, but as a rule the branches of dwarf plants are as high as the snow, and therefore are not badly broken, though very small bushes such as gooseberries and currants are often badly damaged by snow.

The PRESIDENT.—I agree with Mr. Bucke that a collection of the best known seedling apples from all over the country would be very valuable; there is no doubt many of our seedlings will hereafter prove our best fruit.

Mr. DEMPSEY.—With respect to dwarf apple trees, it depends to a great extent what they are dwarfed upon. The roots of some dwarf trees, such as the French Paradise, which is generally the produce from a dwarf tree, are fibrous, and if they are not protected by the snow they would freeze to death readily, all being near the surface. The same variety suffer wonderfully if they are planted on a very dry spot. The wood of that variety is spongy in nature, and the tree itself is really not hardy, although we have quite trees of them, but I don't think a tree from that stock would be satisfactory. Again, there are varieties of crab that grow from cuttings, which strike root readily, which produce hardy stock, which are also fibrous rooted. There is the English Paradise, that is used largely; we have trees in our ground; we imported some trees from England, and they were all worked on this English Paradise. We find they also produce a little fruit, smaller than the French Paradise, but they are stronger growers, and the fruit does not come into bearing quite so soon. That might be hardy here, but it occurs to me that dwarf apples would not be satisfactory in this climate at all. I would advise you to try seedlings extensively, even if you have to take a tender variety, and protect until you get fruit; fruit from this plant, produce fruit or trees, from the seed of that fruit, and when they bear fruit take the first fruits again, and continue on through several generations. Those of you who have read the history of *Dems*, of Belgium will readily see that that is the way he produced so many fine pears, valuable in that country and in France. I think he accomplished more than any man who ever lived in France or Belgium in that way.

Mr. HILLBORN.—In regard to the collection of seedlings, I may say that at the Experimental Farm we have sent as far as we could to get apples, and have got apples.

Mr. BRODIE.—I would recommend that the members of this association who live further north, if they find out any new seedlings should send samples from them to the Experimental Farm to be tested. At one of the Exhibitions of the Fruit Growers Association of Quebec we had on our tables samples of seventy-five seedlings grown in Chateauguay County and on the Islands of Montreal, and among them were some worthy of propagation. If we had then had an experimental station to send them to we could have tried them.

The SECRETARY.—We have several very worthy seedlings already; Scott's Winter is one that recommends itself very highly, a seedling originated in Vermont. And that large Baxter's Red, which seems to be a very fine showy apple, and a fine keeper, is also a Canadian seedling. Then we have Mr. Dempsey's seedling pear and a seedling pear sent to me from near Toronto and numerous others; I think we have enough to make a collection already.

THE HARDY APPLES OF VERMONT.

The paper on this subject was read by T. H. Hoskins, M.D., of Vermont.

I note that I am put upon the programme of this meeting for a paper on the "Hardy Fruits of Vermont." Hardy tree fruits would be more correct; but when I came to consider the subject, it was manifest to me at once that, with the exception of our native plums, in which little selection has yet been exercised, and no notable seedlings produced and propagated, we have no entirely hardy tree fruits but apples, originating

in this State, which have become known to me. Some good grapes have been originated, notably the Vergennes. There are also several desirable pears and plums of Vermont origin, which are sufficiently hardy for the Champlain islands, and the southern part of the State. The best of these pears, known to me, are the Grand Isle, the Macomber, and the Dr. Hoskins—all from the farm of Benj. Macomber, in the Town Island, and county of Grand Isle; all quite as hardy as Flemish Beauty; but none of them sufficiently "iron-clad" for the mountain regions, or the Memphremagog valley. The same may be said of the Green Gage seedling plum, from the same farm—a plum of medium size, productive and of high quality. As none of these have yet been propagated to any great extent by nurserymen they are not easy to get, though I believe they are occasionally to be had of L. M. Macomber, who carries on a small nursery North Ferrisburg, Vt., and is a son of the originator. The Grand Isle pear is described in Downing's Fruits and Fruit Trees of America, and the other Macomber seedlings have been recently figured and described in the *Rural New Yorker* newspaper. They would probably be well adapted to all parts of the Dominion where the Flemish Beauty does well. The one which the originator has complimented me by affixing my name to, is a seedling of the last named sort—as large, as good, and I believe as productive as its parent, but not quite so elegant in appearance. It has, however, shown no signs of spotting or cracking, and may be preferred on that account.

There are, in Vermont, a number of native apples belonging to the Champlain Valley, and doing well there and southward, which would be worth trying in the milder parts of the Dominion. Among these I might name the Northern Sweet, the Bottle Greening, the Tinmouth, the Burlington Pippin, the Hubbardton Pippin, Jewett's Best, the Landon, and the Winter Pippin of Vermont. Nearly all of these equal, or nearly equal Fameuse in hardiness, are prolific, and good market and dessert sorts. Their descriptions can be found in Downing and Thomas. But the apple widely grown and very popular in the State, under the name of Champlain, or Paper Skin, is *not* a Vermont apple, being identical with the Summer Pippin of the books.

When we come to absolutely "iron-clad" apples, capable of enduring with little or no injury a temperature of from 30 to 40 degrees below zero—comparable, for instance, with Oldenburgh, and many other Russian sorts—neither Vermont, nor indeed all New England, has many kinds to show. The nearest to eligibility for the iron-clad list that I am acquainted with is the Bethel of Vermont, a native of the valley of the White River, a Vermont tributary of the Connecticut. This apple has proved with me as hardy as any Russian, Oldenburgh not excepted—a vigorous, healthy tree, sound and uninjured in trunk and limb after repeated test winters. The fruit is as good, as large, as long keeping, and nearly as handsome (a rather duller red) as the Baldwin. But as there is "an out in everything," the Bethel does not escape. It is a very tardy bearer—as much so as Northern Spy. Next to Bethel in merit, though considerably smaller, is Scott's Winter, without the Bethel's fault, being a prolific bearer quite young. These varieties are the only iron-clads, which are also long keepers, that I have found, in testing some 300 varieties of American apples. With the Wealthy, they will give the grower apples almost, if not quite, till apples come again. I recommend them for trial in the severer parts of the Dominion. I may add that my experience with the Wealthy for sixteen years makes me fear that, though hardy in the top, it is likely to suffer in the trunk, like the Baldwin; and in order to get long-lived trees of the Wealthy, iron-clad Russian stocks, like Oldenburgh and Tetofsky, should be planted, and grafted in the limbs when five or six years old. Those who now have (or are making) large orchards of Wealthy, would do well to act on this hint in all future plantings. The only alternative is very low branching, with its inconveniences.

Mr. FAWCETT.—I sent to Dr. Hoskin for some of his Scott's Winter. The trees he sent me were well grown, but here, so far as I know—and I planted some myself, and some other gentlemen around—they everyone were killed the first or second winter. I don't know whose fault it was.

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Mr. GIBB—I have a tree of it, and it is my best winter apple. It is only of medium size, sometimes below, and usually pretty well colored, but it is an acid apple. As a long keeper I have nothing to equal it taken all in all. In Grand Isle, which Dr. Hoskins speaks of, and which is a very short distance from the land, you can see beautiful specimens of trees. My experience with the Wealthy is not quite the same as Dr. Hoskins'. I find the Wealthy overbears. I have lost no trees of Wealthy yet. I have thirty-six in my orchard, eighteen of which were planted eleven years ago, and the remainder nine years ago. So I have fairly old trees, and it has been fruited for a few years back very heavily, and suffer from exhaustion by overbearing.

Mr. WRIGHT.—I have Scott's Winter from Dr. Hoskins, and have had no trouble with it at all; five trees I had were very hardy, and the fruit of a beautiful color, and with good keeping qualities.

BEST FIVE VARIETIES OF APPLES FOR CARLETON COUNTY.

Mr. WRIGHT.—Speaking on this question I should say first and foremost is the Yellow Transparent, the earliest ripener we have. Then the Duchess of Oldenburg, Alexander, Scott's Winter and the Wealthy. I would not have Tetofsky; Yellow Transparent is earlier and the fruit finer, and it does not drop fruit as the Tetofsky does. I would like to add a sixth, the Peach of Montreal.

Dr. HURLBURT.—I would suggest that gentlemen who have hardy trees in the colder parts of Canada should send in their list, and let the selection be made from these by a committee. I have no doubt Mr. Gibb has many varieties that would stand the climate here and produce well, and perhaps some other gentlemen have.

Mr. BUCKE.—The Peach and Alexander both blight very badly about Ottawa, and would not do at all.

Mr. BRODIE (Montreal).—The Montreal Peach is reckoned one of the hardest with us, but the Alexander does blight badly. Last season, however, I saw nice Montreal Peach apples selling for two dollars, while you could get from three to four dollars for the Alexander. That is grown in the immediate vicinity of Montreal, but when they are from the West they are a little on the green side in the picking. As for blight, I have not noticed it at all in the Peach. I would recommend to plant sparingly of it, but would advise amateurs to have a few trees for their own use; not for profit.

Mr. A. M. SMITH.—I like the idea suggested by Dr. Hurlburt, of forming a committee. I recently attended a Horticultural meeting in New York State, and there they have a committee from each county to report not only on the production of fruit, but of the different varieties adapted to each locality. I think we should have a committee from each of our agricultural districts here, to send into the Secretary a list of the varieties best adapted to their respective districts; and that these committees should report at the Annual Meeting, and their report be embodied in the Report of the Association. I think this would be of great advantage to the country at large.

The PRESIDENT.—This matter was referred to the entire Association a few years ago, and each director was supposed to get a list of the varieties of apples, pears, plums and grapes grown in his own district, and mark with a star those varieties possessed of great hardiness or other valuable qualities. I know that a number of the districts were not reported upon, and I think it would be well if the reports were continued periodically; because newer varieties of more value are coming in from time to time to take the place of others.

Mr. BUCKE.—The report has been in the Report of the Association two years running. I think in Michigan it is kept up almost every year, and I think with you that it should be changed from time to time. If you go back three or four years you will find in the report the list for all the counties in Canada; I got up the list for this county.

Dr. HURLBURT.—I would suggest that the seedlings should not be forgotten. I find in this region that for cooking purposes they are in many instances preferable to

cultivated fruits. Years ago we drew off lines in the country, and put down the varieties of fruit that were found by growers to be more successful within those limits. The divisions were south of the Great Western Railway, north of that as far as Toronto, and then east of Toronto. We had not at that time any fruit growers east of Toronto, so that the western part of Ontario was divided off in that way, and certain fruits recommended as being more successful. I think that system ought to be carried out in reference to the whole country.

The PRESIDENT.—My experience in preparing a table of that description is this. I went into the matter very carefully in the county I represented—went over the county two years attending exhibitions, and even township shows; and getting the evidence of the growers in every particular township in the three counties. I went into it very minutely, and I found I could make a report for each county, but even the report of the county I might have divided; for I found certain varieties succeeded in one part of it which would not in another. As a general rule, however, a report of this kind can be confined to each county, and if once properly got up it is very easy to continue it from year to year. I suggested once that the report should be made afresh every second year.

Mr. BUCKE.—I objected to the Montreal Peach and the Alexander. I merely meant that if people set out those two varieties they would not be very successful. We all know, as has been said, that the soil has a good deal to do with the hardness of trees. Sometimes just across the road apples and grapes will succeed when on this side of it they will not. It is not so much the climate as the soil and exposure; and it is therefore very difficult to give a list of fruit that will succeed anywhere in any particular section.

Mr. DEMPSEY.—I am from the county of Hastings which, as you are aware, extends to about the North Pole. There is nothing settled back of Hastings that amounts to anything, and it includes the most severe climate that we can expect to grow fruit in. I find that it is next to impossible to prepare a list for that section of the country.

Mr. GIBB.—The conditions of Montreal and Ottawa are about the same, and I will give you what I find most profitable in my own orchard: Yellow Transparent, Duchess, Red Astrachan, Wealthy and Haas. That is simply as a question of profit.

RASPBERRY CULTURE IN THE OTTAWA VALLEY.

P. E. Bucke, Esq., of Ottawa, read a paper on this subject as follows:

I have been requested to introduce the subject of Raspberry Culture in the Ottawa Valley, and though I do not know that I can throw any new light on it, yet, if I can in any way stimulate or assist in the culture of this delicious fruit, my humble efforts will not be in vain.

The raspberry mingles its first ripe berries with those of the late strawberry, so closely do their seasons run one into the other. To my taste the raspberry is the most delicious of all the small fruits. If it were the earliest to ripen, or matured at the same time as the strawberry, it is believed very few of the latter would be exposed for sale in competition with this queen of berries. An early fruit, the "first fruit" of the year must always claim our appreciation, after a partial suspension from fresh grown products from Pomona's apron. Others appear to appreciate the raspberry fully as well as I do myself, as it always brings a higher price in the market than its earlier ripening competitor.

The red raspberry prefers a cool, moist soil, deep and well enriched. The preparation of the bed must be attended to before the plants are set, as little can be done to the ground beyond lightly forking over the surface when once the canes are planted.

If one raises his own plants it will be found best to set in June or July the young suckers, which are produced during those months when they have grown from four to six inches high. These are transplanted like young cabbages, and form excellent bearing canes the following year. Everyone knows who has tried it that late autumn and spring

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planting of old canes, cutting them back from four to six inches, does not result in a good plant the first bearing season. The canes are branchy, and as a rule not very strong. But by the system of early moving young green plants, a good cane is obtained; and consequently the season following gives an excellent supply of fruit; thus gaining almost two years on the old system. I would recommend those who have plants of their own to try it. It is not improbable such is the perfection arrived at in sending out plants by our nurserymen, that green shoots may be obtained from a distance as easily as young cabbages or tomatoes.

In the ordinary method of planting the raspberry, the plants should be raised in the autumn and healed in but planted out in the spring. Taking them up in the fall retards early growth; consequently they start with more vigor if the young shoots have not begun to grow before the plants are put in their final position. If they are left standing in their original bed they will make a few inches of growth under ground almost as soon as the frost leaves the soil.

Plants are to be set in rows, six feet apart, the plants to be two feet distant in the row; but may be allowed to thicken up a little in the rows afterwards.

For a general crop the Cuthbert is decidedly the best variety; but as its fruit ripens late a few rows of Turner or some other earlier ripening variety may be grown; say in proportion of one to eight. The Cuthbert is very reliable; the canes are hardy; its fruit is firm, plentiful, rich and attractive. In color it is bright, and the flavor is everything that can be desired. On the whole, the Cuthbert, or Queen of the Market, as it is sometimes called, is the most profitable.

In this climate the raspberry requires protection, the same as the grape, during our cold winters. They come under the head of the "half hardy" plants. It is believed western growers would derive ample remuneration for all their trouble if they attended more to defeating the ends of Jack Frost by covering their bushes during their season of rest. My plan of protection is to bend down the canes so that the tops of three or four stools meet across the rows; then with a piece of sod cut 8x10 inches, and two or three thick; lay it grass side downwards on the spot where the plants cross. The mulch for the following spring is then thrown on the bent canes. This may be of long strawy manure, corn stalks, tomato or potato tops, or anything that will keep off the sun and will not break down the stems. This system of protection will also arrest the snow and keep it from being blown away by high winds. The bending of the canes should be done as much as possible during soft, damp weather in the autumn. When the atmosphere is moist the canes will be found more pliable, and not so likely to crack or break. A sod alone, where the snow lies deep is often sufficient protection, but a coarse litter of long manure makes it much more effective. This all sounds like a great deal of trouble, but it really takes very little time, and the labor is well repaid by an increased crop the following season. Shaffer's Colossal, one of the very best of the somewhat new varieties, is unfortunately too strong in the canes to permit of its being thoroughly protected, as it is difficult to get it into a sufficient recumbent position. This difficulty also exists with the blackberry.

In order to have such canes as can be properly treated, we do not here, as in the west, pinch the young wood to make it stocky and branchy, but rather remove the side shoots to allow the plant to grow long and pliant, so as to admit of proper winter treatment. It must be borne in mind that the fruit of the raspberry, like the grape, is produced from dormant eyes, which push in the spring, so that all fruit is produced on the young green wood grown during the present year of fruiting from last year's canes. I tried a little experiment last autumn by laying down some plants in September, whilst leaves were still fresh and green on them. The plants were very limber and I found no difficulty in keeping them flat on the ground with a few light sticks. Whether their horizontal position at so early a date will be found injurious to the plants remains to be tested by their next year's crop.

If the Cuthbert has a fault, it may be that it suckers too profusely, but these are easily dealt with by the cultivator or a sharp, thin hoe, such as are turned out nowadays by our implement makers. One of the greatest revolutions of the age is the beauty and

lightness of the tools now made possible, by the facility with which iron is converted into steel. The oldest of us will remember how in our youthful days we broke our backs using the old heavy, blunt instruments.

When I speak of a sharp hoe I mean what I say. Get one of those flat files a foot long and keep the hoe, spade, etc., in such edge that they will cut like a knife. Do the same with the Dutch or Scuffle hoe and it will be a pleasure to use them on weeds or suckers.

The Golden Queen is said to be the ditto of the Cuthbert, but my plants, obtained last year through friend Hillborn, have not, of course, yet fruited. I am told, however, by thoroughly reliable parties, that it is a grand success. I used to grow Brinckles Orange; it is the highest flavored of all the raspberry family. Its peculiar richness and high aroma is unsurpassed by any fruit. Unfortunately the cane is tender. After several years of great care I lost the plants, and have never renewed them. But Brinckles is the queen of berries. I have now about thirteen different varieties on trial, Marlboro', Turner, Caroline, Brandywine, Meredith Queen, Hansell, Cuthbert, Shaffer's Colossal, Crimson Beauty and Philadelphia.

The garden raspberry as a fresh fruit for the table has no equal; the wild one marketed by farm girls do not in any way come in competition with them. Carefully picked into quart baskets, or measured and sold in their fresh beauty with the bloom on they usually bring from fifteen to twenty cents a quart. The Ottawa market has never been at all supplied with them. The berries are picked off the stem as they are gathered, so that they do not require to be handled and picked again, as it is ready for the table the moment it is obtained. It will thus be seen there is neither shrinkage or waste. The fact that the core is removed when the fruit is picked precludes it being shipped from any great distance, as in the case of the strawberry; because the fruit would squeeze and spoil in transit; therefore the local producers are sure of having the Ottawa market to themselves. The greatest drawback to the trade in the fruit is, that as it begins to ripen the wealthier part of the community are on the wing to the seaside, but it is quite surprising how the middle classes and mechanics are now using the luxuries of life, and as a rule they make the best customers.

I cannot speak from actual experience as to profit, but if the Michigan people are to be believed, there are "millions" in them. One man writes:—"The last season there was picked and sold from a little less than an acre 100 bushels of fruit, sold for thirteen cents per quart net; producing \$384. Further, there was dug from the patch 48,000 plants, sold at \$3 per thousand, or \$144, making a return of \$528 for the piece of ground employed."

The plants of the raspberry may be kept in good bearing condition on the same piece of soil for ten or twelve years, if it has been well prepared in the first instance, and an annual top dressing is given each autumn. The ground should be forked over in the spring, and again after the crop is picked. On no account should a spade be used, unless plants are required, as it cuts the roots and causes them to throw up a profusion of suckers.

The only serious enemy we have to contend with is the raspberry saw-fly. This is easily destroyed by syringing the plants whilst in bloom, with a weak solution of Paris green. This may be applied with a hand-wisk, quite as conveniently. A teaspoonful in a pail of water will be found sufficient.

Dr. HURLBURT.—I don't know if my friend included the Black Cap. I have grown them and found them often very profitable.

A MEMBER.—What variety?

Dr. HURLBURT.—It is a wild variety, and they are very beautiful; but you have to be up before the birds in the morning; the birds are excellent judges of fruit, and I find they prefer them to apples and pears. Mr. Bucke refers to the raspberry as being superior to the strawberry. That is possible under the circumstances connected with our getting them. Most of the strawberries I have seen in the market here have

been Wisconsin persons who of strawber Mr. Bucke not find th in winter v not under spring with them. I h opinion is c Mr. F raspberries better in qu times the c differ slight laying sods find they a scantling o The S Mr. W use in tryin leave them custom of way with e The S Mr. W the attentio A MEM Mr. W Brinckle's C The S Mr. W berry; I go The S Mr. W Among the the quality i even excepti gets ripe. T ance to me bear a lot of —bear for a from week have tried qu hardly lay th reason, altho The S very importa raspberries in to northern s cause the fo great conveni and we do no however, that tant point to and can easily

been Wilson's; they are very large, but until they are perfectly ripe I think very few persons would eat them were they not called strawberries. I believe there are varieties of strawberry, however, which most persons would consider preferable to raspberries. Mr. Bucke has doubtless had more experience than I in growing raspberries, but I do not find they do best on a damp soil, but on a dry soil. The method of protecting them in winter which he has suggested is necessary, I suppose, where they are exposed, but not under all circumstances; because I have found that they have been well kept in the spring without any care,—only keeping them erect by having a frame work between them. I have had no experience in growing them in the last four or five years, and his opinion is consequently of more value than mine.

Mr. R. B. WHYTE (Ottawa).—I have had considerable experience in growing raspberries, and I entirely agree with all that Mr. Bucke has said. The raspberry is better in quality than the strawberry, and its season is twice as long; and we get three times the quantity of fruit off the same area of ground, which is a great advantage. I differ slightly from Mr. Bucke in regard to the way of protecting. I do not find that laying sods on the canes is sufficient, I think it makes the canes grow suckers, but I find they are too stiff to be kept down by mere sod. My plan would be to take a scantling or pole; it is in every way much neater and better way.

The SECRETARY.—Do you cut them back?

Mr. WHYTE.—Never until they are about from five to six feet high. There is no use in trying to grow raspberries here unless you lay them down in the snow; if you leave them up some will live, but you will get no crop the next year. I know it is the custom of many people here to leave them up, but they never get a crop, and it is that way with every variety I have ever tried, and I have grown about twenty.

The SECRETARY.—Do you make \$500 per acre profit from them?

Mr. WHYTE.—I think I get more. I believe it is quite possible if they are given the attention they should receive, and give them plenty of manure.

A MEMBER.—What varieties do you prefer?

Mr. WHYTE.—I think the best, upon the whole, is the Cuthbert, and the next Brinckle's Orange. I think those two are the best red raspberries.

The SECRETARY.—Have you the Clarke?

Mr. WHYTE.—I have, but it is nothing like as good a bearer, though a very good berry; I got them from the South.

The SECRETARY.—How does it compare with the Cuthbert for bearing?

Mr. WHYTE.—I think under similar circumstances the Cuthbert is the best. Among the yellow berries the Caroline is not worth growing, the berry is not much and the quality is poor; I think the Golden Queen is the best of the yellow raspberries, not even excepting Brinckle's Orange, which is very soft, and inclined to turn grey when it gets ripe. The Golden Queen seems to me to be better in flavor, and has all the appearance to me of the Cuthbert. I don't think blackcaps proper pay to grow here. They bear a lot of berries at once, and then no more; they are something like the strawberry—bear for a week or so and then no more; but the red raspberry seems to go on bearing from week to week, so that with proper varieties you have fruit five or six weeks. I have tried quite a number of blackcaps, but I don't think any of them paid; you can hardly lay them down. I tried blackberries a few years ago, and gave them up for that reason, although I had a very fine crop.

The SECRETARY.—I think Mr. Whyte and Mr. Bucke have both touched upon a very important point—protection. We in southern Ontario do not need to lay down raspberries in that way, and consequently have adopted a mode of pruning not adapted to northern sections. There we are accustomed to cut them back in summer time to cause the formation of laterals; I think we get more fruit from them, and it is a very great convenience in cultivation. We have, no long, sprawling arms to contend with, and we do not require any support for the bushes in the summer season. It is evident, however, that in northern sections that system of pruning is suitable, and it is an important point to note that here it is better for the canes to be long, so they will be slender, and can easily be laid down and protected.

Mr. MITCHELL (Innerkip).—I think some gentleman recommended a wild variety of blackcap, and I would like to give a word of warning in the matter. We tried a wild blackcap, and it introduced a very serious disease among our blackcap raspberries; the cane of the wild blackcap seemed to blister, and the leaves turned yellow, and after a little time the disease spread over the entire bush. We found that this disease was contagious, and was communicated to our cultivated varieties, the Gregg and Mammoth Cluster; so much so, that a few years ago we had to discard our blackcaps altogether. We found our Gregg and Mammoth Cluster where grown by themselves were free from the disease, but wherever we planted the wild variety that disease, whatever it was, was communicated to them, and we had to get rid of our blackcaps altogether. I would caution those present to beware of this disease in the wild varieties. I hardly know what it is.

A MEMBER.—Rust?

Mr. MITCHELL.—Yes, it appears like rust; but whatever it is it is very serious. The wild blackcap is very prolific, but those who think of introducing it should remember that it has a disease which even our more tender cultivated varieties are not subject to when kept by themselves. At all events that has been the case in our district.

Mr. WHYTE.—I don't like the term "sprawling," I don't have mine sprawling. I have mine tied up with two strings, one at the top and another at the bottom. It more than pays for the trouble.

The SECRETARY.—It would be expensive by the acre.

Mr. WHYTE.—About a cent and a half a year per plant.

Dr. HURLBURT.—I had the blackcap I referred to several years, and never saw anything such as Mr. Mitchell has described wrong with it. The plants were perfectly healthy, and continued so year after year.

Mr. GIBB.—Thirteen years ago I put in a great many canes, and I made careful notes of them at the time and reported. The result was my retention of the Clarke as my red. The Early Wilson and a number of others I had to give up, as I found they winter-killed, even under cloth. The winter came on a little too soon and found several matured when it set in. There is a little berry—what I consider a dewberry—which sold for rather high prices. It has a peculiar flavor, and is not nice to eat, although sold for making jam.

A MEMBER.—What do you find your best blackcap?

Mr. GIBB.—I like the old Doolittle.

Mr. BORTHWICK.—A comparison has been made between the values of strawberries and raspberries in this market. I may say that our home-grown raspberries have always sold for from 25 to 50 per cent. more than strawberries when placed in competition. There is this difficulty about raspberries, especially from the west, that they don't stand the carriage very well, but those from the west have always realized much lower prices than our home-grown fruit for that reason.

Mr. BRODIE.—Ninety miles below Quebec they can grow Cuthbert and Brinckle's Orange without protection. The Turner, I believe, was another that would grow there.

Dr. HARKNESS.—My experience is that the buds of the Cuthbert even if put-down, unless well covered with the snow early in the season, are killed. You put down a cane, say six feet high, and at the bend, where it is exposed to our cold weather, no fruit will grow, but at the top, from four feet up, you will have fruit. Of course that does not make a satisfactory crop; and I think unless you put the Cuthbert along the fences, or somewhere where there will be snow drifts, you will have to protect it with a mulch of some kind. I have grown a great many different kinds of raspberries, and I must say my experience with blackcaps has not been favorable. There are two or three reasons for that. One is that the canes are excessively brittle; you can't lay them down, and they are very apt to winter-kill. Another reason is that about the first of June, sometimes the last of May, but generally the first week in June, we have a slight frost in this part of the country, probably it will average one year in three or a little more than that, and the least frost in the world will kill blackcaps at that time when they are first begining

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to blow. I have found the Mammoth Cluster hardy, but I don't like its flavor. The Gregg will not stand our climate, and I have tried the Hillborn and it will not. There is a very fine red raspberry here that is possibly hardy and which is of very fine quality, at all events my wife and I think it is the best that grows—that is the Niagara. The Turner is the hardest in my experience and will stand our climate standing up, but it pays to put it down and protect it, as you will have fruit earlier by doing so. It is so hardy that it needs no other protection than laying down in the ordinary snow-fall. The older sorts are good; one of the best I have seen is the Franconia; it is a little acid, but large and bright in color and very attractive. Blackberries have not been a success with me. I am not speaking of blackcaps, but blackberries, they are very unpleasant to handle. It seems to me that they are reaching out for you every time you go past them, and it is almost impossible to handle them. I do not grow raspberries for profit, but for my own use, and I only grow comparatively a few; but I expect to get my work done cheaply, and do most of it with a horse and cultivator. I plant my raspberries six or eight feet apart and let them grow, and in the spring I cut them back when about four feet or four feet and a half high. You will find your lower buds will come out, and they will have late fruit; you will materially prolong your season by that means, especially with the Cuthbert, which you can almost make a fall-bearing berry. Just one word in defence of the strawberry, which has been rather abused here, I think, and that I cannot stand. I still place the strawberry at the head of our fruit production. I can understand a man who eats nothing but the Wilson and Crescent Seedling having a poor opinion of strawberries, but if you grow New Dominion, for table use I don't think you will say anything against the strawberry. I think for flavor and aroma there is nothing to equal the New Dominion, for table use. There is another berry which I see very little about in your reports, the Maggie. I got it from Mr. Arnold, and it is in some respects an extraordinary berry. It is nearly as large as the Sharpless, and almost identical in flavor, though a little better I think, the grain a little finer. It is extraordinary prolific with me, and in the year 1886 I picked berries off my Maggie on the 8th day of June, and on the 16th of July I picked berries off the same plant, and between those dates I don't think there was one day that you could not have gone to those vines and got strawberries. I think, as far as I have seen any record, it is something almost unparalleled; and the same experience to a certain extent will be found every year, and the late berries hold their size well. I find, too, that we must not, because a neighbor finds one berry do better than another, jump to the conclusion that it will do better with us; for I have found within a very short distance changes of soil which had a marked effect on productiveness, and the general success of different varieties of fruit. And, speaking of soil, I want to say just a word about the soil for apple trees. In the county of Dundas, if we want to grow apples, we must get on one of those old glacial moraines—one of those old ridges with a gravelly subsoil. If you put them on our flats they will not do, even if perfectly dry and underdrained. To get a good orchard we must go on one of those ridges which run north-east and south-west. Most of them are the lateral moraines of the glacier that covered this country ages ago, and they are possessed of peculiar characteristics. On the north-west side they are stoney—that is boulders carried over them; on the south-east they are nearly all sandy, and underlaid with a gravelly subsoil. On those ridges we can grow orchards, off them we cannot.

Mr. HURLBURT.—Silurian limestone there?

Dr. HARKNESS.—I really can't say, doctor, we have limestone there, but in some places it lies very deep, and some places it is not; but this gravel is more or less a limestone gravel.

Mr. BUCKE.—I did not touch upon the black raspberry, because we can get them from the west so much better grown, and we have not been as successful with them as with the red raspberry.

The meeting adjourned from one o'clock until two o'clock p. m.

THE QUESTION DRAWER.

On resuming at two p. m., the question drawer was opened, and the following questions discussed.

PREVENTION OF POTATO BUGS.

QUESTION.—Will Mr. Dempsey tell us whether potatoes can be grown successfully without the use of poison to destroy the bugs; if so, how?

Mr. DEMPSEY.—The first question is very easily answered. Yes. The other question "how," will take a little more time to answer. All that is necessary is to destroy the larvæ before it is hatched. To do this plant, only such varieties as produce very early, and bring your land into such a state of cultivation and fertility as will produce very rapid growth, and be sure to grow potatoes with only one eye in the hill, and that springing from a large piece of potato; so that you encourage rapid growth. Fertilize your potatoes as much as you can after they are up by sowing a little plaster or anything else you like; use every means possible to produce rapid, early growth in your potatoes. The bug invariably deposits the eggs as near the top of the stalk as possible, and if you can make the stalk grow three inches a week it will so shove the eggs of the potato bug that they cannot hatch. It is very simple, but I have had no difficulty this year in getting 200 bushels to the acre without the use of poison; and we had the same results last year; two years in succession, you see.

THE CRAB APPLE.

QUESTION.—The printed programme of these meetings does not include the subject of the crab apple; as this meeting is studying out fruits for cold regions would it not be well to include this subject?

The PRESIDENT.—It was thought that the crab apple might have been discussed, and we thought some one in this section would have said something about it. Of course further west we don't feel the same interest in the varieties which are interesting in this section.

Mr. SMITH.—If anyone wants to ask a question in regard to varieties let it be sent in in the form of a question, and it can be answered.

Mr. BRODIE.—Mr. Gibb has more experience than anyone I know on the crab apple question.

Mr. GIBB.—Perhaps it is best not to interfere with the regular programme.

The PRESIDENT.—It would no doubt be of interest to some of those present.

Mr. GIBB.—My choice would be early strawberry, Gibb of Wisconsin, and Wonder of Wisconsin. The early strawberry ripens with the Red Astrachan.

The PRESIDENT.—It somewhat resembles the Early Joe, doesn't it?

Mr. GIBB.—No, there is no resemblance.

The PRESIDENT.—There is one resembling the Early Joe.

Mr. GIBB.—None have that flavor, but they do in the thickness of skin.

Mr. BUCKE.—Why do you exclude the Hyslop and Transcendent?

Mr. GIBB.—Because if you have had them two or three times you get tired of them.

A DOMINION FRUIT GROWERS' CONVENTION.

QUESTION.—At the last annual meeting of the Montreal Horticultural Society and Fruit Growers' Association of Quebec, the President, Professor Penhallow, brought up the question as to whether we could not hold in Montreal next winter a Dominion Fruit Growers' Convention. Does this society think such a move desirable?

The SECRETARY.—Such a convention would be very interesting and profitable. Questions of general interest to both provinces would be the only ones discussed at such

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a convention, which would be held, not perhaps every year, but occasionally, say once in three or five years. I think in that way it would be a desirable thing either next year or some time within a year or two. There are matters of naming fruits and other subjects that would be generally interesting for such a convention to consider.

The PRESIDENT.—I certainly agree with what the secretary says. It is a matter I spoke of myself some two years ago—the holding of a meeting of the Fruit Growers' Associations of the various provinces at a central point. I remember speaking on this question to a prominent fruit grower of the Annapolis Valley, in Nova Scotia, and I believe a great deal of good could be done by the meeting together of the Fruit Growers' Associations from the different provinces. Questions would come up affecting us all, not only interesting, but out of which we might seize something in which we are behind at present. I believe this is a matter that ought to receive a good deal of attention and consideration, and if it is brought properly before the board of the Montreal Horticultural Society, they would probably take the initial step, and communicate with the other societies, and I think the thing could be managed very nicely in a year hence—a meeting of the combined societies.

The SECRETARY.—Would you have it a meeting of delegates or of the members of the societies?

The PRESIDENT.—It could be either way: it can be open to the members if they choose to come, and I think there are a great many who would.

Mr. GIBB.—We have a board meeting about Monday of next week, and if you think well of the proposition, and pass any resolution favorable to it, we will enter into correspondence and go to work at once. There is nothing like having good long notice.

The PRESIDENT.—Is there any member of the Ontario Fruit Growers' Association here prepared to move a resolution. I suppose, Mr. Gibb, this matter should properly come before the Board of Directors, and I think probably if the secretary will make a note of it now, the matter will be brought up and considered at our meeting before the present session closes.

THE DISHONEST FRUIT TREE AGENT.

Q.—Is not there some legal way of preventing agents for fruit trees taking advantage of the ignorance of country people—generally to sell them something that will not suit our climate. I have heard that there is some law in Minnesota to restrain dishonest agents in this respect?

The PRESIDENT.—There is the dog law—setting the dog on them. I have not heard of any other law bearing on the matter at all.

The SECRETARY.—I think I have noticed something in the Minnesota transactions to this effect: that all agents who were taking orders through the country were required by law to furnish a certificate from some respectable nurseryman showing that they were properly authorized to take orders for fruit trees. I think this is a very important point. I think nurserymen have to bear a deal of blame which does not really attach to them, from the fact that there are irresponsible men going through the country imposing on the people. I think such a law here would perhaps be very wise. At all events, I think people should be warned not to patronize any agent who has not a certificate showing that he is properly authorized.

The PRESIDENT.—Just a point in that connection, which is this. Personally, I feel a good deal of interest in agents; I used to buy from nearly every agent that came along, and I have many times felt like punishing some of them very severely. I have been taken in very often myself, but at the same time I have looked at it in this way, that were it not for these agents and the risks we take in the matter, we would not be as far advanced as we are today. We have been able from that simple fact to test varieties from different localities that we would not have known of but for the incessant bother of these agents, palming off fruits upon us. But just at this point we see the necessity of anyone who takes any interest in fruit growing joining the Ontario Fruit Growers'

Association. I think everyone who takes any interest in an association of this sort looks into their writings and reports of discussions and so on, and if he does that, it will not be an easy matter for any agent to fool him. They can see by our reports what they ought to buy—what there is some chance of success in their locality with, or whether there is no chance of success at all, articles that have been tested and those that have not been tested. I think they will find themselves very safely guarded by joining such an association as this.

Mr. WRIGHT.—Mr. Gibb says there is such a law in Minnesota.

Mr. GIBB.—I happen to know in this way, that Mr. Harris of Minnesota wrote me. The trouble there is that the farmers bought a great deal of stock from the south, so much that the impression has risen generally among the farming community there that the tree cannot be grown. To avoid that, they have passed a most stringent law. A man who lives outside the State of Minnesota, and grows his stock outside of it, if he wishes to sell his stuff to agents in that State, has to deposit with the Secretary of State the sum of two thousand dollars, and then the secretary gives him a certificate authorizing him to sell his stuff in the State of Minnesota. The question has been raised whether the two thousand dollars is to cover the operations of all his agents, or whether there ought not to be a deposit of two thousand dollars for each agent, and that question had not been settled when the last report came out. In addition to that, a duplicate of the order has to be given to the purchaser, so that if there is any misrepresentation in any respect it can be ascertained. Of course, the two thousand dollars is held as a bond, and the State Government will hold the man responsible for any misrepresentation. It is a hard law, but they found it necessary to make a law of that kind.

Mr. MITCHELL.—There is a sort of misrepresentation which, if there are any nurserymen or agents here, I would like to mention. That is in the matter of roses. I have been getting them from nurserymen and agents for years, and there are some varieties I have never been able to get. I suppose they have thought that I am only an amateur and have only a small stock of roses, and that if they sold me something better than I ordered it was all right. But there are certain varieties I have been ordering and could not get, and I would like to call the attention of nurserymen and agents to the fact that even though they may send me a better variety than that I ordered, it is quite possible that I may be already supplied with that variety; indeed, that has unfortunately been the case with me frequently. We do like when we send for anything, whether it is through an agent or to the firm direct, to get what we ordered; we don't even want something better than what we ordered. If there is anyone here who has in this way sent me something better than what I ordered; I hope he will make a note of it—that I want what I order, no matter if it is not quite as good as something else.

BURYING TOBACCO STEMS UNDER VINES.

Q.—Has any member tried the effect of burying tobacco stems under his vines as is done on the Rhine, to keep away vermin and mildew?

Mr. DEMPSEY.—I have never tried it myself, but I have seen some gentlemen trying it.

Mr. WHYTE.—The question is mine; a gentleman who traveled in Germany, tells me it is a very common practice there, and that it was believed to be an entire preventive of thrip. He advised me to bring it before the meeting.

The PRESIDENT.—I make use of sulphur in my vinery twice during the season, and I use it on the soil only. I never know such a thing as mildew, thrip, or anything of the kind. Whether it is due to that or not I can't say; the absence of mildew certainly is. I use it early in the season as the vines are blooming, and afterwards when the fruit is about setting, and it seems to me to always have the desired effect.

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GRAPES IN THE OTTAWA VALLEY.

Mr. R. B. WHYTE (Ottawa).—This is not the natural home of the grape vine, and owing to the severity of our climate we have to be constantly on our guard. We have a short summer, and the principal difficulty is the cold winter, which affects all varieties. Every year our thermometer goes down to 35 and 40 below zero, and that necessitates covering. This necessity for covering renders it quite impossible here to prune vines up as high as is commonly done in the west, or in the United States, and it is necessary to have it done so that they can be laid down, and also so that they can be laid down easily without breaking. There are quite a number of systems which answer the purpose. The system now is the two arm system—first two arms along the bottom of the trellis, and cut down all the fresh growth to one or two buds; I think that is by far the best, and by that means you have a vine which is easily laid down. Another is a modification of that system. Instead of growing short spurs to these arms they grow upright, and allow the fruit buds to come out about eighteen or twenty inches apart. I have tried that, and find that they are very apt to break off. Another system I have had a good deal of success with, and not much practised here, is the arbor. How it is going to work in the future I don't know, but for the present I keep it under control, and the most successful vines I have this year are trained that way. The chief advantage of the two arm system is the facility it affords for laying down; it has greater advantages for covering than any other way, and also much simplifies summer pruning. I have tried covering with corn stalks, straw and straw manure, but I find that nothing answers so well as earth, which never brings mildew on vines as the others do. It is no easy thing trying to grow grape vines here without cover. I have met several people who have tried with the hardy varieties, but it is a total failure; no fruit bud can stand 30 to 40 below zero unless it is covered. In some cases, I believe, they have lived through when covered with snow, but my experience is that it is not sufficient, and I have always found the earth satisfactory. This necessity for covering with earth has one good effect, it prevents too close planting; you are obliged to plant your vines far apart. I have found that about twelve feet each way is the best average distance, you can get quite enough earth between rows twelve feet apart to cover the vines. The remarks I made a few minutes ago in regard to the raspberry apply also to the grape; we must have all the sun possible; it is no use trying to grow a grape vine unless you can have it where there is no tree or house for shading the vine. I have had a good deal of experience in this particular. Last year I was seeing the way the Brighton behaved with me. I had one growing in one of my arbors, and it ripened early, quite as early as Moore's Early. I had another one growing where it was shaded by an apple tree, and it never properly ripened at all. The only difference was that this was shaded by the tree, and didn't get the proper amount of sun, while the other did. Another point on which there is a good deal of difference of opinion among grape growers is summer pruning of vines. I am quite satisfied that it is better not to let the grape vine exhaust its vitality in growing more fruit than you require. I have an arbor in the shade of my house, where we allowed it to grow all the fruit that it would—it is Roger's No. 3, and might not require a great deal of sun, but every year the grapes on this vine are quite unfit to eat; they never have a proper flavor. But, while it is absolutely necessary to produce the best fruit, it is quite possible to overdo summer pruning, by taking away so much of the foliage that every shoot bearing three branches of fruit has only eight or ten leaves. This is a great mistake, and never fails to yield poor fruit, the fruit no doubt colors earlier, but it never ripens properly, and never has the proper flavor. A striking illustration of the ill effect of defoliation may be observed in growing tomatoes. Everybody finds it difficult to get all the tomatoes ripe, and it is the practice to cut off a great part of the leaves to let the sun in, but the result of this is that you get fruit with no flavor. Now, I never pull them off if they are not ripe before the frost comes, and the same applies to the grape; but we must train our fruit so as to get the greatest possible amount of sun if we want to secure the best results. It is very difficult to lay down any rule as to summer pruning which another person can safely go by, so much depends on the variety of vine and the vigor of its growth. As a rule I grow my vines

on the two arm system on a trellis about five feet high, and I allow them to grow perfectly free until they get to about the top, about five feet high, when I pinch them in; I never allow them to grow beyond the top of the vine. Then, as the laterals begin to break, I always pinch them back to one shoot, which I think enables the fruit to ripen properly. One of the great drawbacks here is the uncertainty of our season. Up till 1881 we had no trouble in ripening any varieties, but since that until last year, which was like 1881, we had a succession of cold summers. To show the difference between years, I may say that Moore's Early ripened with me last year, well colored, on the 28th August, and perfectly ripe on the 4th September. The year before that it was fully two weeks later, the 10th and 18th of September, and in 1886, when it was still colder, it was another week later. A very important question is what kind of grapes to grow. I have made an abstract from my diary last year of the time grapes ripened. As I said before, Moore's Early ripened on the 28th of August and the 4th of September. It is somewhat singular that the Brighton was quite ripe on the same date; that the vines that had had all the sun I could give them ripened as early as Moore's Early. Adirondack, Rogers' 3, Amber Queen and Eumelan were quite ripe on September 8th and 12th. That is last year's experience, all ripened by September the 12th. In 1886 it was from the 25th of September to the 1st of October before they all ripened. The previous year the great bulk of the grapes were green on October the 6th; the only kinds that ripened at all being Moore's Early, Rogers' 3 and 9, Delaware, Martha and Brighton. It is a very difficult thing indeed to tell what kinds of grapes to grow here from any one year's experience; you must take the average of several years before you can have any idea. I have made here a list of the grape I have grown, those I consider the best, and those I have thrown out. Among the black grapes I put first Moore's Early, I don't say it is the best, but it is generally a most respectable grape. Brighton is a fair grape. A much better is Rogers' 4 or Wilder, which I have placed second; I consider it a much better grape, and a fair bearer, and it ripens just a little before the Concord. It has this great advantage over the Concord—that it is fit to eat before it is ripe, which the Concord is not. Along with the Wilder is the Barry and one or two other of Rogers' grapes, which are so much alike that I do not separate them. In my experience we really have no thoroughly reliable third black; all the others are so far behind that they are hardly entitled to be put in third place; the Adirondack, I think, is the best. The Burnet mildewed this year, though it is the first time I had any trouble with them; before that I had a good opinion of them. There are a great many grapes I have not tried, among which is the Champion, which is a grape I don't think it is right to grow; it is corrupting the taste of the people who use grapes, and it is really doing mere harm than good. It is undesirable trash. The Hartford Prolific, too, I think is not worth growing. Othello I threw out after four years' experience. I had some experience this year with the Eumelan; I had a good crop, but it had no flavor to render it worth keeping at all. Of red grapes it is hard to decide which to have, there are so many good ones. The Brighton first. No grape is more complete than the Brighton, which is perfect in every way. It ripens with me in the first three or four days of September, and there is no grape in my opinion which so nearly combines all the requisites for perfection as it does. I have had great success with Rogers' 9 and 15. 15 is a little late in ripening, but even if it does not ripen it is good and fit to use. There are a great many other grapes that have been successful; Rogers' 3 is a very good grape. Delaware, I may say, I don't think I will grow any more; I had five vines last year, and got nothing at all off them. It is a small grape which the birds find it very easy to pick off and swallow.

A MEMBER.—Put bags over it.

Mr. WHITE.—I don't think it worth it. Iona ripened early last summer, and if it would do so every summer would run even the Brighton a hard race. It never ripened with me, however, until last summer. Salem does very well here now, but Walter's ripens too late. The Amber Queen I fruited last year, several vines, and it is a very nice flavored grape, but you can't get a decent shaped bunch, and for that reason I don't think it is a grape likely to retain its place. Among green grapes the one I put first is not grown, I believe, in the west at all, the Chasselas de Fontainbleau; it may mildew in

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an unusually severe season, but it is worth growing if only for three or four a year. The next is a small grape for which Mr. Dempsey is responsible, the Dempsey 60. It is much superior to the Delaware here, and one that is generally acceptable; I know when fruits were in I would bring grapes that they would think were the best of the lot. The next is the Martha, which with me has done very well indeed, no mildew. The Pocklington and Niagara will not ripen here. I do not grow Jessica myself; but I saw it last year, and I think it is quite useless to grow here. A grape I had considerable success with is the Autochon, it is a very handsome vine growing, and the bunch is very pretty. I think that is all on the subject. I may say that several of the grapes I have spoken of were the property of Mr. O'Connor.

Hon. R. W. SCOTT (Ottawa).—My experience does not quite agree with that of Mr. Whyte, and I was considerably taken aback at hearing some of my favorites receive the castigation they did at his hands. One in particular is the little Delaware, upon which I have been growing fruit for twenty-five years and which has never failed to ripen, and to ripen moreover with very large crops. If you give it the proper food and exposure, and proper treatment, I think it is a grape that will respond most vigorously. I have taken off a certain vine forty pounds of Delaware grapes at one time. During the time I have been growing it I have never, with the exception of one year, failed to realize a satisfactory crop. Besides, the Delaware grape in this part of the country is very much superior to that grown in the western section. A few years ago when the association met here in the grape season some of the members came along to see these grapes growing in my garden, and that observation was made by gentlemen from St. Catharines and other points in the west, that the fragrance was very much superior, that it was larger, and very much finer than the Delaware under similar conditions in the western country. I dare say many of the members have detected that where fruit will ripen and mature thoroughly in a colder climate it is superior to that of the warm climate. You take the apple of Montreal, grown on the north shore of the island, or of the Ottawa valley, and those of the west, and you will find the fruit entirely different, one is not worthy to be considered, while the other is quite fragrant, and the most delicate that can be grown. I have remarked that not in reference to the apple alone, but also the grape, and therefore feel somewhat displeased at Mr. Whyte's cut at the Delaware. He finds difficulty in laying down the grapes year after year. I have Delawares which have been laid down steadily twenty-five years, and I certainly don't experience the same embarrassment; they are now old vines, and pretty stiff, yet they take up their position very readily. They are allowed to fall of their own accord, and lie until the weather is closing in for the winter. Then the plough comes along on each side, and a ridge of earth is thrown up and in that way they are buried. Sometimes one may require a heavier covering, and a man follows the plough with a shovel, and completes the covering. I think it must be, admitted that grapes treated in that way in northern latitudes yield much more abundantly than those further south which are not put down in the winter. I notice in reading United States horticultural papers that the question is frequently asked if the grape does not yield as liberally the year after if it has not been put down. The labour of putting down the vine is fully repaid the following season by the quantity of grapes produced. If I were selecting grapes for this part of the country, and were confined to one variety, I should certainly choose the Delaware; of course it requires great care, and many years it carries too much fruit, for which you suffer the next by its absence. The second grape I would take for profit in this part of the country, is the Lindley. Agawam of course is a very fine grape too; I have been growing it a great many years, and it is a very fine keeper, which is the best of it. The Lindley is not as good a keeper as the Agawam; I find they keep well up to Christmas or up to the beginning of February we have been using them. There is another grape which I regard as the best if it would ripen, but it does not. It is the Iona, which is equal to any grape in the world; I do not know any hot-house grape finer or more delicate in flavor than the Iona; even when unripe it is preferable to many other varieties of fruit. I have grown it many years, and though it does not always ripen it is, as I said, preferable in the unripe state. It is a very liberal bearer, and the vine is a very beautiful one, growing in festoons lovely in form, and it always has an enormous crop. The vines bear too much, at least I have

found that difficulty ; if the quantity of fruit is reduced the green buds stand a much better chance of ripening, and although it does not ripen perfectly every year I should be exceedingly sorry to cut down any of the vines I have. The other grapes I have are the Adirondack, which I have been growing about twenty years. It ripens fairly well with me, and is a fairly abundant bearer. I find Eumelan very salable, and it always ripens, and is a very good bearer. With the Brighton I have had only limited experience ; Mr. O'Connor has had much more experience than I have and he thinks very highly of it, and what I have seen of it myself has been of a most favorable character. The Diana will only ripen occasionally, though it is a very nice grape. The Rebecca is a very pretty and delicious white grape, and one that always ripens, but I would not advise any one to plant it. Moore's Early I find a fairly good grape, but not as abundant a bearer as many other varieties. It always ripens. To our western friends, however, I am afraid we cannot give any very valuable hint, because the knowledge, not alone of grape growing, but of horticulture generally, is so much more widely diffused in the west than in the east. It is only of late years that fruit growing has been begun here, and at one time it was the general belief that very few fruits could be grown here successfully. However, I have experimented not only with grapes but with several other things, and I find this part of the country rather favorable than otherwise. I think the reference which has been made to agents is exceedingly pertinent, and I think if some authority could see that no sales of fruit trees were made except to experienced persons it would be an immense boon. There has been great discouragement in this part of the country, were large numbers of trees, vines and shrubs of one kind or another, the refuse of various nurseries, have been disposed of, which were not in any way adapted to the requirements of this part of Canada. In consequence of this a very general opinion has been formed that the Ottawa region is not adapted for growing fruit. There are many very excellent varieties of apples, pears and other fruits which can be grown in the Ottawa Valley, but the difficulty is that people in ordering trees have gone in for too great a variety ; had they limited their orders to these particular varieties, there would have been no difficulty whatever in producing just as fine fruit, though not in as great variety, as in any other part of Canada, which I think the display on the table here will show.

Mr. A. M. SMITH.—How do you keep your grapes ?

Mr. SCOTT.—In cork dust—these grapes have been kept in cork dust. I have kept Ionas in very much better condition than any of those on the table until the month of March. This year, leaving them out in a cold shed, the frost came on too quickly and touched them all. As a rule I can keep the Delaware till Christmas ; we use the Delawares until Christmas, and then after that some other variety, keeping the Ionas until late in the spring. I have eaten Ionas which were perfection in the month of March. I may say that I don't think there have been six days this year since August that grapes have not been on our table twice a daily. They were packed in barrels and boxes, covered with this cork dust in which the Malaga grapes are brought to Canada. I have the cork perfectly dry, and on a dry, sunny day put the grapes directly into the barrel, covering them with a layer of the cork dust, and then put in another layer of grapes and cover them with the cork dust and so on.

Mr. MITCHELL (Innerkip).—I have never listened to any discussion on any subject from which I have learned more valuable facts than I have acquired from listening to the gentleman who has just finished speaking, and from Mr. Whyte, who preceded him. There is one point I would like to emphasize, which was taken by Mr. Whyte ; that is, that there is a proper balance between foliage and a healthy growth of a plant, not only with grapes, but in regard to everything else. I have experimented a great deal in that direction myself, and I find that the foliage of a plant is just as necessary to its healthy existence as the root ; if you take too much foliage off the roots decay. Mr. Whyte mentioned the Worden, but said that he had not much experience with it. Of course I am not from the Ottawa valley, but I come from a pretty cold climate, and I have been fruiting the Worden for several years, and I have been recommending it to all my friends, and as the climate where I live is something like yours, I can recommend it here, almost beyond any other grape that is grown. It

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is earlier than the Concord, and very similar or rather better in flavour, and very much like it in hardiness and many other respects, which are very necessary in a good grape.

Mr. O'CONNOR (Ottawa).—I have had some little experience in growing grapes. My system of cultivation is very much as described by Mr. Whyte. My trellises are about five feet high, and I grow the vines on the two arm system, which I find as convenient as any method with which I am acquainted, and that in the laying down of the vines it is the most convenient we can adopt. In regard to pruning, I prune very much in the manner which has been described, allowing the vine to run to the top of the trellis, and after that I prune up above that, and take away more or less of the lateral shoots, though I quite agree with the gentleman who has spoken in regard to the ill-effect of taking away too many of the leaves. Evidently the leaves are there for some good purpose, and it is a mistake to remove them so that the fruit is bared to the sun; it does not ripen satisfactorily. In regard to sunlight and shade, grapes will not do at all where there is any shade. When I started growing them I planted two or three rows in the neighbourhood of a pine grove I have, but I had to give them up; for while the grapes planted in the open field where the air was on them from morning till night did well, these did not. In regard to varieties, I may say that I have had in my collection twenty-five different varieties, but I think after all that in this climate there are just four or five which can be grown with success. It is only just for the sake of having a little selection that we go beyond that, but for every-day purposes I do not think it is desirable to have more than five or six. In regard to the Delaware, I have to agree with Mr. Scott that the Delaware is a very admirable, choice little grape, and not to be discredited; it is a grape, however, which requires very careful culture—you have to take a good deal more care than with other vines, but it pays, because its flavour is very delicious. Of the Brighton I suppose I have about 200 vines. It is no doubt a very excellent grape, a very abundant and constant bearer. It has borne now for a number of years with me, and it bears a very large bunch of fruit, and the grapes have a very rich flavour. It is also a grape which ripens reasonably early. This year all my Brightons and Delawares ripened early—there are samples of them here picked on the 9th of September, and I don't think they have lost a great deal of their flavor. I think their flavor is just as good as the day they were picked, except the Brighton, which I do not think keeps its flavor as well for a length of time; while the others turn more into sugar the Brighton turns more into water. After the Brighton the Lindley is a magnificent grape. There is no doubt that it generally ripens and gives a very fine bunch; I am so pleased with it that I am going to put in about 100 more vines this spring. Rogers' 15 is a fine grape. With regard to Moore's Early, I think amongst black grapes it comes after the Champion. The Champion is the worst grape going, and I quite agree with Mr. Whyte that it ought to be cut out of all vineyards; because it goes on the market very early in the spring, and everybody who tastes it is so disgusted that they don't want any more grapes. It gives people false impressions, for many of them think that all black and red grapes grow on the same vine, and are all of the same kind. In price the Champion is really worth nothing at all, and yet it generally brings the very best price of any grape that is sold. A gentleman has mentioned the Worden. I have fifteen or sixteen Wordens bearing, and I can bear testimony to all he says, that the Worden is one of the finest black grapes that we have. It is a good deal better than the Concord; it is larger, has a magnificent bloom, is a fine bearer, and in every way a beautiful grape. It yields a magnificent crop, and is hardly any trouble in management; it is hardy, and, if the season is anyway reasonable at all, it ripens.

A MEMBER.—How do they keep?

Mr. O'CONNOR.—Well, they were a very large crop this year, and they were selling for nothing, and I thought I would put up a lot as an experiment. Black grapes will not keep at all. I have put up a variety of the black grapes, and they have all failed to keep, there is no use in trying them at all; they failed in a very short time—not more than a month. I put fifteen hundred pounds of grapes in my cellar last September, which have kept very fairly. First, I put in a lot of black grapes which all failed, all mildewed and had to be thrown out. But in regard to red grapes, the Brighton keeps well; so does the Rogers' 15 and Delaware, and the Lindley keeps splendidly. The

three best keepers, I think, are the Lindley, Rogers' 15 and the Brighton. There is no secret in keeping grapes. All I did last year was, we picked, and got a lot of little paper boxes such as you get in stores, where they are very happy to get rid of them, and placed the grapes in them and put them into a cool cellar. The boxes you see on the table are the identical ones in which they were placed, and they have remained undisturbed in those boxes since the 9th of September until I took them out this morning. I put in 1,300 lbs. of the red grapes, and they have kept remarkably well. During the last five months we have had them every day, three times a day for a large family, besides a lot I have given away. Mr. Scott has gone to the trouble of packing in cork dust, which is very troublesome. I went to that trouble once and it did not succeed, and I then thought I would adopt my present method. The whole secret is to keep your grapes in a cold place, as cold as you like, as long as it does not freeze. I find that grapes I have had up from the cellar and in the room for twenty-four hours seem to wilt and shrivel up. But keep them in a cool place and they will be in the same condition you see them here. For red grapes I say the Delaware, Brighton and Lindley and the Rogers' 15, and of the black grapes I know none that gives more satisfaction for a general grape than the Worden.

A MEMBER.—Do you think it beats the Concord?

Mr. O'CONNOR.—Well, I do. The Worden is more reliable, and in my opinion a better bearer. It is a little larger grape, and has a most magnificent bloom, and a very nice flavor.

Mr. BRODIE.—How does the Worden compare with Moore's Early?

Mr. O'CONNOR.—I don't think it compares with Moore's Early which comes in very soon after the Champion. Moore's Early ripened in August this year, I did not keep track of the precise day, but very early indeed. I don't think the Worden would ripen at that period, but I think it ripens sufficiently early to be a very satisfactory grape if there is any reasonable weather at all. What we are most afraid of is the first week in September there will come a frost, and the temperature drop down in one night. If you can only get over that it is all right.

Mr. MOSGROVE (Ottawa).—When I came here to-day I certainly did not expect to address this meeting, because I am a novice in fruit growing compared with so many here. I took up grape growing, like my friend, Mr. O'Connor, first for pleasure, and at the present time I have some eight acres covered with vines. I knew nothing about it; I had to trust altogether to the experience of others—to purchase intelligence. I must say that I did not find it by any means as advantageous as I could desire. The first difficulty I had was that every man I got to plant my vines planted them on the principle that they required all the sun and air possible, and for that reason planted them near the surface. Two or three years showed me that that was a mistake, and we had to plant them from ten to thirteen inches in depth. I may say I have lost a thousand vines a year, and all attributable to the fact that they were not planted sufficiently deep. The next trouble was the training. I adopted the course which I have seen described as the two arm system. The difficulty with that is laying down, and in that respect you have to improve upon the system. I find that instead of having the stem coming up, and then your two vines branching out each way from there, you have to start them, as it were, from the ground. You have to start the vine from the ground, not above the ground, so that when you lay them down they can lie flat on the ground without injuring the vine. Upon this point I have made what I may call a discovery; I have found the practical utility of doing this. In laying down the vine my man makes with a hoe a pit three or four inches deep, and puts the vine in the bottom of that pit, and then after that they lay them down and peg them there. I find that when this course is adopted it has two results. In the first place you get them so much lower, so much more covering upon them with a less quantity of earth; and secondly, when they are pegged there they remain firmly fixed, instead of springing up, as they do when laid upon the surface. That being done we put the plough in, and plough about four inches in depth right up on the vine, in such a manner that the man following with a wide hoe can cover them up very quickly. I find that one of the great objects in connection with keeping the vine here is to keep the snow on the ground. I have this year adopted a course which I do

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not know how it will work. The first thing we used to do was to cut away the vines from the trellis. This year instead of doing that I have simply cut away the arms from the wood, leaving the growing wood as it were upon the trellis. This I expect will tend very materially to keep the snow upon the ground, and thereby form a protection for the vine. If this succeeds this year I shall carry it out more fully next year than I have done this. I have a good many of the grapes that are shown here, and they have all done very well, but I have lately taken to another plan of cultivating grapes altogether—I have adopted the Riparian family for this northern climate. I think if we want to succeed here with grapes we must take our wild grape, and propagate from that, or get a seedling; I think that will be profitable. Upon my location I know nothing about frosts, I have never yet had a single grape killed with frost. They have all ripened with me. It may be that my location is favorable in that as in other respects. Mr. Hillborn was on my grounds last year, and I showed him some of my Elvira's growing there. They are always ripe a few days before the Concord. The grape colors and ripens earlier a good deal; it is a very fine wine grape. The Elvira, of course, is a white wine grape. Now, about manuring. Up to this last year I have used barnyard manure. Last fall I got a quantity of ashes, and I have used some of this phosphate from the mines down here, unprepared in the mercantile sense, but ground very fine, and this year I have got in the neighbourhood of a thousand bushels of ashes, and I think two tons and a half of that I mixed last fall. I intend to put some thirty to forty bushels per acre of this on my vines next spring, and the balance I will apply to some other land I intend to plant on. My view, as I said before, is that here we must adopt the northern or Riparian grape if we want to succeed.

Mr. GREENFIELD—(Ottawa).—I have had a little experience, and we find the more experience we have the better grapes we get. At one time we were glad to get the Champion, but now we get far superior grapes. The best grape we can get, I think, is Moore's Early; it is very good to keep, and comes in early, and it has very much the flavor of the Concord; you can hardly tell one from the other except by a little difference of the skin. The Prolific is an excellent bearer, and comes in late, and it will stand frost. Then the Delaware is an excellent grape and a very good bearer, and so is the Brighton. The Agawam is very good, and we are getting some more, but we find Rogers' 4 rather light for this climate, though it is an excellent grape. Rogers' 3 is very excellent if it ripens. You have to keep the Brighton down, but if you can get it right it is a good grape. I have had Chasselas de Fontainebleau, a very large variety of grape; it is a very good keeper. I have a number of seedlings too, which I expect to be able to bring out next year, and I am trying to rear new grapes in the climate, for I think if you raise fruit in the climate where it is to be grown, it is better than that which is brought from other parts. I have one that ripens as early nearly as Moore's Early, it is a very good bearer and has an excellent flavor, and if I have anything like good weather, I hope to be able to send some up next year. The Niagara is not bearing, but I have the Lady, which is an excellent bearer, though a little tender; it requires care. Iona, if you can get it ripe, is one of the best you can have, but you can't depend upon it every year.

Mr. BUCKE.—I would like to hear from Professor Macoun in regard to the Riparia and Labrusca.

Professor MACOUN.—I think those varieties raised from the Riparia are far more likely to succeed in ripening early in Canada. The Labrusca does not grow naturally at all, but the Riparia grows down on the Isle of Orleans and in the North-West, and I believe these northern varieties will yet show us that we are only beginning to raise grapes here. I may say that twenty-seven years ago I sounded a trumpet note in Colborne, on Lake Ontario, when I told people in that village that the day was coming when all the territories along Lake Ontario and eastward would be covered with grape vines, and I have lived to see the day, and I can go further now, as I said to my friend Mr. Gibb a few minutes ago, and say that I believe in ten years time grape vines will be grown in many parts of the North-West, above Medicine Hat, on the open prairies, and will ripen earlier than here. There is no doubt that you could find that the temperature at night goes much lower in this vicinity than it does in western Canada. We have no

vine in Canada akin to the *Labrusca* except just one along the Niagara frontier, which comes near it.

Mr. WHYTE.—I quite admit that the Delaware is a nice, sweet grape, and I would grow it if it would ripen. In regard to what Mr. Scott has said about the crop, it is quite new for me to hear of forty pounds having been taken off the Delaware here. Mr. Smith, a large and successful grower, told me he thought he had a large crop when he got eight pounds. I am not satisfied with eight pounds. I quite agree with what Mr. Scott says as to the grapes here having a better flavor than those of the same variety when grown west. Last year I used to buy all my grapes, and bought from the west, and I am satisfied that our Lindley and Delaware are better grapes than those grown in a warmer climate. In regard to what Mr. Mosgrove says about deep planting, I am satisfied that four or five inches is deep enough—in an ordinary farm four or five inches is amply deep. When I spoke of the two arm system, I took it for granted they would branch at the ground, as I always endeavor to get them to do.

Mr. SCOTT.—The grape vine I spoke of stood by itself; it was a shade for a summer house and had the summer house to run over, so it had ample opportunity for getting both light and air.

THE BEST AND HARDEST SHRUBS FOR THE LAWN IN THE NORTHERN LATITUDES.

James Fletcher, F.R.S.C., F.L.S., read the following paper :

In introducing the subject which has been allotted to me to-day, I shall take the opportunity of drawing your attention to some of the most valuable, from a horticultural standpoint, of our indigenous shrubs. In this way, I believe, I shall serve a more useful end than if I were to speak of many of the ornamental introduced shrubs which are in general cultivation, and which are probably just as well known to most of you as they are to myself. Of course, there are many new shrubs being constantly introduced by nursery-men from different parts of the world; but the number which may be advantageously grown in the northern parts of Canada is as yet small. Probably the northern parts of Russia will prove the most fruitful districts from which useful shrubs will be introduced into Canada. Many have already been brought over, and no doubt before long others will be added to the number.

In the meantime, however, and without going to the expense necessary in obtaining plants from so great a distance, I believe we have in our native floral stores of wealth for the horticulturist as yet hardly touched and very little appreciated. This, too, of a nature exactly suited to our severe winters, and many of them equally beautiful with the most ornamental shrubs yet introduced.

On the present occasion, when speaking of shrubs, I shall use the word in the way it is generally understood by gardeners, viz., as a small tree, and not in its restricted botanical sense. With the gardener, a shrub is a small woody stemmed plant, whether it have one or many stems springing from the ground, and in this list are included the young plants of many of our forest trees—until they attain too large a size. Indeed it is amongst our evergreen forest trees, when they are young, that we find some of our best ornamental shrubs for the lawn.

Perhaps the most convenient way to consider our subject will be to take a glance over the natural orders as they are botanically arranged.

In the Crowfoot family (*Ranunculaceae*) we find very few ligneous plants; but mention must be made of the three Virgin's-bowers (*Clematis verticillaris*) with its large mauve flowers, is a lovely object in rocky woods, where it climbs over low bushes and hangs out its delicate bells in the month of May. *C. ligusticifolia*, the Lovage-leaved and *C. Virginiana*, the Virginian Virgin's-bowers are useful for their profusion of white flowers, followed by garlands of beautiful silky seeds.

The Canadian Moonseed (*Menispermum Canadense*), is a woody creeper of great beauty and well worthy of much more extensive cultivation as a trellis plant. Its large

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shining heart-shaped or ivy-shaped leaves, as well as its clusters of cream-coloured flowers render it an attractive object.

Of the Barberries, the Oregon Grapes (*Mahonia aquifolia* and *M. Nervosa*) are the most useful, as well from their striking foliage, flowers and fruit, as for the ease with which they are cultivated.

Of the St. John's Worts (*Hypericum Kalmianum*) is the only one which comes within our subject, and this is more suited for the border or shrubbery.

In the Rue family we find the Prickly Ash (*Xanthoxylum Americanum*), but the growth is too straggly for a lawn plant.

In the next order, however, the *Anacardiaceæ* we have the beautiful sumachs, many of which form shrubs of great beauty. The scented sumach (*Rhus aromatica*) is a charming shrub and easily cultivated. The variety *triloba* from the North-West has rather smaller leaves, but is equally beautiful. This species is being largely cultivated in the United States as an ornament on railway embankments.

The western variety *occidentalis* of *Rhus glabra* being of a more compact habit than the species, could probably also be advantageously used for the same purpose.

In the Vine family we have the deliciously scented wild grapes and the useful Virginian creeper. The luxuriant growth and copious foliage of which make them the best of all creepers for summer houses or arbors, agreeable accessories to the lawn.

In the Buckthorn family we have few in Canada which would be valuable acquisitions to the lawn. *Rhamnus alnifolius* of Eastern Canada, is a lover of swamps and the western *Rhamnus purshiana* too soon assumes its arborescent form. Even the New Jersey-teas (*Canothus*) frequently recommended, do not appear to me to be well suited for lawn culture. The growth is too straggling, and there is always too much dead wood which requires cutting away. When we have so many berry-bearing shrubs, I think their place can always be better filled. The best is undoubtedly *C. Oreganus* of the west.

Amongst the *Celastraceæ*, besides the species of *Euonymus*, which are scarcely hardy enough for northern latitudes, we have two worthy of special mention, the climbing Wax-work (*C. scandens*), with its beautiful scarlet berries, and *Pachyotima myrsinites*, a small box-like shrub found in the mountains of British Columbia, with slender twigs and a profusion of small shining leaves. This would, I believe, form a good hardy substitute for the European Box (*Buxus sempervirens*) so extensively used as a border-plant.

Of the Maples a few may be grown as lawn shrubs.

The striped maple (*Acer Pennsylvanicum*) with its large light green foliage, and smooth striped bark as well as its pendant racemes of flowers is a great favorite. Other species which may be mentioned, but which are perhaps better suited for the shrubbery are the spiked or mountain maple (*A. spicatum*) and the two British Columbian species, the smooth maple (*A. glabrum*) and the vine maple (*A. circinatum*); in the same family we find the Bladder-nut (*staphylea trifolia*) with beautiful flowers and handsome foliage; but it seldom forms an ornamental shrub. Of the extensive Pulse family (*Leguminosæ*) we have remarkably few indigenous species which can be grown as useful ornaments to the lawn. The only three which are truly indigenous belong to the genus *amorphæa*. These are only known by the English name of Lead-bush, on the prairies where they are indigenous. Their fine foliage, compact habit of growth and conspicuous inflorescence render them objects of considerable interest, *A. canescens* and *A. fruticosa* I have found in Manitoba and *A. macrophylla* has been collected there with the others by Prof. Macoun. If however there is a dearth of shubbery plants amongst the leguminosæ this deficiency is more than made up in the next order the *Rosaceæ*. Here we have the cherries (*Prunus*) the best of which for the lawn is the common choke-cherry (*P. Virginiana*) of close growth and bearing a profusion of white racemes followed by heavy clusters of red-berries. The western black-cherry (*P. demissa*) which much resembles the eastern *P. serotina* but is more like *P. Virginiana* in its habit of growth, is also desirable. The other species are not quite so well suited for our purpose. The bird cherry (*P. Pennsylvanica*) when young and for a few years is a most graceful and beautiful ornament to the garden. Almost five years from the seed it forms a very symmetrical small tree with slender stem of bright color and with a large bushy head, covered in spring with bunches of white flowers and elegant foliage. Later in the year the heavy crop of crimson

cherries renders it still a conspicuous object. This thing of beauty however is not a joy for ever, it has the disadvantage of growing too rapidly and by the end of another five years has become too large for ordinary lawns. This of course may be remedied to a certain extent by pruning.

Closely allied to the cherries is the British Columbian shrub *Nuttallia cerasiformis* with light green aromatic foliage and bearing berries of great beauty. The pendant racemes of greenish white flowers are followed by bunches of large cherry-like berries which when half ripe are of a very pretty waxy-white with pink cheeks, when fully ripe however they are deep purplish-black. I have not tried this yet at Ottawa, but am under the impression it would succeed.

Following the cherries, we have the meadow-sweets (*Spiræas*) all of which are useful. By far the most beautiful of our native species is the British Columbian *S. discolor* var. *ariæfolia* called in Vancouver Island "iron wood" from its hard and heavy wood.

This is a magnificent shrub and varies greatly in size. In the woods on Vancouver Island bushes fifteen feet in height may be found, while on the bare rocks small plants occur not a foot in height but covered with the large feathery masses of blossom which last from May to July. The two Hard-hacks *S. tomentosa* and *S. Douglasii* are already much cultivated in Europe as ornamental shrubs. Another pretty shrub, whether in flower or fruit, is the Nine-bark *Neillia opulifolia* which has been separated from the true spiræas. It closely resembles its Russian representative known as *Spiræa amurensis*. Of the Raspberries (*Rubi*) almost the only one worth growing as an ornamental shrub is the British Columbian (*R. spectabilis*). I believe this plant might be made use of in hybridising. The fruit is large and luscious; but has a peculiar astringency, a little of which might make some of our cultivated varieties even more agreeable to some palates. The red and white flowered scented raspberries (*Rubus odoratus* and *R. Nutkanus*) which have large showy flowers like single roses and broad leaves, may be used to advantage in shrubberies.

Our native roses are none of them suitable for separate cultivation on lawns.

A northern representative of this natural order and one well worthy of our attention is the Shrubby Cinquefoil (*Potentilla fruticosa*). It is a plant of wide range, the specimen exhibited having been collected in Alaska. Its compact habit of growth and large conspicuous golden flowers make it very desirable.

In large gardens a few small trees of our native hawthorns may be grown with pleasing effect. In the west we have black-fruited species and in the east those with scarlet haws, there is also a yellow fruited variety in western Ontario.

In the genus *Pirus* we have our native crabs and the mountain ash, also the choke-berry, (*P. arbutifolia*) which grows naturally in swamps; but like many other of our bog plants will grow almost as well, and certainly flower better on dry ground in northern districts. Of the June berries, the dwarf variety *oblongifolia* of *Amselanchier Canadensis* would probably be the most useful on the lawn; but the most important member of this family is the celebrated Saskatoon berry of the west. The showy flowers are followed by a profusion of intensely sweet berries which are collected in large quantities by the Indians and were one of the important factors in making their berry pemmican. This shrub I am sure might advantageously be cultivated as a fruit for the market.

Amongst the native gooseberries and their allies we find some of our most attractive ornamental flowering shrubs. I will draw special attention to the old-fashioned flowering currant, a native of British Columbia (*R. sanguineum*), the white-flowered black currant (*R. Hudsonianum*) and the golden-flowered black currant (*R. aureum*) sometimes called the Missouri currant. Moreover all of these bear fruit of economic importance and a seedling from the last, is the lately introduced Crandell black currant now receiving so much attention. Allied to the above we have from British Columbia the beautiful shrub known in gardens as "Syringa," (*Philadelphus Lewisii*.) This well known and much admired shrub of our gardens is a most conspicuous ornament of the deep canons and rocky defiles as the traveller follows the raging Fraser River up into the interior of British Columbia. Mr. A. J. Hill writing from a point a few miles above Yale, B. C., in June, 1880, thus refers to this

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plant, "the whole country recently red with roses is now white with fragrant "Syringa," so lavish is nature of her floral gifts here." On Vancouver Island occasionally bushes are found, but nowhere in the same abundance as along the Fraser River. The flowers are produced in the greatest profusion, by far outnumbering the leaves, actually bending the slender branchlets with their weight and scenting the air with their delicious perfume. *P. Gordonianus* is also found in the mountains of British Columbia. The name "Syringa" as applied to this shrub is an error, as that is properly the botanical name of the lilac.

The next shrub calling for attention is the Wych Hazel (*Hamamelis Virginica*) a plant of much interest not only for its beauty but also from its quaint flowers which open in October and November and when growing separately it forms a pretty bush.

Amongst the Dogwoods (*Cornaceæ*) we have many species worthy of cultivation, as the flowering dogwood (*C. florida*), with its magnificent western representative *C. nuttallii*, both of which, however, run rather too much to trees for our present subject. Without actually seeing it in a state of nature few can comprehend the magnificence of this latter tree. One large involucre flower cluster is borne at the tip of each little branchlet. The showy white petaloid involucre are sometimes over six inches in diameter, and when fully matured are of a snowy whiteness. The tree grows in woods and on mountain sides in many localities on Vancouver Island, as well as on the mainland. It forms a tree from 40 to 60 feet in height, remarkable for its slender trunk and branches. Hardly less beautiful is it in the autumn when clusters of bright scarlet berries have taken the place of the flowers. At the base of Mount Finlayson, near Victoria, V. I., are groves of the Giant cedar and Douglas fir, which raise their lofty heads more than 300 feet from the ground. The trunks run up clear of branches like vast columns for more than 100 feet, and in the dim light beneath these giants the dogwood reaches its greatest perfection, spreading out its many slender branches in all directions, bearing their wealth of white flowers which gleam like silver. The bark of the dogwood furnishes a valuable remedy for ague, which has frequently been used by travellers as a substitute for quinine.

Of the Cornels which retain the bushy form there are several worthy of cultivation; perhaps the best are the round-leaved (*C. circinata*), the alternate-leaved (*C. alternifolia*), and the red osier (*C. stolonifera*) dogwoods.

Amongst the *Caprifoliaceæ* again we have many showy woody-stemmed plants. Here we find the Snowberries (*Symphoricarpos*), the lovely little creeping Twin-flower (*Linnaea borealis*), and the honeysuckles (*Lonicera*). The most ornamental of the bushy forms is the Bracted Honeysuckle (*L. involucrata*), found from the Atlantic to the Pacific, with deep green leaves and purple berries. The Bush Honeysuckle (*Diervilla trifida*) may be used on the outside of shrubberies. Of the Arrow-woods (*Viburnum*) many are useful. (*Viburnum opulus*) the High-bush cranberry, as well as its cultivated variety, the Guelder rose, or Snow-ball tree, are well known. Other species of beauty are (*V. lentago*) the Sheep-berry, and the Hobble-bush (*V. lantanoides*).

The Button-bush (*Cephalanthus occidentalis*) of the Madder family may be used sparingly, the glossy leaves being its chief beauty. The round heads of creamy white flowers, although very pretty, soon lose their freshness.

We have now to pass over several orders without any shrubby plants, till we come to the Heath family. This, however, is one of great interest, containing many valuable plants for the horticulturist. I will mention some of those best suited for growing on lawns. Amongst the Blue-berries (*Vaccinium*) few are worthy of our attention, although (*V. corymbosum*) has been highly recommended. The western *V. ovatum* makes a pretty low shrub. For growing in a shrubbery beneath other plants few are more desirable than the deliciously scented Eastern May-Flower (*Epigaea repens*) and the "Sal-lal" of the Pacific (*Gaultheria shallon*). Pretty compact shrubs which may be grown on a lawn where not too dry are the Leather-leaf (*Cassandra calyculata*), one of the first flowers to open in spring, and the Kalmias or Sheep Laurels. The most attractive plants, however, of this large family are the rhododendrons.

Rhododendron Californicum, Hook, the Rose Bay, is found on some of the rocky islands off the coast of Vancouver Island, and also on the mountain sides at Hope, on the

Fraser River, in British Columbia. The large rose-purple corollas, blotched and spotted inside with green, are produced in rich clusters at the tips of the branches before the new leaves of the year appear. The shrub attains to a height of six or eight feet, and has long been grown in Europe as an ornament for parks and gardens. This species and *R. catawbiense*, also found on the Pacific coast, have been largely used in cultivation for hybridizing with Indian and other species. Another kind of these handsome shrubs, *R. macrophyllum*, Dow, almost as showy as *R. californicum*, also occurs in the cascades or coast range of British Columbia. *R. maximum* was formerly found in Nova Scotia and western Ontario, but it is to be feared is now extinct in both of those localities.

The Canadian Rose Bay (*R. rhodora*) is found in enormous abundance in the Lower Provinces and is a beautiful object. This belongs to the deciduous division of the genus. Closely allied with the Rose Bay are the two species of Labrador Tea (*Ledum*). *L. palustre* is only found in the far north, but *L. latifolium*, much the more beautiful of the two, grows in all our swamps from Newfoundland to British Columbia.

Of the *Aquifoliaceæ*, or Holly family, we have two representatives worthy of mention. The Mountain Holly (*Nemopanthes Canadensis*) is a deciduous shrub growing in swamps, but bears transplanting very well. The foliage is light, and the berries, when freely produced, have a fine effect. I wish, however, to draw special attention to the Canadian holly (*Ilex verticillata*) as a desirable lawn shrub. Unlike the European plant so well known as "holly," our native species loses its leaves in autumn; but the branches bear a rich provision of beautiful scarlet berries, which may be preserved with ease, and answer the same purpose for Christmas decorations. This shrub is little cultivated, but is deserving of much more general attention. Of the *Lauraceæ* we have none which would give promise of success in this locality, the Sassafras (*S. officinale*) and the Spice Bush (*Lindera benzoin*), not proving hardy enough to stand our winters. Of the *Thymelæaceæ*, the order which embraces the scented Daphnes of other climes, we have only one native species, the Moose Wood (*Dirca palustris*). In nature this forms a low, straggling bush, found in damp woods; but when planted separately in the open it makes a very pretty bush. The leaves are large, and the delicate color of the foliage renders it useful for mixing with other shrubs. *Daphne mezereum* has become naturalized in some localities, and is gradually spreading, possibly through the agency of berry-eating birds.

Following this order, we come to the *Elæagnaceæ*, low shrubs, remarkable for a beautiful development of stellate and pellate hairs on the leaves. *Elæagnus argentea*, the Silver-bush or Buffalo-berry of the North-West plains, grows easily and bears thick clusters of highly perfumed yellow flowers, followed by large silvery berries. *Shepherdia argentea*, although not bearing such fine foliage as the last named, is a more beautiful bush by reason of its scarlet berries, like red currants. Many a traveller in the North-West, before the time of railways, has blessed this bush for its acid fruit, a pleasant change of diet after living for months on pemmican. *Shepherdia Canadensis* is also a pleasing shrub which extends to the Pacific coast, where the Indians call it "soap-oolalic," and make a beverage from the berries by beating them up in water.

There are a few others of the deciduous shrubs which call for our notice. Of the *cupuliferæ*, one or two of the oaks may be grown as shrubs for a few years. Our hazels are scarcely ornamental enough to take the place of the easily procured cultivated varieties.

The Iron wood (*Ostrya Virginica*) and the "Blue Beech," or American Hornbeam (*Carpinus Americana*) are useful from their slow growth and symmetrical form. The Sweet-fern (*Myrica asplenifolia*) is a graceful lone shrub with leaves at first sight more like those of a fern than a woody plant. This is being also used with *Rhus aromatica* as an ornament on railway embankments in the United States.

Of the birches, all of the dwarf forms are useful, and small plants of the arbore-scent forms make a pleasing variety. I do not consider that any of our native willows are worthy of a place on the lawn, unless a collection is desired.

This brings to a close our list of deciduous woody plants.

We must, however, make a brief allusion to some of the *coniferæ*, which play so important a part as "shrubs" in landscape gardening.

Of the true pines (*Pinus*), few exceed in beauty our common Red (*P. resinosa*) and

White (*P.*)
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White (*P. Strobus*) Pines. Of robust growth and graceful habit is *Pinus contorta* of the Pacific slope.

For general appearance and also for its hardihood in enduring all circumstances, few can compare with the wide spread White Cedar (*Thuja occidentalis*) which will thrive in almost any soil.

Another great favorite is the Red Cedar (*Juniperus Virginiana*), which is a tree of great beauty. The staminate or pistillate flowers are on different trees, consequently specimens of both should be grown, so that the berry-like cones, which add greatly to the appearance of this tree, may be formed. Of the *Piceas* the Menzies Spruce (*P. Sitchensis*) is one of the best. The needles are stiff and the growth is virgourous. An attractive feature of this tree is the bright yellow-colored bark of the young shoots.

In the two Hemlocks (*Tsuga Canadensis* and *Mertensiana*) we have probably our most elegant Canadian trees. When growing separately, no words can exaggerate the beauty of young plants of these trees at the time these young shoots are bursting in spring. I know of no simile which better expresses their appearance than fountains of living green beauty. They equal in grace the celebrated *Deodaras* of the Himalayas. The different species of *Abies* are short-lived and rather stiff in appearance; but beautiful trees of (*A. balsamea* and *A. grandis*) the Balsam Firs are frequently seen.

The light feathery appearance of the Larches (*Larix*) will always win for them a place amongst a collection of conifers. When grown separately and on dry ground, they seem to form more beautiful trees than when growing in their native swamps.

In conclusion, I beg to thank my friend Prof. Macoun, for his kindness in lending me the beautiful collection of specimens I have exhibited to-day, and without which, I fear, this paper would have been of little interest.

Mr. CASTON—of Craighurst.—Can Mr. Fletcher tell me anything about a little shrub which I have seen between Port Arthur and Lake Superior. I got off the train there one day and saw the berries. They were of a purple color, and when I tasted of them I found they were splendid. They were about the size of a grape, and the foliage of the shrub was very much like that of the snow-drop. I thought it would make a very useful as well as an ornamental shrub. I asked one person what he thought it was, and he thought it was a June berry. I don't know, because the June berry fruit is not ripe until July.

Mr. FLETCHER.—Was it a blue berry?

Mr. CASTON.—Bluish purple.

Mr. FLETCHER.—Did it have seeds?

Mr. CASTON.—Yes, it had seeds; this shrub was about four feet and a half high.

Mr. FLETCHER.—I should think it would be one of the June berries I have referred to.

HARDY ROSES FOR OUT-DOOR CULTIVATION IN THE COLD NORTH.

Mrs. A. A. Wright, of Renfrew, read the following paper on this subject:

The successful cultivation of the Rose, like the successful cultivation of fruit, is in our northern climate attended with no little difficulty. Besides the natural enemies of this, the "Queen of Flowers," we have in addition to combat the all-destroying demon of excessive and unrelenting cold.

To obtain varieties with sufficient vitality to withstand the rigors of our northern winters, is our first consideration. In this respect, no philanthropist or enthusiastic amateur has ever made a special trip to Russia, or other high latitudes, in search of "never-fails," or "ironclads," and we are obliged to content ourselves with productions of skilled growers and hybridists of America, England and France.

The amateur who contemplates the beautifying of the garden with a bed of beautiful and attractive roses—roses that are to remain in their respective positions during the

entire season—naturally turns in those missionary pamphlets (illustrated catalogues) of the florist to the column headed "Hybrid Perpetuals," as here the amateur is told, is the list of the hardy varieties, suitable to out-door cultivation. And now comes the first liability to mistake, the name "perpetual" being altogether misleading, in fact it always reminds me of that amusing story told by Mark Twain, entitled "A Touching Anecdote of George Washington," in which the chief feature is that the name of George Washington is not once mentioned.

So with hybrid perpetual roses, there is nothing perpetual about them, except it be that some of them, like my Francois Michelin, are perpetual rampant growers, and also like some of our good temperance men, perpetual abstainers. For so far as this variety is concerned, I have not yet obtained a single bud or blossom, although it is the most vigorous grower in the garden. But to return now to varieties. Although the hybrid perpetuals are not constant bloomers, they should all bloom freely in the early summer and supply us with a limited number of flowers later in the season. And as it is on this class that we in the north mainly depend, I will give the names of a few, that with us have been the most successful. Of course, we have to protect them carefully with leaves, straw, earth, or some such material.

In the light varieties first for us comes "Madame Plantier," pure white, medium size, profuse bloomer early in the season, very hardy and vigorous.

Coquette des Alps, medium size, very full, a desirable white rose. In pink we have La France, the most beautiful of all roses, silvery rose, changing to pink, very large, tea scented, a continuous bloomer; it is a hybrid tea, not quite so hardy as the perpetuals. Paul Neyron, deep rose, very full, perhaps the largest variety known. American Beauty, large, beautiful form, very double; color, a deep rich rose, sweet scented.

The Old Province should never be omitted from any list of northern roses, full and fragrant, a vigorous grower.

In dark varieties we have General Jacqueminot, brilliant crimson, large, fragrant, very hardy. Alfred Colomb, crimson, very large, extremely fragrant, one of the most useful for general cultivation, and one of the hardiest. Marie Baumann, very bright crimson, large, full of exquisite form, very fragrant; it should be given a favored position. In yellow we have Persian Yellow, bright yellow, nearly full, well formed. Harrison's Yellow, golden yellow, medium size, semi-double, a freer bloomer than Persian Yellow.

All the moss roses we have tried, are hardy, viz.: Perpetual White, Crested Moss and Pink Moss. In climbers—Queen of the Prairies, rosy-red, large, double, scented; Gem of the Prairies, rosy-red, sometimes blotched with white, large flat flowers, slightly fragrant; Baltimore Belle, pure white when fully opened, hardy and vigorous. In the Polyantha class we have not as yet found any sufficiently hardy for out-door wintering.

In this list I have tried to give distinct varieties both in form and color. They are all beautiful and worthy of a place in every garden.

Mr. MITCHELL.—I do not know that I can add anything on this subject which will add anything to the impression already produced by the able paper we have just heard read, but I will just make a remark or two upon it. I have been very glad since we have been here to note the presence in the room of several ladies, for we are very glad to have the ladies on our side, and to have them to take an interest in these matters, and I can only say I am very sorry Mrs. Wright did not read her paper herself. In regard to the Francois Michelin, a rose which I heard depreciated to a certain extent, with all due deference to the lady and the paper we have just heard read I must say that I think the Francois Michelin must have been purchased as a continuous bloomer from one of those agents or nurserymen who are not very particular, because with me it has been a most continuous bloomer. The worst fault I have with it is that it is hard to propagate, and it is a poor grower, but it is a first-class rose, and a continuous bloomer. As to the other roses mentioned I can corroborate everything that has been said. Paul Neyron is perhaps after all the very best rose we have. The American Beauty which was men-

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tioned has had a great rage, and at the present time it is quoted on the wholesale markets of New York at \$100 by the hundred, and selling at \$150 retail, but I have never set so much store by it as many of the older and better known roses; to me there is a certain amount of grossness about it. The mosses that have been mentioned, the crested moss rose in particular, are first-class, but if you get the crested moss from an irresponsible agent I think it is likely they will sell you something easier to propagate; it is hard to propagate. The old common moss-rose is very valuable also. I have very little to say in favor of the newer mosses; they are much easier to propagate, but not so good when propagated. The Baltimore Belle was mentioned and I noticed it in our "Horticulturist," and in some American horticultural publication there has been a good deal of discussion as to whether the Baltimore Belle was scented or not. The true Baltimore Belle has very little scent. I think generally where people claim they have a scented Baltimore Belle it is Mrs. Hovy or something of that sort. There are some scented, but I have never seen any quite so perfect or beautiful as the Baltimore Belle. I may say I listened to Mrs. Wright's paper with much interest, and I am sure everyone else in the room did the same.

Mr. DEMPSEY.—I did not quite understand what Mrs. Wright meant by hardy roses. The majority of those roses require protection, without which we cannot grow them. In regard to cultivation, the best way is to fertilize the soil as much as possible; I have never found that we could make it too rich for roses. Then, as soon as they are through blooming in the spring cut them back, prune them right down, which induces new shoots to come out again. In this way we almost invariably have a second blooming in the season. Another point which we find important is to have as much shade as possible; we find that the rose will fade readily if it is not shaded a little from the bright rays of the sun, and if they are shaded by some artificial means, some laths put together with a very fine net over it, or anything of that kind, the shade is very beneficial, and the rose does not fade for several days, whereas they would fade in six or eight hours if the sun were allowed to fall right on them. In the winter we have to protect our roses, and the so called hybrid perpetuals, and the way we do that is by pinning them down to the ground and fastening them there as have been recommended by some for grapes. Sometimes we throw a little earth on, but if it is a tender variety we cover them with evergreens first, then some forest leaves over the evergreens, and then the evergreens again to keep the forest leaves there. You will find by this means none of the tender buds of the rose will rot.

A MEMBER.—Do you find mice troublesome?

Mr. DEMPSEY.—Well, mice are quite easily got rid of just by boring a hole in a block, and making a mixture of meal, arsenic and sugar in about equal parts, and putting this mixture in the hole in the block. The mice will crawl in and eat it, and we readily get rid of them.

Mr. MITCHELL.—As to making the soil rich, while the plants are young it is not well to go to the extreme. Old plants will bear almost any kind of stimulating, but instead of being good for young plants before they are fully established it is injurious. In regard to cutting back to produce bloom, I got carried away with that idea myself; I cut back until I found that I was cutting back at the expense of the root. There is a certain balance between the two things; in growing roses, like everything else, we have to use a certain amount of common sense. Don't cut back so much as to make the roots decay; and you will do that if you cut back too much. Mr. Dempsey's suggestion about mice is very good. They are very destructive, and I have found arsenic better for destroying them than strychnine, the crystals of which, I think, are so large that the mice in some way avoid them. It has been my practice, and it has been very successful, to take a little arsenic and spread it on a knife, and cut a piece of turnip and put it under something, either two boards nailed together or a board along the ground. I have found that just as good as any method I have ever tried. A little frost does not cause the turnip to decay as it does some other vegetables, and if pretty well covered up with snow it will last perhaps all winter. It is one of the best things I have used.

Mr. SCOTT.—The best material I have found for covering roses is mere earth; I find it superior to leaves or evergreens or straw, and it does not attract mice. In localities

where the ground is particularly dry I have succeeded in carrying through tea roses by covering them with six or seven inches of earth, and then covering sods over the top. I have found that succeed pretty well. But all the hybrid perpetuals can be brought through without any difficulty.

Mr. HAMILTON.—I would like to call attention to two roses, one brought out from Russia, and the other from Japan. I have got both of them. One of these roses is the double Japan dog rose; it grows about four feet high, and is even hardier than the old cabbage rose. It requires no laying down or protection of any sort, and the only old rose equal to it in hardiness is one mentioned by Mrs. Wright, the Madame Plantier. The other rose I think is a Japan rose, though I am not sure; I only say so because it answers the description of the Japan roses introduced within the last two years. The flower is about five inches across and very pretty. Most people think that the flower requires to be double. Now, this is beautiful though single, and it has one advantage—it blooms throughout the entire season. It bloomed with me last year from the beginning of June until October. New wood came up and it continued to bloom, and then the flower was varied by fruit, a pretty scarlet berry, even more beautiful than the flower. These two roses are certainly a great acquisition.

Professor MACOUN.—The last rose described by Mr. Hamilton is wonderfully like a rose which comes from British Columbia; it is very abundant there, and certainly is a very fine object.

Dr. HARKNESS.—We would like some suggestions as to how to get the best results from any particular plant, the best way of encouraging bloom of good quality and quantity.

Mr. BUCKE.—The doctor is the very man who can give that himself.

Dr. HARKNESS.—I think not, Mr. President. I am a young rose grower, and a little enthusiastic on that account, but I came here more to learn than anything else, expecting to hear from experienced rose growers. In the matter of cutting back, I don't think, myself, that it is advisable to cut back very short. We are told to cut back; that bloom is gained. I think if we have a good vigorous large bush that we can get more nearly perpetual bloom by cutting back before the bloom appears. You stop the top growth and you will have laterals sent out, and in that way you will have full bloom much more quickly than if you leave your plants to exhaust themselves by having full spring bloom. You will not have so much bloom in the month of June as if you had left your plant undisturbed, but you will have more towards the last of July and the first of August than if the plant had exhausted itself in having a full crop of bloom at first. Of the numerous enemies of the rose bush I only find one that gets the upper hand of me, which is the little borer which attacks the extremity of the young and sappy growth. It bores in for perhaps three-quarters of an inch to an inch, and bores itself out, but it stops the growth of that branch, and in doing that it at once starts out lateral growth. I protect my rose bushes with earth. I protect my teas with earth, and then cover the earth with leaves, and hold these leaves down with brush or anything of that sort. I find that we can carry our teas through our winter here (Ottawa) very well, especially if we have them in a shady place where we have a good, heavy snow drift on them; they came through there very nicely, early in the season. I have found well rotted sods to be a very successful manure for roses. A man living on a farm, as I do, has no difficulty in having sods piled up, and letting them lie a year or two. They are to be used as absorbents, and when you use these decayed sods as absorbents I think you have the very best quality of manurial application for rose bushes, and you also improve the texture of the soil.

Mr. WRIGHT.—What teas did you winter over?

Dr. HARKNESS.—Well, I don't know that I could tell you at present. There were not more than half a dozen varieties; I wintered over all I had, and there was no special selection made. Last year was an exceptional season in some respects; we had early and deep snow, and the ground was practically free from frost all winter. I don't think it would be always possible to winter over tea roses out doors, but I think it can often be done, and I think it can generally be done if sufficient care is taken, because, so far as my experience goes, they come out very nicely. I think there is nothing better than the ordinary cabbage rose; it is perhaps somewhat thrown into the background by the newer

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varieties, but as far as beauty and fragrance and quantity of bloom is concerned, I don't think it can be very well surpassed, and I would certainly recommend anyone growing roses to give it a trial.

Mr. HAMILTON.—I would like to ask Professor Macoun how roses in British Columbia differ from those in the western part of Ontario. It occurred to me that when the gentleman was describing his single rose it was very much like our wild rose.

Prof. MACOUN.—There are fourteen species of wild roses in Canada, and the northern species and the Niagara roses are different in the general appearance of the rose.

Dr. HARKNESS.—One trouble that I find in the cultivation of summer roses in the month of August is from insects, wasps and so forth, which prevent by their ravages the proper development of the flower and destroy its symmetry. I find a very effectual remedy for that in the application of a small quantity of pyrethrum. It is very easily applied, and can be used in such small quantities as not to constitute an eyesore on the rose or to make any smell, and yet be quite effective.

Mr. HAMILTON.—I think it might be well for this Association to encourage the hybridization of some of these more hardy roses. I have no doubt that the rose I have spoken of is a perpetual bloomer, and might be crossed with some of the double roses so as to originate a new strain altogether. So far as I know Canada has not done anything in that direction yet, and I think it is something well worthy of the attention of this Association. The Fruit Growers' Association of Minnesota offer tremendous prizes—I think I may use that term—for a seedling apple to be raised there under certain conditions. I think it is \$1,000. Now, while it might not be advisable to offer so large a sum to raise new roses suited this part of the country, it might be wise to offer a prize large enough to induce some amateur to go to the trouble and introduce something new, and it would only require to be started to originate new and valuable varieties.

Prof. MACOUN.—There is a little rose that does not grow much taller than your hand; it grows all the way across from Manitoba to the Rocky Mountains, through the whole prairie region from the middle of June to the last of September. I have pulled it at all seasons.

ROSE NOTES.

The following paper was read by the Hon. Mrs. Lambart, of New Edinburgh :

Perhaps a few remarks—the result of seven years' experience in rose growing, on a somewhat extended scale—may be of interest as supplementing the regular paper on the subject.

In the first place let us realize that it is not against severity of climate, but against the length of time during which the roses must remain covered, that rose growers in Ottawa have to contend.

None of the hardier teas—none of the hybrid teas—none of the hybrid perpetuals—none of the mosses—need ever lose one inch of wood *from cold* if properly covered, but the greatest care and precaution have, in my case, utterly failed to prevent the loss of a large number of bushes every winter from decay.

Dampness gathers where ventilation is impossible—the hot suns of early spring turn the imprisoned moisture into steam, and when the snow is gone and the roses come to be examined, one is aghast at the mouldering blue-black mass of jelly that was once a rose bush, often not more than one or two inches of healthy wood surviving above ground.

This disaster is wholly confined to the hardier roses, which, with their stout woody stems are more readily a prey to decay than the leathery pliable stalks of the tender varieties.

My La Frances (nearly a dozen of them) all vigorous growers, have survived many winters, but have never lost one inch of wood from any cause but the pruning-knife, and the Gloire de Dijon, a pure tea, has passed equally well through one winter quite out in the open ground.

The Jacqueminots (on the other hand), and all that hardy Baroness Rothschild race, and the mosses and the provinces (the hardiest of all), have come out of their winter sleep little heaps of black ruin.

My experience proves that the hardest of the roses (that is my hybrid perpetuals, mosses and provinces), will pass the winter without the slightest injury, quite uncovered, if they are planted near a close high fence, and that if planted quite in the open and left perfectly upright and uncovered the wood will only be killed back to the snow line; as that is about the extent to which they should be pruned, there will be but little damage done to either the bushes or their season's bloom from their winter's exposure.

I have found that, to lessen the risk of decay, it is better not to cover the hardy roses until December, although it is well to peg them down in November. The teas, hybrid teas and polyanthas should be covered in November—and well and deeply covered for at least a foot or more from the stem all around. Leaves, earth, evergreen branches, then more leaves and evergreen branches—a goodly pile,—but for the victims of decay nothing does so well as a very light covering of very dry straw.

In regard to pruning, several systems are recommended, and I have tried them all, with the result that the few concise and simple rules given by George Paul (the president of the English rose growers), have proved by far the best for us as well as for England.

He makes it a rule without exception, to cut out altogether all wood more than two years old, and to shorten the strongest shoots about one-half. Cut out altogether the weakest and the crowding shoots, and the less vigorous branches cut back to the three eyes.

These rules apply to hybrid perpetuals only—Madame Plantier, Charles Lawson, Blairii, and all of that class, should have all the wood that has flowered cut out entirely, directly the flowering season is over, thus encouraging an immediate growth of new shoots from which the next season's bloom will come.

In regard to insects, mildew, etc., I have seen nothing new suggested for some time, but I think that effectual remedies are well known to all rose growers, and only untiring fidelity in using them is required.

It may not be generally known how much common soot will add to the beauty, brilliancy and substance of a rose. It should be well mixed with the earth close to the roots, and a very few weeks will show its benefit.

It is very important to keep the rose beds well mulched during the heat of summer, and their foliage sprayed as often as possible after sunset.

Her Majesty, which created such a sensation in the rose world some years ago, seems, from all accounts, never to have bloomed in Canada. I have one bush that came from England two years ago. It has grown vigorously from the first, and last summer it blossomed. The bud was very much larger than the buds in the colored picture with which we are all familiar, in fact it was so much larger than any rosebud I have ever seen, that a perfectly true description of it would be quite incredible. Hundreds of people came to see the marvel, and the rose itself proved quite in keeping with the bud, the beautiful reddish tea foliage making a lovely finish to the spray when in its full beauty. But the mildew! worse, even, than the Giant de Battailles. It yet remains to be seen whether this perfectly peerless rose can be grown in a wholesome condition. If not Mr. Evans, of Philadelphia, who paid so much for a monopoly of Her Majesty, will have more greatness in his possession than may be to his benefit.

Merveille de Lyons (that splendid, huge, hardy, perpetual, perfect, white rose), has now been quite long enough in cultivation to be more generally known than it appears to be in Canada, and the roses that our grandmothers grew, and which can never be other than lovely, are still enumerated among the suitable roses for us to grow,—of course they are, but we all know that, and now we are asking for the results of experience as to the most reliable of the newer varieties. George Paul, Ellwanger and Barry, Peter Henderson all give lists which no collection should fail to contain. These lists all differ somewhat, but *all agree* that Charles Lefebvre, the large, fragrant, dark velvet vigorous rose is the grandest of roses, and that everyone should have all that Baroness Rothschild sisterhood, its members being Mabel Morrison, White Baroness, Merveille de Lyons, Baroness de

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Rothschild, Mme. Massicault and Baroness Nathaniel de Rothschild. Also that La France must be included, and Alfred Colomb, and Capt. Christy and Pierre Notting and Magna Charta and—but what is the use of enumerating lovely and inviting varieties on which we might wish to try our skill, when the nurserymen have combined against us; and it is simply impossible to know what rose you have until it blooms. The fact that you order Louis von Houtte, and that the rose you get is labelled Louis von Houtte, is of no importance whatever, for, is not Louis von Houtte a difficult rose to grow and to propagate, and does not the bloom of a Jacqueminot correspond to the printed description of a Louis von Houtte; and if you don't know the difference you will be highly pleased at your own success in growing a rose which all authorities pronounce a difficult floricultural task, and so both you and the nurseryman are benefited, are you not? And is he not really after all a real benefactor—opinions may differ, we rose lovers don't agree with him, but there seems to be no help for us, the business is practised so systematically and so universally. If you order a Mme. Norman, as I did one season from three different firms in Canada and the United States—you will be likely to get, as I got from all three, Coquette des Blanches. I had already five Coquettes, but that was of no consequence to the noble army of nurserymen, who, in their wisdom had decided that it was better for me to have another than the frail and lovely Norman. For Gabrielle Luizet I get La France, and would one not be very unreasonable not to think that quite near enough. For A. K. Williams, Francois Michelin, Julius Figuer, Countess de Sereneye, etc. You never are sure what you will get—anything will do for an order for one of these. I must, however, make one notable exception—I have never had a rose untrue to name from Ellwanger & Barry, of Rochester, but their prices and the duty and freight make their roses just double the price of English roses, while their stock of the new roses is quite too far behind the times. After years of martyrdom I have found relief and satisfaction, and reliability and cheapness in English roses, which at one shilling (24 cents) each, for large bushes (guaranteed true to name), when several combine an order, supply one with the very choicest stock at net price of forty-three cents per bush. George Paul, of Cheshunt, Herts Co., Wm. Paul, of Waltham Cross, Herts Co., Benjamin Cant, of Colchester, Essex Co., and George Prince, of Oxford, Oxford Co. (who grows exclusively on seedling briar), may be implicitly relied upon.

In closing I would recommend those who have failed to coax such weaklings into vigor as Louis von Houtte, Marie Bauman, A. K. Williams, Julius Figuer, Francois Michelin, Xavier Olibo, and a host of other beauties, when grown on their own roots, or on the manetti, let me beg them to get these from Prince on the seedling briar and await the result without fear of disappointment.

LANDSCAPE GARDENING.

Professor J. Hoyes Panton, M.A., F.G.S., of Guelph, read the following paper on Landscape Gardening:

The art of landscape gardening develops, as a country advances in taste, and on this account is more likely to be associated with an old country than a new. Thus we find in Europe many examples of this art are common, and inducements held out for its application, that encourage and enable men naturally qualified for the profession to study with a view to following it as a life work.

Our American friends have not been long in showing their advancement in taste as well as other things, and supply us with many beautiful examples in landscape gardening, especially along the banks of the Hudson River. Here was an excellent seedbed for the development of this art, and advantage was taken of it by the heralds in this line of work on the American continent. This locality, so favorably supplied with all the most enthusiastic could desire, gave ample scope for the work of following out the principles of landscape gardening. That their efforts were successful is borne out by the testimony of all who have taken a trip down the Hudson and observed the beautiful homes on its banks surrounded by grounds, that are monuments

of taste and skill. From this attractive district, containing so many palatial residences, innumerable examples have been taken to serve as illustrations of what can be accomplished by the possessor of refined taste; and in the form of woodcuts they have adorned many a page in horticultural journals.

With a view to direct attention to a subject so well suited to increase our pleasure in life and to more fully enjoy much that surrounds us in it, this paper has been written. We hope that the time is not far distant, when we shall be able to find many examples in our own country, where nature has supplied so much, that is well suited to furnish illustrations of what can be done by a student in this department of horticultural work.

Our country is comparatively young, its inhabitants have been largely occupied hitherto in securing the necessities of life; but having passed this period, and enjoying many comforts and not a few luxuries, the time has arrived, when a development of taste may be favorably urged. The subject of landscape gardening has not received as much attention as its effects on the culture of a people demands.

It aims at the development of the beautiful in nature, and as such must eventually, to a great extent, affect national life and taste.

A landscape gardener is born and not made; his work is one of thought more than mere physical effort. He must possess more than ordinary talent, for besides having a good knowledge of the materials he is to work with, he must combine with it a superior taste so as to arrange them with the best effect.

True, there are quacks here, as in all professions, men who have presumption to arrange trees, etc., in a sort of haphazard way, and call it the work of skill; but to reach the highest perfection in this art requires attainments of a most superior nature.

A gardener may be very efficient at his work among vegetables and flowers, and yet lamentably deficient to lay out a lawn. On the other hand, we might find a person comparatively ignorant in the cultivation of flowers, who possessed skill to group trees, etc., with very fine effect.

The surface of the earth level, rolling, rough or rugged; a body of water, as lake, pond or river; trees small and large, of every form, and the sky overhead, must be so arranged with reference to each other, that all will blend into one harmonious whole, giving to the eye an ever-changing, attractive scene, viewed from different points.

To do this, it can readily be seen, the director must possess great taste and skill. He cannot work by fixed rules—the future results of his work has to appear before him as well as those at hand; he must see the effect of the growing trees at maturity, on surrounding objects as well as what they produce in the present.

He must be able to use with the greatest effect all that nature supplies, without sacrificing the *natural* for the sake of the *artificial*.

Natural lakes are to be preferred to artificial; if only the latter can be obtained they must be made to represent as near as possible the natural; the knoll of nature will be more pleasing than the mound of art; the native rock to the mason's pile. The moment *nature* is sacrificed to *art* a stiffness becomes apparent in the scene and much of its beauty is lost; hence the need of using as far as possible all that nature supplies before the tools are introduced to give the artificial a place in the picture.

Cowper deprecates a tendency in his day to make art triumph over nature. He refers to one Brown, a celebrated landscape gardener, who stopped at no obstacle in the way of adopting the *artificial* with little reference to what could be done with the natural surroundings. The poet, in his poem "The Task," says:

"Brown appears. The lake becomes a lawn;
Woods vanish, hills subside, and valleys rise;
And streams, as if created for his use,
Pursue the track of his directing wand:
Sinuous or straight, now rapid or now slow,
Now running soft, now running in cascades,
Even as he bids. The enraptured owner smiles.
'Tis finished. And yet, finished as it seems,
Still wants a grace, the loveliest it could show."

Now, though a true landscape gardener may be difficult to find, and one cannot be made by studying the dry principles of the art—yet a knowledge of these leading

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truths, and observing to what extent they have been applied on grounds, which may come under our observation, will enable us to enjoy the work of others, so as to see in hill and dale, expanse of water and rugged rock, much that is interesting and attractive—much that never would have been noticed had we no knowledge of these principles.

Though never called upon to use this knowledge further, than to be able to see the beauty which can be developed from surrounding objects, and to thoroughly appreciate a fine landscape, the subject is well worth our attention and study.

Often much might be added to the view of a sheet of water by a proper arrangement of trees in the vicinity.

A view of the sky is much improved and modified through trees well arranged; in fact the beauty of all natural objects greatly depends on how they are presented to the observer.

The modern style of landscape gardening is widely different from the ancient. In the latter great efforts were made at regularity in form and symmetry in shape, and every object, especially trees, indicated a labored attempt to make them somewhat of a geometrical design. The pruning knife and shears were never idle; trees took the form of spheres, cubes, pyramids and many other shapes which presented themselves to the fancies of the gardener. A stiffness pervaded the whole scene, which impressed the observer more with the amount of work it had required to make these designs, than the beauty shown in the form.

As the art of landscape gardening advanced a higher ideal was presented to the student, who adopted the modern view. He sought to imitate nature, and by following her, attain the beautiful and picturesque. The *beautiful*, being characterized by curved and flowing lines, is produced by outlines whose curves are flowing and gradual, a surface of softness and a growth rich and luxuriant.

The *picturesque* shows lines of more or less irregularity, with an abrupt and broken surface, and growth displaying a wild and bold character. To reach the best results in securing these, it is necessary to have variety, but at the same time unity, and a blending of all the parts so as to obtain a harmony of these in the whole scene. While attention is given to the effective production of the whole, at the same time a proper connection of the parts is to be observed.

The principal objects of interest to the landscape gardener are :

1. *Trees*.—The variation in size and form can by the skilful hand be placed in the most effective positions. Some are round headed, some oblong, some pyramidal, some drooping, and others spiry-topped, all producing excellent results when placed in the proper position. Though the sky covers all, yet the glimpse got of it through the spreading branches of a tree is often very beautiful indeed; consequently it is sometimes well to shut off a portion of the whole in order to intensify the view of a part.

2. The ground presents many features which can be worked into beautiful effect in a landscape. It may be rolling—level, hilly and rough, and advantage of each condition taken.

To attain the beautiful a level or gently rolling surface is to be used in preference to the hilly and rough, which more properly belong to the picturesque.

A road to the residence is a very essential feature in a well laid out ground. It was once thought, that this should lead directly to the house and by the shortest way; now taste demands, if at all possible, it should be more or less curved. The direction of the road is important in the scene, as it will present the parts in the most effective way in passing through the grounds.

Trees should be so arranged in reference to it, that there should always be some part of the building in sight, and as the visitor continues his approach the view keep changing until the whole is in view. It spoils the effect very much if the same part is seen from the beginning to the end.

3. *Water*.—Whether in the form of lake, pond, river or rivulet, in the hands of the skilful supplies much to adorn a landscape.

The appearance of the water from different points; the natural outlines of its shores; beautiful walks, that may be made to skirt it, and meander away to other parts, all can be so arranged as to form a very attractive scene. Few objects afford better facilities to render a scene effective than the prescence of water.

4. *Rocks*.—The occurrence of these supplies favorable conditions to the gardener, and gives scope especially for the development of the picturesque, which blended with the beautiful gives all the most exacting could desire.

To use all these conditions to the very best results in making a landscape pleasing to the eye and a subject well suited to develop noble thoughts in the mind, lies in the domain of landscape gardening. To be successful in this I am quite sure from what has been said any one will admit, that this art requires no ordinary talent, and as already noted at the outset, such a talent falls to the lot of few. It may be improved, but can hardly be formed by the adoption of fixed rules. In Canada there is much room for a development of greater taste in the arrangement of grounds around many homes. Nature has done much, and it now remains for art to add to this, and render these places more attractive.

Our country is young, but we are advancing, and it does appear that one of the signs of progress is a development of taste. To make a few suggestions that would serve to introduce the subject of taste in the arrangement of grounds for discussion by the members of the Fruit Growers' Association this paper has been written. The task has been undertaken unfortunately at a time when there was not the leisure necessary to do justice to the theme; but I hope a few thoughts have been given that may supply food to observing minds.

Mr. CASTON.—I think this is a very important question. Although we know agriculture is the most important industry, there is a tendency now-a-days for farmers' sons to get away from the farm, and the consequence is that while the professions are overcrowded, the work of the farm is regarded as drudgery. Now, I think one of the best ways of curing that evil is to endeavor to make the home attractive. You see very little landscape gardening or attractive homes among the farmers, and if you ask the reason you will always get some such answer as that they haven't the time. Now, I don't know how far that is true, but I think they might find time to do most of it, and that by making the home attractive, they will succeed very effectually in keeping the members of the family at home. I was talking a short time ago with a gentleman down in our neighborhood who is quite a successful farmer. He had a lot of little boys running round him, and he said, "I want to make these boys farmers; I want to make them believe that this old farm is the most attractive place they can find anywhere in the country," and I think that is the way farmers should educate their children, so that the children can point out their home with pride, and say, "That is where we live." It does not matter that a man has not a very grand house if his surroundings are beautiful; that makes all the difference. A man may have ever such a nice house standing in a bare field without any natural surroundings of beauty, which is not nearly so pleasant a home as a much less pretentious house and grounds that are laid out with taste and an eye to the beautiful. In some of the older counties a little is being done in that direction by farmers, but as a general rule, you will find that landscape gardening is confined to the cities and towns in Canada. I think that ought not to be, and I think if there could be any way devised to induce the farmers to follow the example of the towns and villages, it would be of great benefit to the country at large.

Mr. SCOTT.—I scarcely claim to be landscape gardener. I have laid out a place of twelve or fifteen acres according to my own ideas. I think there is no part of the world in which such facilities are found as here for landscape gardening. Our country is so beautifully diversified, hill and dale; mountain and valley; unruffled lake and murmuring stream are everywhere to be seen. But speaking more particularly of those who come from the colder portions of the country, where the snow covers the ground for three

or four months is not drawn unequalled are grown in circumference do well in s of beauty all there is not relief to the In planting five fruit trees; it is who have dr no doubt, is the open country my success, v dotted my a hedges, but n they make th pleasing to lo if you have e the eye will f attractive the I put in a hee three days. the men out t day, which in think I lost t the purpose of I have very f Canada, and I difficulty what according to th I have moved I much more ca put them in u from place to driving winds made picturesq I think in an occupy, their in ing out an orch the monotony of ful trees, the m which much mi those things, h just listened to but in order to through the eye know what an living in the co but in the Old No human being duty to do our s to the beauty of

or four months in the year, I think it is very much to be regretted that more attention is not drawn to the great beauty of our evergreens. Spruces, pines and cedars are unequalled in beauty, and it is seen most in the winter season. As a rule, our evergreens are grown in clusters, the individual development of the tree is not promoted. No one can see the charm of a perfect spruce unless it is grown in an open space, and has a certain circumference to itself. There are some evergreens, such as hemlock, for instance, which do well in summer. I think Mr. Fletcher referred to some of them, and they are things of beauty all the year through. In this part of Canada, in eastern Ontario particularly, there is nothing which so diversifies the winter scenery as evergreens; they present a relief to the eye in our winter landscape which has a value scarcely, I think, appreciated. In planting orchards, I should advise everyone to plant one evergreen tree to every four or five fruit trees. It is wonderful the influence they have upon the surrounding deciduous trees; it is remarked that it is always warmer in the vicinity of evergreen trees. Those who have driven through evergreen forests have noticed that it is warmer there. That, no doubt, is partly owing to the protection from cold winds, but I have also noticed in the open country that the snow invariably left earlier in the vicinity of evergreens, and my success, whatever it amounts to, in growing fruit, is largely due to the fact that I have dotted my apples over with evergreens; not alone in hedges, though I have some in hedges, but mingled through the garden, where they add very much to the winter beauty; they make the garden a pleasing spot to look at, even in the winter season. It is not pleasing to look over the orchard when the leaves are all off and the trees are barren, but if you have evergreens dotted through, not in symmetrical proportions, but just where the eye will fall on them as it takes in the panoramic scene around, it is wonderful how attractive the winter scenes of Canada can be made. I may say, that upon one occasion, I put in a hedge which was certainly five or six hundred feet in length, and did it all in three days. I dug a trench first about two feet six inches by eight inches, and just sent the men out to the woods with the waggons and they brought in the evergreens on a rainy day, which in general is the time I should recommend—a rainy day in June. I do not think I lost two per cent. in putting in that particular hedge. I mention this merely for the purpose of illustrating the facilities there are in this country for planting evergreens. I have very few foreign evergreens in my grounds; almost all of them are indigenous to Canada, and I simply got a few out of the woods when they were small trees, and I find no difficulty whatever in making them grow, bearing in mind these two important points, that according to the locality either the end of May or the beginning of June is the best time—I have moved them every month in the summer, but in the months of July and August much more care is needed, but if you have a rainy day, and I would not advise you to put them in unless you have, the chance of loss is very trifling—and that in moving them from place to place in your grounds, the sun must not be allowed to play on, nor the driving winds to blow on the roots. There are few places in Canada which might not be made picturesque if a few evergreens were interspersed over the lawn, orchard or garden. I think in an orchard in eastern Ontario, apart from the beauty and the little ground they occupy, their influence over the deciduous trees would make them very valuable. In laying out an orchard, I put in every fifth or sixth tree, so arranging them that they break the monotony of the ordinary line of evergreen. Then, of course, there are other beautiful trees, the maple and elm, which grow all through Canada. This is a subject upon which much might be said, and which might be discussed at great length. It is one of those things, however, in which you have to instruct the people by example. We have just listened to a beautiful paper, very ably written, and which I hope will be reproduced, but in order to induce people to make their places look beautiful, we have to do our share through the eye, by the perceptive faculties, by setting before them a good example. We know what an influence the parks and squares in cities have exerted, even on people living in the country, and that is the reason all leading cities, not of this continent alone, but in the Old World as well, beautify them. People are influenced by what they see. No human being is so low as not to be influenced by the sight of beauty, and it is our duty to do our share as we have opportunity, and avail ourselves of every chance to add to the beauty of the world in which we live. I am very glad to do my share, and I am

sure that all here who have a taste in that direction will have similar feelings. The culture of a taste of this kind always creates a refined and elevating feeling, and I am glad to say that in Canada this feeling is growing, and is to be felt all over the land.

THE FRUIT EXHIBIT.

The following gentlemen were appointed a committee to report on the exhibit of fruit:—Messrs. W. W. Hillborn, R. B. Whyte and P. E. Bucke.

AN ADDRESS OF WELCOME.

On the opening of the evening session Mayor Stewart, on behalf of the corporation and citizens of Ottawa, delivered the following address of welcome:

Mr. President, ladies and gentlemen, on behalf of the citizens of Ottawa I desire to tender you a most hearty welcome on the occasion of your meeting here. Apart from the official position I hold, I wish to tell you, sir, and the members of your Association, that I take a deep and warm personal interest in the prosperity and success of your Association. You have done a great deal of good, not only in this country and the United States, but also in the old country, in disabusing the minds of people as to the climatic character of our country. I have visited the old country three or four times, staying there for long periods—on one occasion nine months—and the greatest difficulty I had to contend with was in speaking with people in different parts of England and Scotland, who imagined that we had a country only fit for Indians and half-breeds to live in, and that so far as growing fruit and civilization was concerned we were away behind. Now, sir, I think that idea has been pretty much dispelled by the large and magnificent display of fruit made by your organization in the old country at the Colonial Exhibition. I had not the privilege of being present at that Exhibition, but a great number of my friends who were there tell me that that fruit display did the greatest credit to Canada, and I believe it very materially stimulated emigration to this country from Great Britain. Having accomplished so much good in that way in the past, what may you not expect to do in the future? At the Centennial Exhibition, too, which I had the pleasure of attending, you made a most admirable show, and I am told that last year, before the American Pomological Society at Boston, you made a most creditable exhibition. Taking these things into consideration, I think, sir, that your Association deserves the greatest encouragement from all persons who take an interest in fruit growing, and have at heart the interest of this Canada of ours. I am very sorry indeed that you could not have visited our city in the summer time, because we have now something which will attract your society—I mean the Experimental Farm. That farm is ably managed by gentlemen who have always taken a deep interest in all horticultural matters; I refer to Prof. Saunders, Mr. Hillborn, Mr. Fletcher and some others. I hope on some future occasion you will be able to visit us in the summer so that we can show you what can be done in Ottawa in the line of fruit growing. I thank you very much for the kind interest with which you have listened to my few imperfect remarks, and am glad to have had the opportunity of being here to-night. I again extend to you a very hearty welcome on behalf of the city of Ottawa.

The PRESIDENT.—On behalf of the Ontario Fruit Growers' Association, Mr. Mayor, it gives me very much pleasure to reply to your kindly remarks. We have worked assiduously in the past to educate the people of this province, and I can assure you that such kindly remarks as you have made to-night are most grateful, and as I said before will stimulate and encourage us in this great work. It has afforded me a great deal of pleasure to visit your city, even at this season of the year, and it is our intention, as you suggested, on some future occasion, probably not far distant, to visit your city again as an association at a more favorable season. We follow with much interest the experiments which are being carried on at the Experimental Farm here under the super-

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intendence of Prof. Saunders and his staff of assistants. We look upon this as a most decided step in advance, and one that will materially strengthen our hands. Prof. Saunders was one of the ablest and most energetic officials of this association, occupying the chair for several years in the most acceptable manner. When losing him we felt that we were losing one of our best men, but we felt at the same time that in assuming the responsibilities of his present position he would strengthen our hands even more, perhaps, than by direct connection with the association. I thank you again for your most kindly remarks and trust that at no very distant day in the future we may again visit your city, until which time I trust your citizens will maintain the same lively interest in our association that has been shown so markedly during our present visit.

THE QUESTION DRAWER.

The following subjects were discussed from the question drawer :

BEST GRAPES FOR COLD LATITUDES.

QUESTION.—Will Mr. Charles Gibb give us a list of the grapes he prefers ?

Mr. GIBB.—First the Delaware, then the Brighton, next the Worden or Herbert or Arminia. (The Herbert is Rogers' 44). My preference is rather for the Worden ; next comes the Lindley, (Rogers' 9) or Massasoit (Rogers' 3) ; next the Duchess. When grapes were up before I noted down one or two new varieties, very little grown. First of all comes the Chasselas ; I don't know if it is the same you call the Chasselas de Fontainebleau. The Concord Chasselas was produced some years ago by Mr. Campbell of Ohio, who sold it out as being good for nothing. However, it is a good sized berry, and a literal sack of juice, rich and sweet. The Concord Muscat, also by him, produces a fair grape ; I fruited it in 1886 but not in 1887, I only had fruit one year ; it is a little tender, and we had slight frost last year. Another is the Rochester, of Ellwanger and Barry, which is very red with a very large bunch, the largest I have ; I always put the Rochester in for the heaviest bunch of red. I have been away a good deal, and it has been allowed to overbear, but in spite of that I always get my largest bunch from it. They are of fair, good quality. The Munroe, also of Ellwanger and Barry, is a grape of very fair quality, rather small, but a long and compact bunch. Then Rogers' 502 is a fair sized bunch, sweet with a little acid. I may say that my place is on a hillside, exposed, about forty miles east of Montreal and not more than four miles south of it.

BEST APPLES FOR SHIPMENT TO EUROPE.

QUESTION.—What varieties of apples are the best for shipment to Europe ?

The PRESIDENT.—If I were answering that question as regards to varieties that are grown or can be grown here it might be difficult for me to say, but I can tell you the varieties which we find command the highest prices in Europe. I will begin with the Ribston Pippin, the Blenheim known as Blenheim Orange, then King of Tompkins County follows close upon its heels. If you want to go earlier than that take the Cravenstein, but these command the highest prices. Then the Northern Spy and Twenty-ounce come together ; this Cabashea, or Twenty-ounce Pippin, has come up wonderfully in the British market. The American Golden Russet is up well, but the difficulty about them is that shippers as a rule ship all the standard winter apples at the one time, and the result of that is that they don't get the proper value for the American Golden Russets. The Russets should not be shipped until after the first of January ; they are not wanted in the old country until after that, and where storage can be had by all means store the American Golden Russett until after the first of January, and then the

shipper will get the full price. The Rhode Island Greening came up very well in price this year. It has been considerably below the Baldwin, but is now about even with it, or nearly so. I look upon the Baldwin as one of our best paying apples in the west on account of its keeping qualities and its shipping qualities, though I would not be in the least surprised myself to see the Baldwin go out entirely from the British market on account of poor quality; for we find that people in that market are looking much more to quality now than they used to do. They used to consider color almost entirely and never questioned the quality of the apple. They did not seem to know anything at all about that, and they don't know very much yet, but they are learning, and I believe there will be a considerable difference in grading apples in a few years, and such apples as Ben Davis and the Baldwin will go comparatively out of the market and the high quality apples come in and come up in price. I believe prices are not at their height yet. For several years past they have been advancing very steadily, for our only competitors in that market are the Americans. This year we took a jump far ahead of them; our best fruits on the British markets being worth from three to five shillings a parcel more than their best brands of apples at the same time, and in a great many cases even more than that. In fact as soon as they know it is a Canadian grown apple they want it at once, and if it is a fine sample they want it regardless of price, and they are bound to have it.

Mr. BUCKE.—How do our apples compare with the same varieties grown in the Old Country?

The PRESIDENT.—You would scarcely recognize them, so great is the difference. True, there is something of the shape and color, but the color is much brighter here, and the size is altogether beyond theirs. They only get about one-half the size we get in any of our varieties here, and as for color in highly colored apples, the color there is very sickly. It is not that bright, lively color which we get here. The only apple I took the slightest fancy to in that country was one called the Wellington, a winter apple there, and apple growers there told me it was the only apple they were making any money out of, of their own growth. I liked the look of the apple, even as grown there. It is fully as large, possibly even larger than the Baldwin, and had a much livelier color, even there, than our Baldwin. I think in this climate it would have a still brighter color than there, and possibly some change in the quality; and even there I considered the quality was pretty fair. I went to a man there to get some scions. He said he would give me some, but he said, "Don't allow any of the wood of that apple to go to Canada." I said why. "Well," he says, "it is the only apple we can make anything out of here now, and if those Canadians get any, we are done." I at once informed him that I was a Canadian, and he then refused me. I told him I was going to get that wood, and I did. It certainly made a most magnificent growth. I consider the Wellington, as grown in England, better than the Baldwin as grown here, and it is an apple that will cover the same season as the Baldwin.

Mr. A. M. SMITH.—A gentleman in St. Catharines had a few trees and it is entirely new to me; I am much taken with it.

Mr. GIBB.—If you could have added the Duchess, Fameuse and Alexander, I should have been very glad.

The PRESIDENT.—I didn't intend to slight Quebec by any means. There is no question about it, I don't know any apple we have that would bring a better price in the British Market than Fameuse if we could only get it there in perfect order. I did think of suggesting the Fameuse in small half barrels, such as they use in Virginia for Newton Pippins; they would look very fine, and could probably be handled a little better. They want to be shipped in smaller quantities than the common apple barrel, because they seem to crush badly, although we did have some this last season that arrived in pretty good order. Then the Duchess would sell at very high prices, I have no doubt about that; in fact, I have tested the Duchess myself; some specimens were got over in very good order indeed. We had some at the Colonial which arrived in very fine shape, but the Duchess had to be picked considerably on the green side. If there were only a system of cold storage on the steamship lines there would be no difficulty whatever in shipping and landing Duchess apples in perfect order on any of the British markets.

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Mr. HAMILTON.—Speaking of English Apples, did you see the King Pippin ?

The PRESIDENT.—Yes.

Mr. HAMILTON.—The reason I ask is that last time I was with our society in Montreal the question was asked before 100 fruit growers what was their best apple, and without exception they put the King Pippin first. It is an apple almost indistinguishable from the Cellini, and I would like to know if that is correct. The Cellini, as we grow it, is pretty large, about as large as the Alexander, but a little longer.

The PRESIDENT.—It does not narrow into the eye like the Alexander.

Mr. HAMILTON.—No. The Cellini at my place is all right ; it has proved the hardest of all the old apples I have had, leaving out of question the Duchess. It is a very fine tree and a heavy bearer, and the fruit is fine in size and quality.

Mr. DEMPSEY.—I have seen the Cellini and King Pippins tried ; you will almost invariably find that the King Pippins produce some enlargement on one side, while the Cellini is perfect in form. Nor is the King Pippin so highly colored as the Cellini ; they are a distinct variety. Now, I wish to add a word or two in regard to the shipment of apples. If we can ship in small half barrels, I believe there is less risk in shipping such varieties as the Duchess of Oldenburg, Fameuse, Wealthy and Gravenstein. If we ship Golden Russets in the month of January they are liable while being transported by rail to Montreal or any other point where they are to be put on board ship to become very cold—perfectly chilled, and sometimes perfectly frosted ; then, when they are placed in the body of the ship, where a turnip in ten days would grow an inch and a half or two inches, they are sure to condense moisture from the warmer atmosphere, and the fruit becomes saturated with water, and in eight or ten days a small barrel of fruit would be spoiled. Now, if they start in the fall in good order there are very few that spoil. By packing in small barrels the pressure is not so great. I believe there is less risk in shipping fall apples than in shipping winter apples.

Mr. BUCKE.—Could you not ship winter apples in the fall ?

Mr. DEMPSEY.—They don't command good prices in the fall. The President rather gave us to understand that Ben Davis and the Baldwin were going out of the market. Now, I want to inform you just here that my Ben Davis stood at the top of the list this year in England, and it is hard to get around that. There is another variety which stood very high this year,—the Westfield Seek-no-further, which commanded very fine prices. Then there is another apple of which we have never been able to send any before this year—the Mackintosh Red, which is a beautiful apple, and it commanded fancy figures.

Mr. BUCKE.—What do you call a fancy figure ?

Mr. DEMPSEY.—I call thirty shillings a barrel a fancy figure, and it is a price that will pay us very well. We sometimes have to put up with half or a quarter of that. There are several other varieties coming into notice. Respecting Cox's Orange Pippin, along about Christmas and the month previous to Christmas they were unpacking them at Covent Garden and putting them in hampers ; what they there call a hamper is supposed to contain four even peck measures, but really does not hold a great deal more than three pecks ; and they have been quoted there at fifteen shillings a bushel this year ; that is more than thirty shillings a barrel. I haven't seen any quoted so high this year as Cox's Orange Pippin.

The PRESIDENT.—Mr. Dempsey has misunderstood my remarks as to Ben Davis and the Baldwin. I said that people in the Old Country were looking at quality so much now that I believed the time was coming when those apples would go out. They have not gone out yet, although Rhode Island Greening is almost even in price with the Baldwin now. We know that these apples are poor in quality, and I believe that in Britain they will eventually come to that conclusion.

Mr. SMITH.—Some of our most successful grape growers are getting higher prices for the Champion than for any other variety.

BEST STRAWBERRIES FOR THE VICINITY OF OTTAWA.

Q.—What kinds of Strawberries succeed best in the vicinity of Ottawa?

Mr. P. E. BUCKE.—I don't think I can give much information about the Strawberry, as I have not any ground of any extent, and I am sorry to say that although I believe Ottawa is about the finest place in the world to grow strawberries, there is not a strawberry grown in Ottawa. We get them almost entirely from the west and from Brockville. I think our friend here who deals in berries can tell you more about what is not grown in Ottawa. I think if a man started here with a few acres he would make a fortune. The strawberries we get here are brought from a distance, and they are not what they ought to be. Mr. Scott grows a good many, but unfortunately he is not here to-night,—the Hon. R. W. Scott.

Mr. HAMILTON.—My place, as I think I have said before, is about half way between Ottawa and Montreal, and I have grown about half a dozen varieties. I have not hitherto been growing them for market, but last year the man who keeps the station restaurant took some of them. The varieties I had were Minor's Great Prolific, Mount Vernon, Duchess, Manchester and Sharpless, and Bidwell. I think of these Minor's Prolific bore the most heavily. The Sharpless berries were larger, some of them being two and a half inches in diameter, and would make two or three mouthfuls. The bed that bore so heavily was only two years planted. It was made from poor soil, made up with swamp muck that had been put up for a couple of years. We took off the patch, we had ten rows about an acre long, ten quarts a day for about a fortnight; that is at the latter end. We used them very largely ourselves before we began to sell them, because we didn't like to see them going to waste, and we also made a distribution of them among the neighbors. I think we had probably 250 quarts off the patch. I would put Minor's Prolific first, and the Sharpless second, and the Cumberland, which I think I omitted mentioning, third. The Mount Vernon did not bear very heavily, but it is a delicious berry; and last of all I put the Bidwell, though it didn't have exactly the same treatment as the others, I kept it apart; it might have done as well as some of the others if it had been grown with them. I think, as Mr. Bucke has said, that it would pay any person to begin growing for the Ottawa market at the rates that these turned out to be.

Mr. O'CONNOR.—I have not grown many strawberries. In regard to the Sharpless, although the berries are very large, I do not think upon the whole that it is a very desirable variety. I think the Wilson is good amongst the new varieties, but of course I am not experienced. Mr. Bucke's remarks about there being no strawberry growers here are very correct, our berries all come from Brockville and the west. It is very surprising to me that our gardeners should allow this, and I hope this discussion may have the effect of inducing some of them to make a start.

Mr. CASTON (Craighurst).—The nature of the remarks just made make me almost inclined to come down here and start strawberry cultivation; and I certainly think there is a great opportunity for some one to make money here. It seems to me that if you can grow such grapes as we have seen here to-day, you should be able to grow magnificent strawberries. A gentleman here to-day spoke of the shortness of the season. Now, I think the strawberry season is longer than the raspberry season, because you can get early, medium and late; sour, sweet or go-between. In our locality we have nothing better than the Wilson, which is something like the Concord grape for hardness, crop, and standing transportation; I don't think there is anything yet that can beat it. But you don't want to eat the Wilson before it is ripe; a good many people judge harshly of it because they do so. If you want something sweet I would recommend the Sharpless. I have been surprised at hearing so little said about the strawberry here, and one gentleman in speaking about raspberries seemed to be against the strawberry. That is not my experience at all, nor do I think it is that of anyone from the west. I think there is no other fruit that will produce as much for the ground it occupies as the strawberry.

Mr. WHYTE.—After the uncomplimentary manner in which I spoke of the strawberry this morning I suppose I should hardly say anything about it now. Still I have grown a good many strawberries here, and I gave them up, not because I didn't like

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them, but because I like the raspberry better. When I did grow them the Wilson succeeded very well, but I think it is surpassed by the Crescent Seedling. The only berry I had good success with in point of quantity was the Dominion, it was perfectly satisfactory, a large berry of first-rate quality. The Sharpless I never got much out of, we got large berries, but very few of them.

BEDS AND BEDDING PLANTS, LAWNS AND BORDERS.

Mr. N. Robertson, Superintendent of the Government grounds at Ottawa, read the following paper :

Lawns are especially difficult things to deal with, and never can be properly dealt with unless the subject is before you, owing to the diversity of positions and surroundings which must always be taken into consideration. Borders are generally treated as if they were the dumping ground of all sorts of material with regard to any particular position. To detail how to fill a border properly, I consider a far more difficult task than beds. There are so many things to be thought of, such as to insure a general dispersion of flowers over it during the season, with a proper regard to the blending of colors, and many other material points. Besides this, it is considered more of a permanent institution, as perennials are mostly used in its construction, it requires much maturer thought to plant it properly. Beds then form part of my subject to-night. Time will allow me only to take a passing glance at what such designs should be. There is a rule laid down for this, but I will not say whether we adhere to them or not. It is that designs of beds should always be in keeping with the architecture of the building; that is to say, if they are Gothic, then the beds should be the same, and so on with the other styles of architecture. There are few studies which open up a wider range of thought than that which bedding plants do; for, although a certain number is called by that name, yet there so many that can be used for this purpose that it is hard to strike a line between them and say what is or what is not a bedding plant. There is nothing, I can assure you, can be more pleasant to me than to say anything that will be instructive or useful to your association. Bedding plants, then, covers so much that I shall be able only to deal with the most prominent and useful. To enable me to better explain the different positions they hold towards each other, I will divide them into different sections, by calling them dwarf, medium, tall and flowering plants. Although they can be used in conjunction with each other, grading them from the centre or back ground, yet I prefer them separate for my present purpose, so as to give you a more decided idea of the work they are best adapted for, and make myself more easily understood.

First, then I will take up what is known as *Carpet Bedding*. This is, perhaps, the most expensive of all bedding, as it requires such a large quantity of plants and labor to fill a bed. I cannot refrain from speaking of a recommendation given some years ago in a daily paper, which has always taken a great interest in horticulture and done much to benefit it. When this system of bedding was looming up, it had depicted a bed that was seen in one of the English parks on an extensive scale. To carry out this recommendation, gentlemen were told to ask their wives to forego a silk dress for that season, putting its cost into plants that they might have such a bed. This bed contained no less than fourteen thousand plants! I will leave you to compute the cost at the lowest possible price for which they can be had, and see how many would undertake such a bed. I do not want you to infer from this that you cannot have a carpet bed at a very small cost.

This system of bedding may well be said to have gotten the better of good judgment. The great trouble with it has been that it has driven so many of our flowering plants from our gardens. But the tide has now turned; and some writers most forcibly condemn it altogether for this very fault, and because it contains so few varieties. Although they were varied in design, yet it became monotonous and wearisome to the eye. But I should be sorry to see it driven from our gardens altogether. As there is no part in bedding that can better show the good taste and intelligence of the party than this can,

a limited amount of it gives diversity of position and a varied dispersion of plants. No one should attempt this sort of bedding on a large scale unless he has a good command of glass to carry a considerable stock through winter, for some of the plants being tropical, require a high temperature, and cannot be kept over without it. This is also a material point in the cost of carpet bedding.

Foremost, and perhaps the best and most prominent of all bedding plants in the dwarf section is the *Alternantheras*, of which there are many varieties, but the best and most desirable to use in the red colors is *Parychoides Major*. This variety is of later introduction than many of the others and far exceeds them in brightness of color, and the one I prefer above all others of this shade. In the yellow, there are only two varieties that I know of, *Aurea* and *Aurea nana Compacta*, the last far exceeds the other in every respect, compact and of a clearer yellow. These are all the colors required of them, as none of the other varieties can so effectively fill their place. They are a tropical plant, native of Buenos Ayres; the name alludes to the anthers being alternately fertile and barren. The more exposed the position, the brighter will their colors show. Evade putting them either in a shady position or in damp cold soil.

Next to them may be placed the *Golden and Silver Thymes*. There is also a green variety, but the first two are the most in use for bedding purposes. Like the *Alternanthera*, its growth is compact, but it differs in constitution, being hardy in parts of the Dominion, but not so here; it has to be housed during the winter as the other, and kept in a cool dry temperature. It is a native of Spain, and has become naturalized in Britain. This plant is admired for its smell and is extensively manufactured and used for seasoning purposes, that is to say the green variety.

Pyrethrum Aureum, or Golden Feather, as it is commonly called, is a hardy perennial, which may be taken up in the fall and laid in some sheltered corner covered up, and taken up and divided in the spring into many plants, giving you a large quantity of them; but the better plan is to raise it from seed every year, as you will have brighter color from seedlings than from the old plants. It is unlike the two former in this respect, it will not look well under shears' trimming, and instead of using the shears pull off the straggling leaves by hand that get out of shape. There are other varieties of it, but I have found them no improvement on this one.

Leucophyton Brownii is what may be called the whitest of all plants. In looking at it, you would almost think it was silver wire, and is most beautiful when well developed; but upon the whole, it is not a plant seen much in use because of its slow growth and difficulty of propagation from cuttings; it takes two years to have good plants, and although it makes a line or band of much beauty, will never be popular.

Salvia officinalis is a white and green-leaved plant with much larger leaves than the former which I have described. It is also of taller and less compact growth than any of the former, but, when on rather a poor soil with plenty of sun, it makes a very pretty line. It must be trimmed into shape with the knife which it bears well. It is a native of Mexico, but stands considerable frost, but cannot be called hardy.

Achryanthus wallacei can well be made a splendid associate of the last plant. It is not like the others of its sort; it is a much lower grower and the leaves are much smaller, more resembling the *Alternantheras* in their taller forms than an *Achryanthus*. It is of very recent introduction, but, from my experience of it last summer, it promises to become a favorite plant. Its color may be said to be a dark brown. It will have to be trimmed as the *sabia*, which treatment it bears well.

Cerastium tomentosum, or Snow in Summer, as it is often called on account of the numerous white flowers with which it literally covers itself in summer. Its light foliage is what classes it amongst these plants for bedding purposes. It is a perfectly hardy perennial, and although it looks best when not allowed to flower, it will clip into any shape, yet it does not care to be removed frequently, which mars its respectfulness as a bedder considerably. Its best position is as a border around a bed where it may stand several years. I have had it trimmed into a half-round shape so nicely that parties would ask if it was stone, so compact and close will it become.

Echeverias are plants much used in this kind of work. Planting is all the care they require. Like all this class of succulent plants their situation must be dry and warm, as

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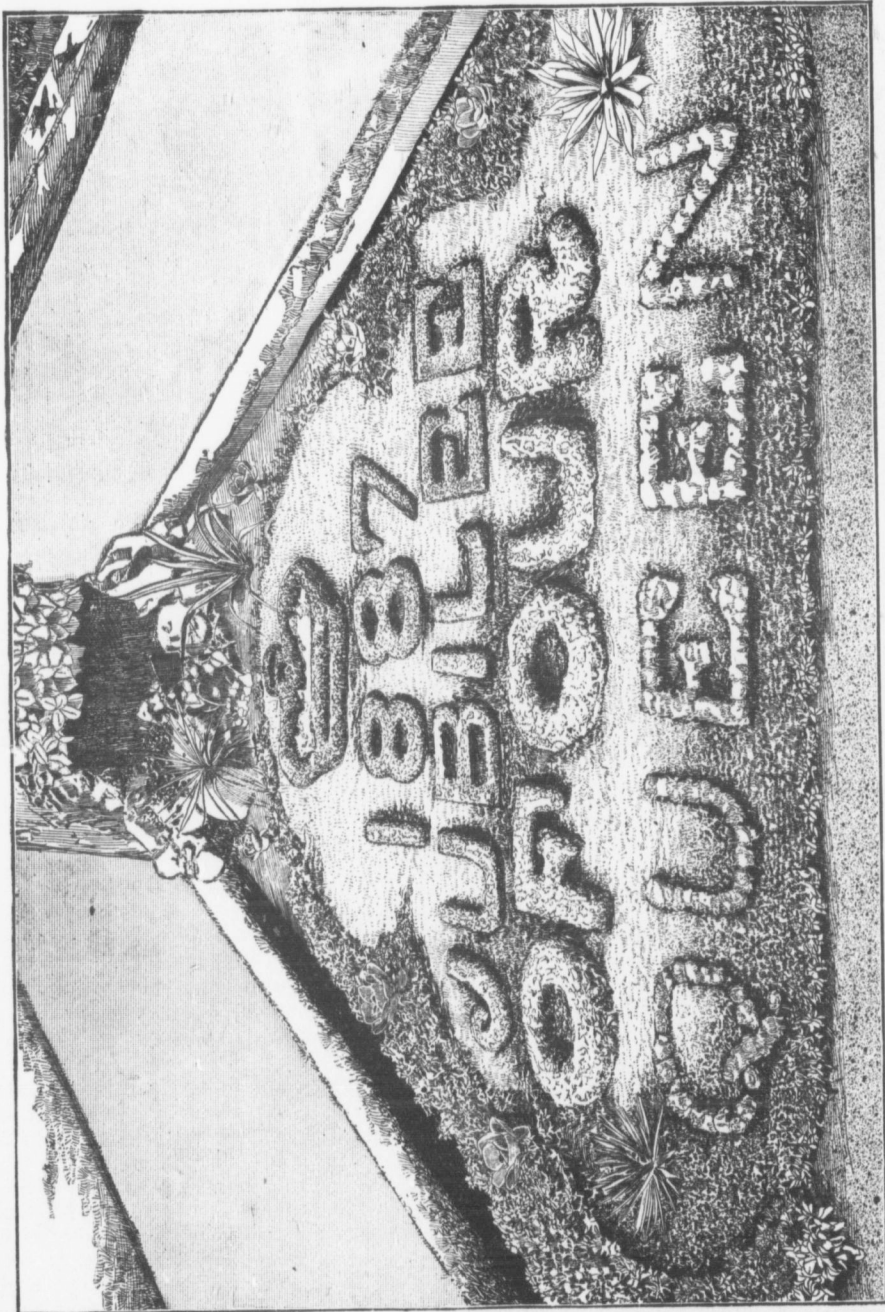


PLATE I. See page 51.

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they are very tender and will not stand the lightest frost, being natives of Mexico. Damp positions must be avoided for them, or they will rot. There are many varieties of them, but I will only select two of them; (1) *Secunda*, of a dark green color and a more robust grower than the (2) *Secunda Glauca*, which is noted for its bluish green shade. Those plants throw out numerous offsets during the summer which should be taken off in the fall and put into boxes of sand. They will soon root and make the best plants for next season's work. Any dry corner in the hot-house will suit them, near the light; a large quantity can be put into a box.

Sempervivum tectorum, or House Leek, and known also as "Live forever," which also is signified by the words *semper* and *vivo*, from which the name is derived; and surely it deserves it, for I think nothing in the shape of dryness will kill them. Moisture only will do this. Unlike the other *Echeverias*, with which they are often confused, they are perfectly hardy; the hardest frost seems to have no effect on them. They are propagated from their offsets in any quantity. The old plants are apt to come into flower, and then they die out; but good sized offsets taken off with the short stem they have, and planted, will not one of them miss. They are natives of the Canary Islands, but may be said, like the thymes, to be indigenous to Britain. There are many varieties of them, some of them very small but beautiful, too numerous to detail here.

Now, I have touched on a few of the most prominent varieties of plants used in carpet beds; except such as are used for filling figures, or for the carpet ground on which figures are made. Of these there are a great variety of sedums, but I shall take one that is commonly known as Irish moss, *Sedum Acre*. Like the *Sempervivum* there is no kill to it. Many complain of its spreading habits, but of this I do not complain, as I can always with a little attention keep it within the bounds, and I know of nothing that makes a better ground than this does, if you only clip the flowers from it. If you allow it to flower, it will become rusty looking and unsightly; if it gets too high you can press it down with the hand, or even a piece of board, and it will not show any signs of disapproval. You can tear it into as many pieces as you like, and sow it on the surface of the soil, throwing some earth on it, and you will soon see a nice green sheet spring from it. There is said to be a variegated form of this, but I have never been able to get it. I have recommended this one above all the others although some of them are far more beautiful; yet its hardiness and tenacity of life makes it come under the control of every one.

Mesembryanthemum cordifolium is a tender perennial. It belongs to the Cape of Good Hope, and there are numerous varieties of it. This one, I suppose, must be a hybrid from some of them, and is valuable for its color, being a greenish yellow, very distinctive and useful as a carpet or for filling in dark figures. It can be raised from seed, but is surest to grow from cuttings. Any quantity of moisture will soon destroy and rot it off, and being succulent very great care must be taken to preserve it.

Oxalis tropaeoloides is of a dark brown color, and if also useful in filling in light colored surroundings. It is a perennial and tender, and can be raised from seed, but seems to prefer doing this for itself, for if the seeds are old they are hard to germinate. In taking it into the house it soon matures its seed-pods and explodes them all over your shelving and pots, and creates much trouble to remove; it is sweet boxed up for the winter, and divided up in the spring.

And now, before going into the other sections in which I have classed those plants, I here show you photograph of beds composed of the plants I have enumerated on the Government grounds here. This one (See Plate I.) was produced last year, intending to show, in a feeble way, that I entered into the spirit of that year, and did something also to commemorate that jubilee year of our most gracious and beloved Queen, who has reigned so prosperously and nobly over us for fifty years. And here I must explain that the position the photographer has to take does not bring out the background as distinctly as the front, yet they were as distinct in the bed. This arises from the angle he has to look from. To do it properly he would have to look perpendicularly up on it. The angle dwarfs the crown and mars its distinctness and shortens the letters, and runs then closer together than they really were. They were as full and distinct as the front ones are in the bed. The crown is of *Alternanthera, Aurea Nana Compacta*; the year "1887"

and "Jubilee" is *Alternanthera Parychoides Major*; "of Our," of Golden Feather; "Queen," of *Echeveria Secunda Glauca*.

These are surrounded by a line of *Pachyphitum Bractosum*. The filling in is *Sedum Acre*. The outer border is *Salvia Officinalis*, filled in with portulacca; between this and the other line is studded through with the tall growing *Echeveria Mataelica* and several sorts of the dwarfier growing agaves and yuceas. The outer verge is grass, for being a point where two walks diverge, it has formed somewhat an irregular bed which is not easily filled.

And here is another (See Plate II. fig. a) that appeared the first year that our present and much esteemed Governor, Lord Lansdowne, arrived in Canada, and who has always taken a lively interest in horticulture. The words "Virtute non verbis" being his motto the beehive and bees part of his crest. That summer was cold and did not bring out the tropical plants as bold as they might have been had it been warmer. The motto is of *Alternanthera Amonea*, the one I used before I got the newer one, viz., *Parychoides*; the body of the bees are of a darker colored one; the wings *Leucophyton Brownii*; the two yellow figures are surrounded by Golden Thyme, filled in the centre with *Oxalsi Tripeoloides*, the side figures are surrounded by *Alternanthera*, filled in with *Echeveria Secunda Glauca*. The outer border is *Salvia Officinalis*, the remaining portion of the bed is carpeted with *Sedum Acre*.

And although those two are sufficient to show you this sort of work, yet for fear you might think me remiss and forgetful, I will show you another (See Plate II. fig. b) which was the best I could do for Lady Lansdowne. Her family name is Abercorn, and the crest is too intricate to be brought out in a bed, so I put the nearest substitute I could think of; and a portion of that crest being an oak tree I used only the acorn. This bed is composed also of plants which I have enumerated above.

And now I will take up what I call the medium class of bedding plants, which I have said can be worked in conjunction with others, but better separately, for such devices as I have shown. They will not bear trimming by the shears, as the former do to keep them close and neat. The knife is the instrument you must use on them on account of their larger leaves and coarser stems, which gives them a bad appearance unless they are kept uniform and in shape.

First, then, I will take the *Coleus* or Foliage plant, as it is called. Natives of Africa and Asia, they well deserve the name of foliage plant, for there is no other plant that I know that shows such a diversity of colors in leaves and shapes as they do; yet as a bedder their value is much enhanced by not standing the sun. The hothouse is the place to develop them in perfection and bring out their gorgeous colors. In a shady position there are a good many that do fairly well, but in the bright sun there are only a few such, as *Vershaeffelti*, a dark color; *Firebrand*, of a flame color, and *Golden Bedder*. However, there are others that will do tolerably well and make a fair appearance in a warm, shady, sheltered bed, where the wind does not toss them about, they will give considerable satisfaction and pleasure. It is a pity those plants are not more useful for bedding, as nothing is so easily multiplied by buttings as they are.

Achryanthus differs from the *Coleus* in that they require an open sunny position to bring out their colors, and will do well in any place where they have this. It is hard to say what varieties amongst several is the best. The dark colors answer certain purposes, but the ones I favor most are *Leudenii* and *Emersonii*. The first has smaller leaves than the other, is a more upright grower, and of a darker shade of color, being of reddish brown; *Emersonii* is of a much lower, rather straggly growth, with quite large leaves, and when young is a very bright red, very impressive and pretty. There are lighter varieties of this plant, but I never could use them with any satisfaction. They are easy of propagation; a few stocky plants, or a box of cuttings taken in the fall, before frost comes, will give you any quantity in spring. They require also trimming with the knife, and are a most useful plant in many positions.

I will now turn to some of the most useful of the light colored plants, which are fit associates for the former. *Centaureas*, a very extensive genus; some of them tall growing; but I shall only select two of them that are the most useful in beds, viz., *Gymnocarpa* and *Candidissima*. Their leaves are covered over with a white, downy

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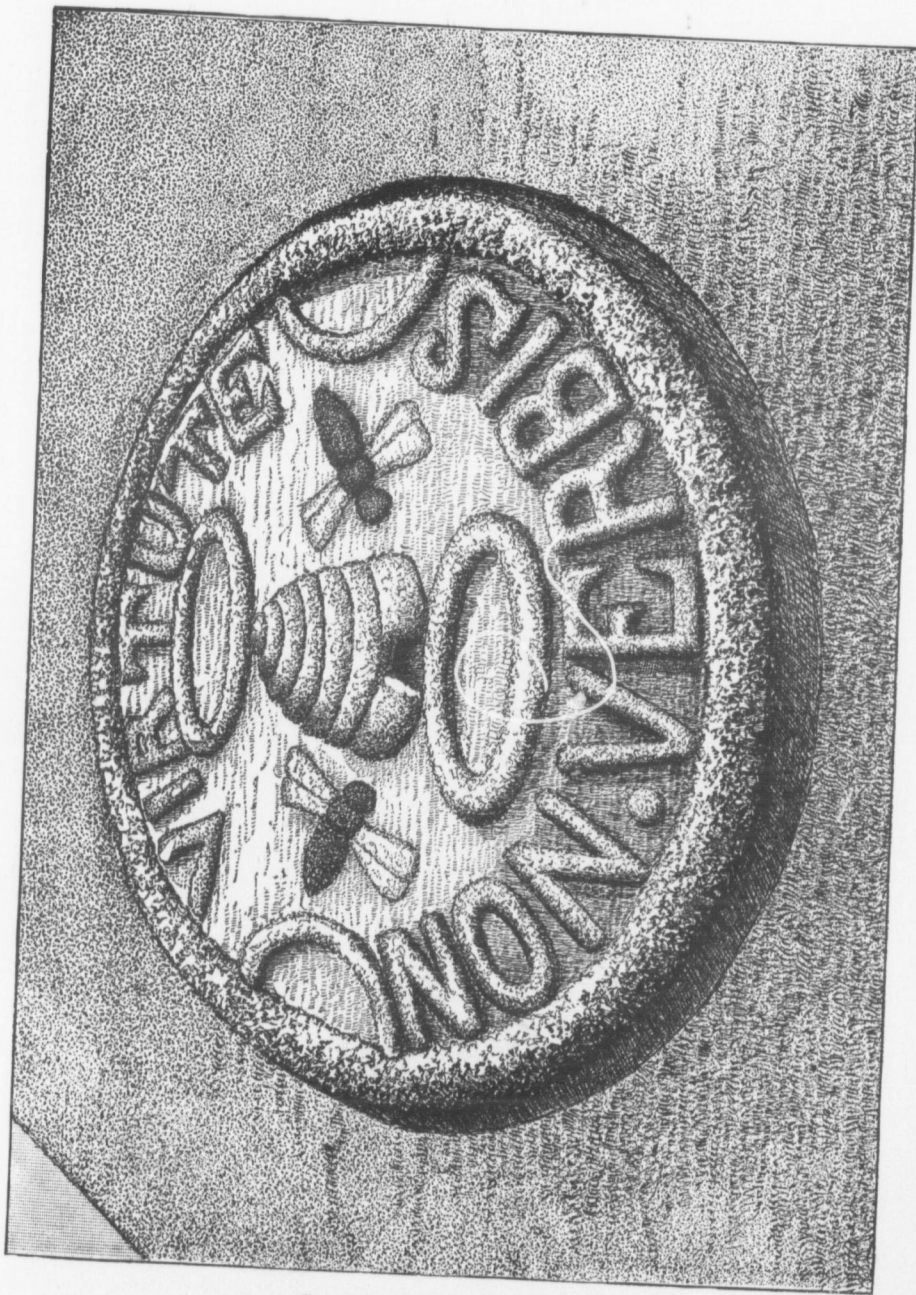
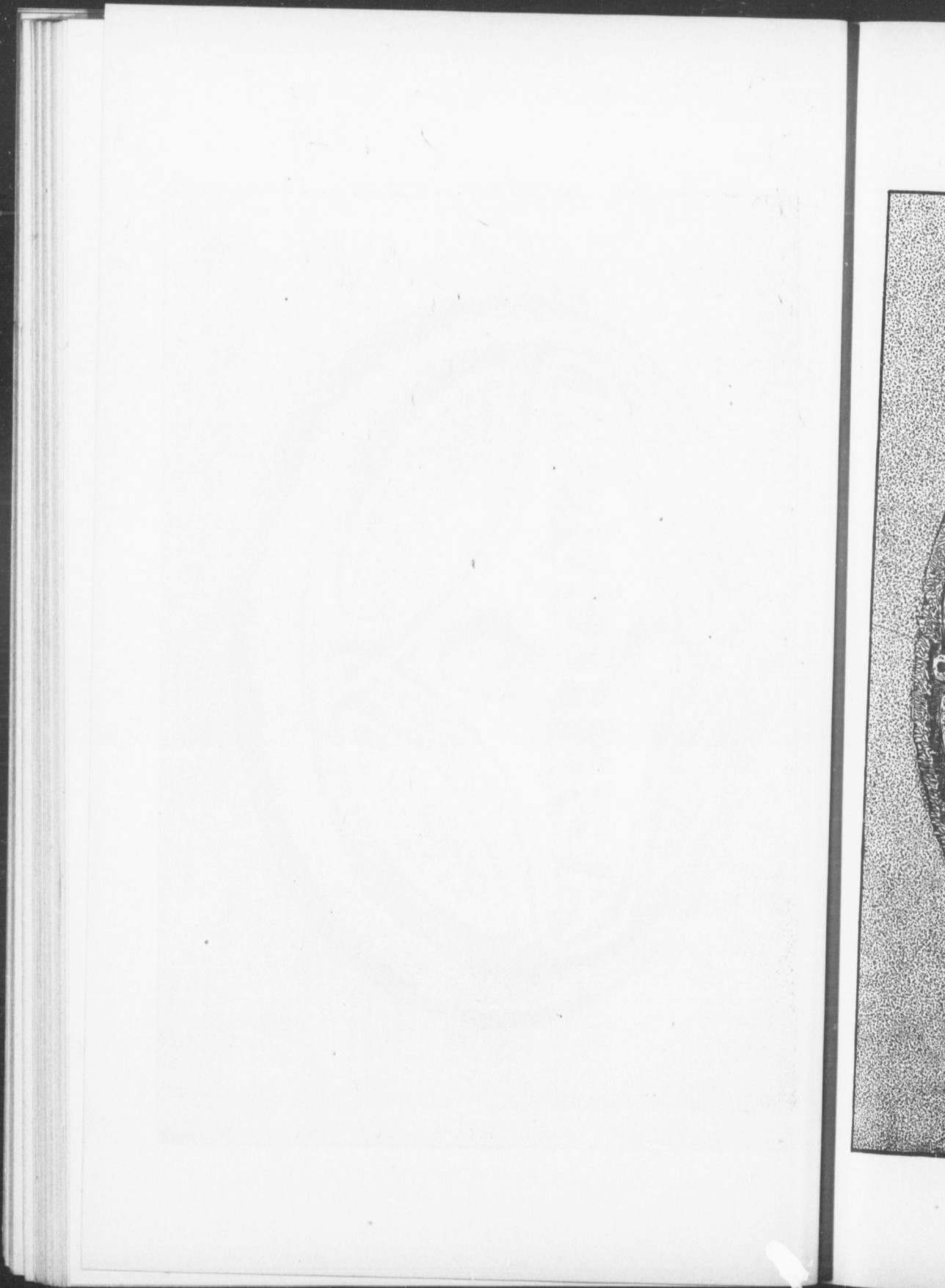


PLATE II. Fig. (a). See page 52.



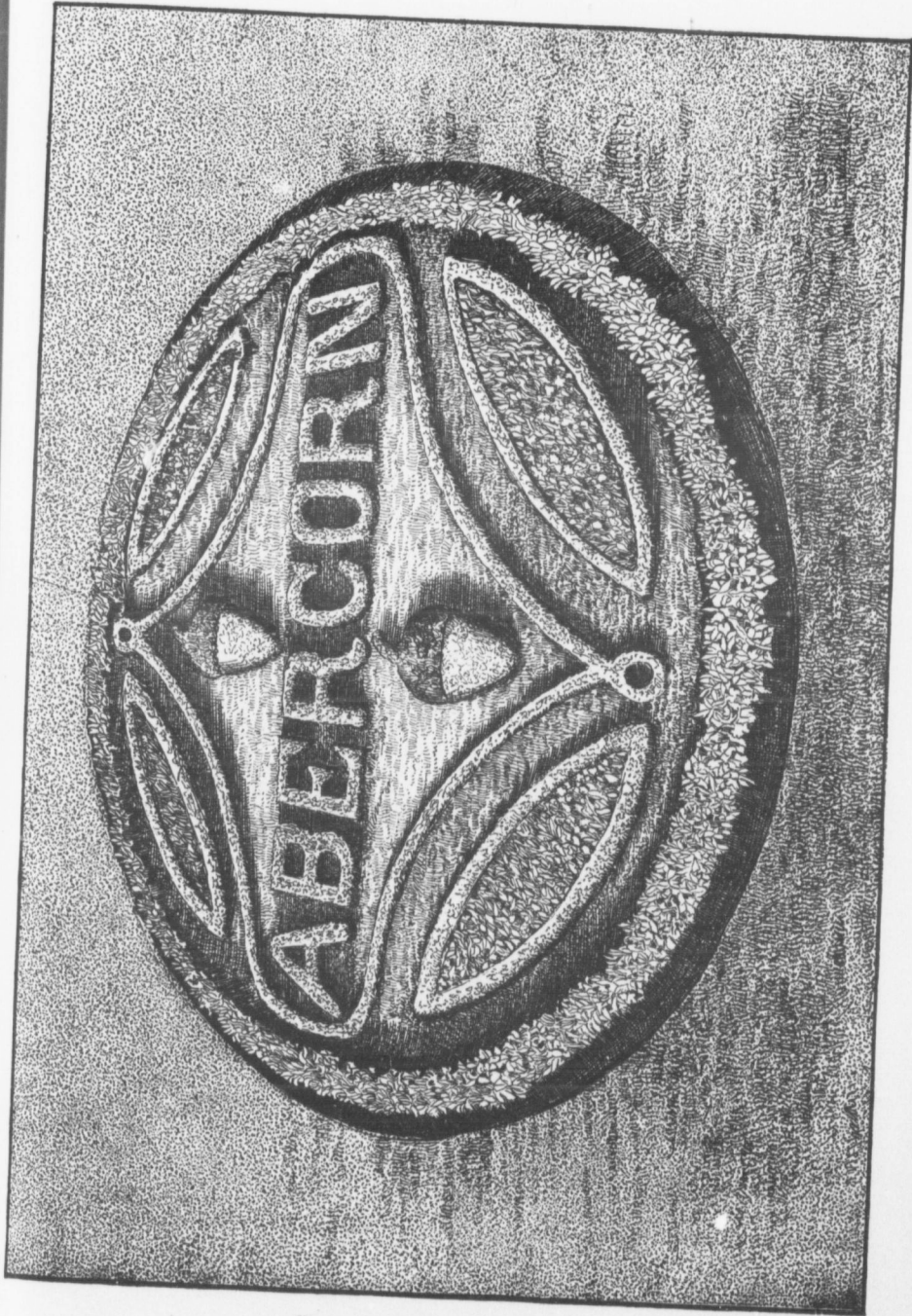


PLATE II. Fig. 6. See page 52.

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substance, which gives them a most interesting appearance. *Gymnocarpa* is a close, bushy grower, different from the other, which is more upright and not so compact, and therefore not so effective as the other. They are perennials and not hardy. I never think of saving over the plants, as they are easily raised from seed, and thus make much the nicest plants. They are natives of the Levant.

Cineraria maritima much resembles the *Centaureas* with its downy leaves. It is perennial, but so easily raised from seed that no one would think of growing it from cuttings.

Lantolinas, are tender perennials from the south of Europe, which grow into large bushes if allowed to do so, but are most accommodating. They can be clipped and kept to any height or form that you please. Plants may be allowed to grow quite tall, and trimmed almost into any shape you wish, and make an unusual ornament amongst other plants. Its propagation is by cuttings taken off in the fall, or from stock plants in the spring, but require to be taken early to get nice strong plants; its color may be called a light green.

I will now add to this section a new white-leaved geranium, *Mdme. Sollerii*, which promises to throw all the other white-leaved varieties into the shade when used for foliage only. I never have seen it flower, although I have used hundreds of plants of it and given it every chance to do so. The leaves are not as large, nor probably show so much white around their margin as some of the others do, but a large number of leaves are altogether white, which adds much to its appearance. It differs in manner of growth from any other geranium I have ever seen. Instead of throwing up one stem, I have counted as many as fourteen from one plant arising from the ground; that is to say, if you strike a single stem it will at once throw out stems all around it, and form a compact round bush. Many of those stems are rooted so that you can pull a plant to pieces and have many plants. It is a vigorous grower and accommodates itself to almost any condition, giving it additional favorable points over the other white-leaved sorts.

Bronze geraniums look particularly well in a bed when you take those that stand the sun best, such as Marshal McMahon, King of the Bronzes, and many others, but come out best in partial shade. This new one, *Mdme. Sollerii*, makes a splendid associate with them in the same bed, and can be used in many forms. Of their propagation little need be said. I never save the old plants, but take off quantities of cuttings and box them up in sand. There they stand and are well rooted by February, then pot them off into small pots, where they remain until wanted. A box three feet long and one wide will hold a hundred and fifty cuttings. This is the size I make all boxes for cuttings, but the more important part is the depth. There should be no more than three inches of sand in them, so as to secure them from damping off; and as many of the cuttings are young and tender this is a good safeguard.

And now I will take the tall growing plants. They are of all the worst to define, there is such a varied class of them that can be used in a bed. The great difficulty with them is their proper position. This is a part that requires considerable practice. I shall not attempt to deal with more than one bed, and one that is often seen. We shall suppose it a round bed the simplest and easiest to fill and such as anyone can reach. Center your bed with one or more plants of *Ricinus* or castor oil bean according to the size of your bed. Then outside of this put a line or two of *Cannas*. Avoid any intricate design with this sort of plants as you cannot cut and trim them in, all you can do is stake them into line. Then put a band of *Caladium Esculentum*. These two plants are most convenient as their roots are best stored away in a cellar until spring. The first is an annual and such as any one can raise in a window if they have not better facilities. You can now fill out the remainder of your bed by any of the medium growing plants I have enumerated, only observing the contrast of colors.

In *Cannas*, there is one which I would recommend any one to get, viz: *Chernanii*. The flowers on this one are very large and fine. Although the *Gladioli* cannot be classed as bedding plants, yet I cannot refrain from calling your attention to a new strain of them, *Lemoines'* hybrid spotted; they are quite distinct from the others with a rich vivid orchid like coloring. The blotch is the striking feature of the flower. There

is a great variety of them and they are said to be much hardier than the others, any one getting these cannot fail to be delighted with them. This brilliant and remarkable class of Gladioli originated with Mr. Lemoine, in France.

Now I shall take flowering plants. Some of them can be used in many ways and carry out beautiful designs; but no plant should be used in a bed that does not flower a long time. Our seasons are too short to admit of refilling as those in more favoured climates do. Once filled they should stand the season through; plants whose flowers are of short duration should have their position in borders where their place is not so conspicuously seen when they fail.

Of flowering plants our annual *Phlox Drommondi* may be said to take the lead. I know of no plant that can exceed this, both in mass of bloom and duration. The more compact and newer sorts such as Snowball, Fireball and Rosea, are so tractable that you can make various designs out of them and they are so varied in colors that they make a splendid mass bed. People should always buy them in separate colors, in order that you may place them in many different positions that will be attractive. Much can be done to keep them in any shape you desire by short stakes run around the outside of them and a string run along them to keep them in shape, as trimming cannot be resorted to with flowered plants.

Ageratum, such as Copes' Gem and White Cap makes a splendid associate with *Phlox Drommondi*, but requires to be kept on the outer side as it is dwarfier. You can have the red, white and blue, in all its glory, or other devices. And here I show you the preparation I make for such beds which I shall allude to afterwards. *Ageratums* can be raised from seed but the surest way is to keep a few stock plants and if those plants are cut close back in the spring and put in a hotbed they will give you hundreds of plants, as they strike almost in a few days, provided the young tender shoots are taken. Although small when put out they soon grow. Seed beds are very apt to vary in height, in fact you are not sure of their height in this way.

The *Single Scarlet Geraniums* I suppose may be called the next to Phloxes for a bright dazzling show; what variety of them is best for bedding purposes it would be hard to decide. I have a seedling which, by permission, I call Lord Lansdowne, that I prefer to any I have tried. Persons looking at a bed of it when in full bloom, with the sun shining on it, had to turn their eyes from it, so bright was the glare. General Grant is in great favor with many and some like the old Black Dwarf. To these can be added pinks and other colors, for the sake of variety, but properly speaking geraniums are more for massing than for any other purpose. They are always the better of some border around them. *Tagetes pinnata*, yellow, is neat and its fine cut foliage completely studded over with its yellow flowers make a fine contrast, or even a line of *Achryanthus Lindenii*, although of a reddish color, looks well. *Asters* from their many distinct colors can be placed in a bed if the colors are kept separate so as to work out some simple design, but they require to be planted closely for this purpose, so as to cover the ground completely. There have been several new varieties of them, introduced within this last few years, and amongst them is the *Zirinzebell*, pure white to say the least of it it far exceeds the other older asters in its purity of white and compactness of its flowers. There are several other sorts of this strain which come well up to them. Massing plants are perhaps the best for general purposes and I will take a few of the more prominent of them, such as *Zinnias*. The great improvement that has been made in them is seen in the newer strain of Henderson's *Zebrina*, the flowers of which are produced in great profusion, and so varied and beautifully marked that any description that I can give could not properly describe them.

Double Geraniums I cannot omit; they always make a nice mixed bed if the plants are from young stock, raised in the spring and strong enough when put out. They will not give a distant show, but are always pleasant to look at. There are so many new varieties of them now a days that it would be hard to choose from them and I shall not attempt to name any of them.

Coxcombs are not classed in general as bedding plants, but I was so much struck by seeing them put by chance in a bed, that I thought I would try them, so I made a carpet of *Centaurea Gymnocarpa* and planted scarlet Glasgow prize *Coxcombs* amongst them;

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their scarlet combs peering through the white foliage gave me a bed that every one that saw seemed to admire. They require a rich soil to bring them out in their beauty. The light colors also make a very pretty bed, but they require a dark ground work to bring them out. *Celosia plumosa nana* is a new introduction of this class which I tried last year with much satisfaction. I cannot do better than give you the description given in the catalogue in which I saw it mentioned. It grows to a height of from twelve to fifteen inches and about as wide in diameter. Each plant bearing from forty to sixty large golden plums of a golden yellow color, and each spike is composed of from ten to twenty smaller ones so that when the plant is in full bloom it is one mass of golden yellow. This is no exaggeration and it lasts a long time in bloom. It is bound to take a prominent place amongst bedding plants in many forms.

Petunias are an old time tried bedder, and for a mass I know of no other plant that will give a better show than they will. They are thrown somewhat in the background because they are seen so often, but they still add variety and if bordered around with some stiff growing plant they make a good bed. The newer fringed varieties of the single are very pretty, and the double fringed are extremely fine, but no use in a bed.

Verbenas were always considered a good bedder and the new large flowering varieties are certainly far ahead of the old ones; their flowers and trusses being much larger and their colors very fine. They should never be planted on dry hot soil, as in such a position they will soon rust and become unsightly.

Pansies have always been favourites, but are rather classed as spring and fall flowering plants; they never do much during warm weather; they must be planted in a cool and shady place. The newer varieties such as White's American strain, Henderson's Butterfly, and Trimandaus are great acquisitions.

Impatiens Sultani is a perennial balsam. It is a plant that may be said is never out of bloom. Plants of it will in the greenhouse flower all winter through, and outside it will flower all summer. Its color is a rosy pink with which it covers itself. It seems to be rather a troublesome plant to keep over in winter; insects seem to have a great love for it, especially the green fly and the mealy bug. It needs constant watching and little water, and as much light as possible. Of its future I cannot say; it has now been a few years introduced, yet it is not at all common. It can be raised from seed, yet even this seems difficult.

Tuberous Rooted Begonias are plants that always make a nice bed, and come within the reach of any one. Small bulbs cost little or they can be raised from seed. What makes them a convenient plant is they dry up in winter and can be stored away in any dry warm position, started in spring, and put out, when the weather becomes warm, about the beginning of June and they go on growing at once.

Lobelias, I should have classed amongst the dwarf growing bedding plants, but owing to their aversion to strong sun, their constitution not bearing it, I have kept them apart. There are annual and perennial varieties of them; the latter I prefer, they may be raised from seed and in a shady rich bed the two colors, white and blue, make a most pleasing bed. You can make simple designs or bands of these two colors which will flower most of the summer.

Portulacca is another annual that I need say little about. Any one can have a bed of it, but owing to the seed being so fine, great care requires to be taken in sowing and when coming up the plants are liable to damp off, unless light and air is plentifully supplied. And there is still another bed which I would call a natural curiosity bed, the *Cacti*. Every one, almost, will tell you he cannot see any beauty in them. All I can say on this point is that I have for years past had them in different forms, beds and borders; and in whatever position they were placed in, more people lingered for a longer time around them and examined them, than around any other plants, showing that they created much interest. All the attention they require is a dry warm sunny position; in any moist shady one they will soon rot off.

There are other styles of bedding such as ribbon and pin cushion, the first is for colour as a ribbon, the second is an under carpet of some material, with ornamental plants studded all through it; such as Agaves, Aloes, Yuccas, Palms. Any plant that has an

odd or ornamental foliage can be used in this. I might go on and enumerate many more plants that can be used as bedding plants, but I have now given you the best adapted to this climate and will leave you with this advise; always keep a reserve stock of the different sorts as accidents will happen sometimes. Grubs too cut them off, and we might forgive them more readily if the appearance was that they did so for food, but their work seems wanton destruction, cutting them and leaving them there. I am more troubled by a two-legged sort that carries away whole plants and they are an all-season pest, taking them away when the season is far advanced, at a time when it is impossible to make up with some plants. When you put out a design with flowering plants you are not always sure of the color; by means of this reserve you can take out what does not come true to the color you want and replace them from it. Consider the nature and habit of your plant before you put it out; if they are sun loving plants, give them a sunny position, if shade, give them shade, and if large leafed plants, never put them in an exposed position where the wind will toss and destroy their appearance; and above all things never commence to fill beds without some forethought. Here is a sample of my manner of preparation. (See Plate III.) During the winter I have the size of each bed, and work to a scale so as to know the space required for each. This gives an idea of quantities that may be required, also, there is a question so frequently asked of me that I will answer here, viz:—"How do you manage to fill and trim your beds so as that we never see any marks of blemish?" I use a plank thrown across the beds, raised on blocks at each end for the men to tread on for both purposes. When my bed is smoothly raked I draw my design same way as on paper, the planter following the lines without in any way obliterating them. For this purpose I use a wooden compass about four feet long, pointed so as it will mark. It is simply two pieces of straight wood attached at the top with a bolt that you can tighten at pleasure. A foot rule is my scale, The compass is also a most useful instrument in borders around curves or any place where lines are wanted. You can draw lines around any figure by following your outer edge with one point and marking with the other. This may seem to many a very troublesome way of doing this. But as yet I never have arrived at anything without trouble, and if you want to be successful in this work you must do it with some system also.

Designers have been employed to give patterns for carpet beds; this is a mistake, for they lack a knowledge of the material you have to deal with, both in nature and color, and will give you designs that you cannot properly fill. In making a design the first and most important point is to know what you are going to fill the design with. Nature has given you a very limited amount of material and color to do this work with and you cannot but abide by it. Rules are laid down for the proper blending of color; here we can only contrast lighter and darker shades and do the best with what we have.

And before closing my remarks I must say that I am sorry that many parks still cling far too much to foliage plants. They are very pretty and more enduring than flowering plants; but I shall hope to soon see the day when many of our old familiar flowering plants shall again be seen side by side with them.

Let us encourage in every way we can any one that has a patch of ground to have a bed of flowers. It gives cheerfulness to the location and is a healthful and pleasant pastime to those who attend them. If you have a friend sick pull some of them and take to him. The heart will be very hard that is not melted by them. I cannot help here adding a short extract from some paper which says: "Show me a person that loves flowers and I will show you one that has a warm heart gushing forth joy and pleasure to all around. It may be hid; but it is like the flinty rock which when broken open, has gems within that sparkles and dazzles the eye. Do not pass through this world as if it were made for you and you only. Do all in your power by decorating your homes to not only give pleasure to yourselves but also to making those that surround you happy.

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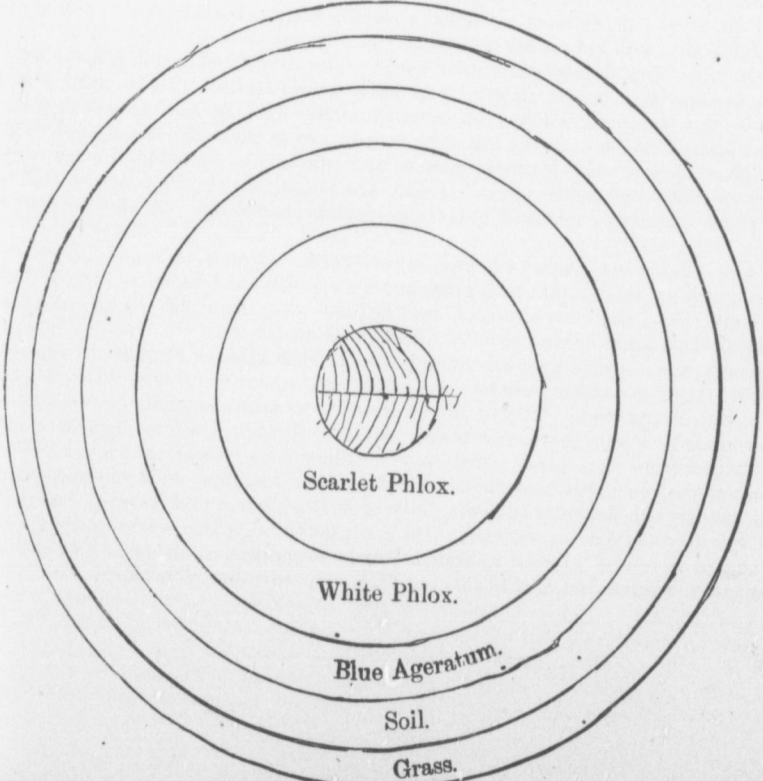
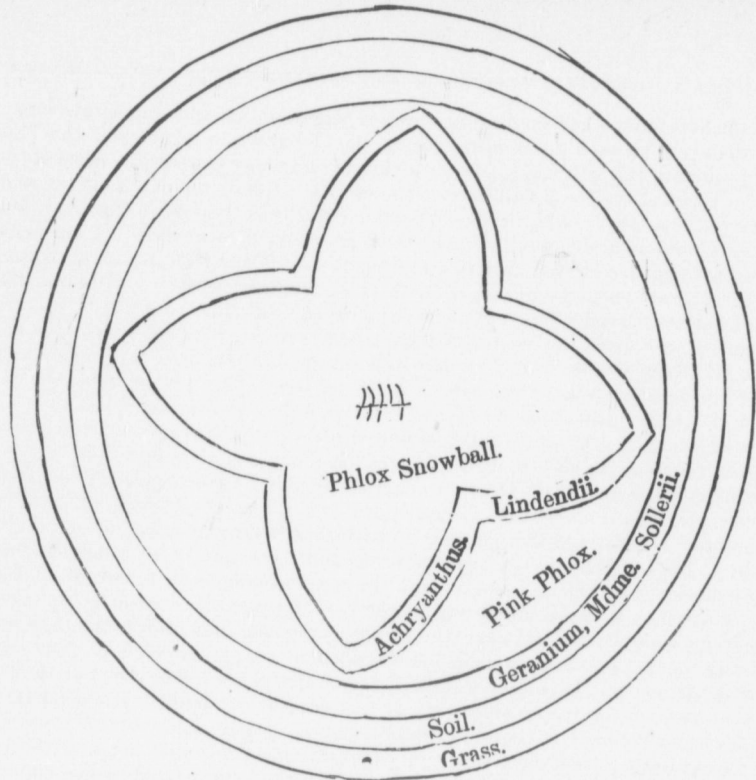


PLATE III. See page 56.

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WOMEN IN HORTICULTURE.

The following paper, by Mrs. Annie L. Jack, was next read to the Association :

In ruder times it was the custom for women to do the heavy agricultural work on the farm, while her lord and master was off in the woods for-game to furnish the meat and clothing they required. In later years during the early settlement of America we read of women still helping in the fields, generally a labor of love to lighten the burden of the men who were dear to them; but as refinement and indoor life gave our sex more home duties, the idea took hold of many minds that it was a sign of coarseness and vulgarity to be seen at outdoor labor, and many country people foster this sentiment in their children. Phylis will go cheerfully down into the home cellar and cut potatoes all day for planting, but affects ignorance of methods of planting and cultivation of the vegetable as soon as it goes out of doors, and I remember once a country bred girl, who after a year or two at a city school where she studied botany, asked me "if those green things were strawberries?" while close enough to see, that they were well grown specimens of *solanum tuberosum*.

If the work of women in the growing of plants, fruits and flowers could be elevated to a science instead of being considered degrading these crude ideas would die out, and women could take their place in this as well as any other department of the world's great work. It is true some would-be delicate people may denounce you as strong and the sun browned face and hands may not be so attractive to society people, but after all these are minor things and we can learn to pity those who never know "the glad creative skill, the joys of they who toil with God." Among all the professions now open to women, that of horticulture presents many attractions that no other life can give. Surrounded by the best gifts of nature she can appreciate and enjoy this work, and it is a pity that among so many institutions of learning none has yet been endowed to teach our daughters all the important departments of horticulture. The cultivation of fruits and flowers form a large part of the refinements of life, and the work of grafting, budding, pruning, tying up grapes, and harvesting the fruits of vine and orchard can be done by our sex in competition with the stronger man, who usurp these tasks. Our florist usually employ girls to make up designs and bouquets, their deft fingers, and good taste, having a natural tendency to happy combinations, and in the pretty garden plots of most of our homes, it is the woman's hand that makes such gardens of beauty. A prominent lady florist in Cleveland, Ohio, began by propagating plants in her home and selling them to her friends, with this money she bought the cast-off sashes of an old greenhouse and some of the lumber and bricks, and by the help of a carpenter and her brother built a small greenhouse 11x18, doing the glazing herself. She was \$100 in debt when it was finished, but paid it all the first spring by the sale of plants, and going on with patient perseverance and skillful labor she is now recognized as one of the leading florists of that city.

Many women have earned pocket money, and some a competence by growing strawberries and other small fruits, such labor being light enough for woman's strength. The growing of herbs too is sometimes carried on by women, and when done with system is quite profitable and pleasant employment. Vegetables as a rule are heavier and not so easy to market, but I remember still the pleasure I experienced one winter in \$150 pocket money that was mine, from sales of celery. There had been a wash-out in the low lying lands about the city, that doubled the usual prices, and although mine was not very large, being a second crop on the ground, it was of the best quality and met ready market.

Many successful fruit growers can tell their experience, but success does not come always without failures, any more than with men, though close application to business will bring equal profit to either. Health and independence is to be found amid such work, and for country girls, there is certainly an opening that should be more alluring than the factory and workshop, and it is a pity that some practical method cannot be devised of teaching this branch of the business to promising students. The natural sciences, especially botany and entomology are necessary, the latter being indispensable in order to know our

children." My father had a hot-bed, and I got the flowers from him and I put the plants in the yard, and we had them there by the thousand, and no one ever pulled them, and no one ever got a chance to steal them, for the children. Ten or twelve years after that I opened what is now the Central School in Belleville, and I said: "Now, we are going to have flowers here, not in the yard, but in the house." By this time flower cultivation had taken hold of the people of Belleville—for Mr. Dempsey can tell you that twenty-eight years ago very few flowers were cultivated in any part of the county—and things were changed. Well, I told my assistants that we were going to decorate that school-room, and we got hanging-baskets all around the room, and the window was filled with flower pots. What was the result? Why, the cultivation of flowers started in Belleville, and we have now in the city of Belleville the finest rows of trees of any city in the Dominion, and it was all the result of my fighting, not to the bitter but to the successful end. Now, the children never touched the flowers, and, what is more, it is the want of cultivation, or culture I may call it, that makes children care little about flowers. This is a matter which should be taken up by this Association, and impressed upon the Minister of Public Instruction in Toronto, the Hon. G. W. Ross. Show him the absolute necessity of bringing this thing before the teachers, and not recommending them, but compelling them to bring this mode of culture into the schools. This is not the first time I have talked about this matter in this city, nor do I intend it to be the last, because this matter must be talked up until not only the teachers wake up but the men who put the teachers in their places, and these men must learn that there is a culture about the cultivation of flowers, and having them constantly under the eye, that surpasses any other culture in this age of the world. I believe, gentlemen, you are the men who can force this matter before the Minister of Education and compel him to see it. Mr. Ross is not a gentleman whose eyes are shut, but like many another Minister, he will do when pushed what he was anxious to do without being pushed.

The SECRETARY.—It has been a favorite idea of mine for some time to have this thing stirred up in regard to the schools. I am connected with the High School Board in our village, and have been interested for some time. We want to bring some influence to bear on our school authorities, so that a larger tract of land might be had in connection with all our schools, and that they might all be made the means of educating the children growing up. Let the school yards be not simply play grounds, but means of instruction and education with regard to trees and shrubs as well as flowers. I think it is a mistake where all the trees and shrubs planted in a school yard are of one kind, as we very often see. They should be little arboretums; collections of the different trees and shrubs which we have in our own country desirable for planting in private grounds; and the teachers ought to take every opportunity they have of instructing the children of the school in the names of these trees and shrubs, so that they may grow up with some knowledge of this department of horticulture. How many of the people which have grown up in our country are utterly ignorant of the names of the different varieties of trees and shrubs to be found in our woods. It seems to me that this is a matter of great importance, and that we ought to take some means of influencing the Minister of Education in the manner suggested by Mr. Macoun.

Dr. HURLBURT.—I think this matter should be impressed on both the public, and the school authorities.

Mr. CASTON.—There is a day set apart for tree planting called Arbor Day. In our section, at the last school meeting, we had opened a new school building with fine grounds, but it had no trees, and some of them spoke about it. I proposed to have all the section school teachers and children turn out on Arbor Day and get a lot of evergreens and deciduous trees, and plant them. Of course this was a step in the right direction, and something more may follow.

Mr. ANDERSON.—With respect to Mr. Wright's suggestion as to the cultivation of flowers in the schools, especially in high schools, I think it is most required in the rural districts. You will find that in large cities and towns more time is devoted to gardens for fruit, vegetables and flowers than there is out in the country, where you would expect the farmers to be more alive to their own interests in the matter. In any of the provinces you will find that it is the farmers, who have most at stake, who are careless and

indifferent. It is lamentable that such should be the case. We want to teach our farmers that their land is worth more to them than they are making out of it, and anything that will teach the farmers what a treasure they have in the little patch behind the back yard, would be an immense benefit to the country. I think if something could be done to stir up the farmers and show them the actual money value of flower and fruit gardens and vegetable gardens, and the cultivation of forest trees, it would be materially advancing the interests of this country.

Mr. GIBB.—When I was travelling in Germany, I noticed one day, at one of the horticultural schools, that there were about four times as many students as the school could hold, and I was told that it was a convention held there every three years, and that every school teacher had to go and spend three days at that horticultural college attending lectures on horticulture, and more than that, that he had to plant so many trees every year; whether that is in his own or the school grounds I cannot tell. It amounts to this, that every teacher there of a certain grade had to have a fair knowledge of agriculture. Then, one of the chief methods of teaching horticulture in Europe is to be found in the railway station gardens. Wherever throughout Europe there is a little railway station, you will find a nice little garden. In an out-of-the-way place in Russia you will find a beautiful shrubbery around their little station. One thing that has worked very well here as an incentive to children to study up trees, is prizes for collections of leaves. We have found that work admirably. No one can collect specimens without studying up the trees, and we have had capital collections from the youngsters, some of whom know all the native trees and some of the foreign ones too.

Mr. DEMPSEY.—I believe I am a farmer. I am sorry I am not a school-teacher, but unfortunately I never was, and we farmers have not had the privileges of those beautiful school-houses. Now, I have to say that, in our part of the country at least, every farmer grows vegetables—every one of them. My friend Professor Macoun can tell you they grow vegetables, and good ones too. I can assure you that farming is not at all a disgraceful profession with us, and if the gentleman who thinks we don't grow vegetables will come up there, we will show him some as good specimens as he ever saw in his life.

SECOND DAY.

On reassembling on Thursday morning the proceedings were resumed by opening the Question Drawer, in which were found the questions on which the following discussions are based:

FERTILIZERS FOR APPLE TREES.

QUESTION.—Is there any fertilizer better for the apple tree than ordinary barnyard manure?

Mr. BRODIE.—Last spring I applied to one half of my orchard hardwood ashes, about half a bushel to each tree, and to the remainder of the orchard I applied the ordinary barnyard manure the fall previous. On the part of the orchard to which I had applied the barnyard manure the apples were wormy—about one-third of them were wormy—which looks as if the manure had been a harbor for the insects; while the apples on that part where the ashes were applied were well colored, and not a spot at all on them.

Professor SAUNDERS.—What quantity of ashes?

Mr. BRODIE.—Just according to the size of the trees. I had a man going around with one of these coal sifters, and we sifted them around just as far as the branches extended.

Mr. DEMPSEY.—Mr. Brodie's sentiments just about speak the whole of it. I never found any better fertilizer for apple trees than hardwood ashes yet, but still occasionally a little manure or green clover turned in we find very advantageous. The way we have

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been using clover is by sowing a crop in corn. We plant corn in the orchard, and after hoeing it the last time we sow clover thickly, and in our part of the country, something like here in Ottawa, the snow lies on the ground pretty well, and the clover about June will be in blossom. When it comes in blossom we commence to turn it under with a chain on the plow, and in every third furrow we drop a row of potatoes. That is the way we get our strong growths of potatoes. There is no trouble, and we never fail to have crops on that principle. We use fertilizers for the corn first, then we use the clover for the potato, and I find that we get beautiful apples where we do this—fine crops on the trees and the trees themselves healthy.

Mr. HAMILTON.—An exception should be made of young trees, which are better manured with stable manure. It certainly grows better, but after they have reached a certain growth and begin to bear the stable manure might be dropped or used in a less quantity and more ashes. I think young trees are improved by the application of well rotted stable manure, while bearing trees would be the better of ashes.

Mr. BRODIE.—My experience of manuring in garden soil is that where we manure at the rate of fifty or sixty tons to the acre, we make too much growth in wood. It is only trees like the Duchess that we can afford to manure. My Fameuse made such a growth of wood that I had no crop at all; I took off two crops of hay, and then they began bearing.

A MEMBER.—How often do you apply the ashes? Is it every year, or only now and again? I know that in grape growing I have killed some of my plants by applying them too often.

Mr. BRODIE.—Only apply once a year, and it is according to the size of the tree; if the tree is large, half a bushel; if small, less. Every year as soon as the snow is off the ground.

The PRESIDENT.—No doubt it would depend a good deal upon the soil itself, a light sandy loam would take a good deal more ashes than a sandy soil.

Mr. DEMPSEY.—I will just give you a little result of some of my own experience with manure applied to an apple orchard. In the first place, there is a very great difference in the value of stable manure dependent upon the food of the animal. If an animal is highly fed one load of manure is worth perhaps ten or fifteen where they are only just kept on straw, hence there is very little danger in using stable manure if your animals are kept all on straw, but if the animals which produce the manure are highly fed the trees are sometimes forced to such a rapid growth that I have known a whole block of new apple trees to be destroyed in one season just from the forcing of the growth from stable manure. In applying ashes whether it is a large or a small tree does not make any difference in the quantity; because you spread it evenly over the whole of the soil. Under all circumstances I find that cultivation is worth more than all the fertilizers we can use. I have land on which I used no fertilizers whatever for ten years, but cultivated the soil well, and we invariably got a good growth of trees without any fertilizer. Then, again, I have tried to grow apples without cultivating the soil; we had a block of trees of a few acres which we did not cultivate this past year, neither did we take anything from the soil, but we did apply some ashes. The season was exceedingly dry. Just beside us was the piece of land we took the heavy crop off, and on the spot that we cultivated and took the potatoes off or other vegetables we took off one acre as many apples of the first quality as from ten of the others.

Mr. MITCHELL.—I am not an apple grower, but I would like to say a word on this question. As to wood ashes, I am not enough of a chemist to know what it really does as a fertilizer, but I have used ashes from our mill to a considerable extent on plants of different kinds, and I cannot say that I feel to-day that it does a great deal as a real fertilizer, but I think that it keeps down many of the aphides, of which there are more working at the roots of our plants than perhaps we have any idea of. Take up a plant of almost any kind carefully, and particularly in dry seasons, you will often find the aphides working there. I think these aphides which infest the roots would rather be somewhere else than where there are ashes in the soil. My experience is that we do more good with ashes in that way than anything else. These aphides are getting to be a very serious pest, and I think the application of ashes has the effect of preventing their ravages to a

very great extent, but, as I said before, I can hardly say I believe ashes as a real fertilizer amount to very much.

Mr. SHEPHERD (Montreal Horticultural Society).—I have used large quantities of ashes, one hundred or a hundred and fifty barrels a year; mixed wood and soft wood ashes. I have killed a great many trees by applying too great a quantity of ashes. I do not approve of Mr. Hamilton's idea of forcing young trees, particularly the Fameuse, to make a great growth, not in the Province of Quebec at least, where the climate is not such as to permit of a great growth safely, because it does not ripen the wood sufficiently. Out of three hundred trees set out in 1879 I lost about 25 per cent, and I attribute that loss to the fact that they were forced too much the first four or five years, that they didn't mature their wood. I keep most of my orchard in sod and grass, and we apply the ashes between the rows of trees; the man goes down with a cart full of ashes and sprinkles them as the horse walks along. We don't spread the ashes under the trees, but between the rows. I think one certain benefit of their application is that the color of the fruit is very much improved, particularly on sandy or gravelly soil. I have noticed the year after the application of the ashes that the color of the fruit has been very much improved by it.

Prof. SAUNDERS.—I think Mr. Mitchell has struck only half the truth in his remarks though there is a great deal in what he says. Alkaline applications are no doubt efficacious where there are soft bodied insects like the aphid, which are readily destroyed by them, but to ignore the usefulness of wood ashes as a manure is going contrary to the experience of the whole world. We know that potash is a most important element in the constitution of all plants and trees, and cannot be replaced by anything else, and where that element in the soil has become exhausted you have deficient fertility, and the fruit, flowers, or whatever you may grow, will be of an inferior quality, and it becomes a necessity in some way or other to restore this important element to the soil as a fertilizer. The knowledge which we at present have of the chemical constituents of our fruit trees is so limited that it is not possible to speak positively as to what preparation of this important substance should be added to the soil, and the character of the soil itself also modifies the importance of the use of a substance of that sort. With regard to the apple itself, we have had analyses made of the apple several times, but I am not aware that any analysis of the wood or leaf has ever been made in such a way as to give us the manurial constituents which enter into the tree. That is a class of work we hope to take up at the Experimental Farm as soon as we can, not only analyzing the fruit of the tree, but the wood and leaves and roots of the tree, so as to ascertain what are the constituents drawn from the soil. When that is done we shall probably be able to give some useful suggestions as to what should be added to the soil where it has been cropped annually for a long period with the same product, as in the case of the apple. I think the present discussion a most important one, but I would not like it to go abroad that ashes are not a good fertilizer, because I am sure it would not be a correct conclusion.

Mr. BRODIE.—Is not there a certain percentage of phosphoric acid in ashes?

Prof. SAUNDERS.—Yes, and some iron, and very fine proportions of other salts and lime. It depends very much upon the character of the wood. Different trees yield ashes with different constituents; some are richer in potash than others, and some richer in other ingredients.

Dr. HURLBURT.—We almost always cultivated, about three-quarters of our orchard; sometimes potatoes, sometimes corn, and there was very seldom any fertilizers used under the trees, though sometimes some barnyard manure was scattered over the ground under the trees. These trees where the ground was cultivated every year grew much more rapidly, and produced much better and more fruit, and the trees lasted longer. We never used any ashes, and I question whether ashes or any fertilizer of that kind can be permanently used to advantage. We know that a great part of the substance of the tree comes from the air. When I say a great part I mean almost the entire substance. Of course there are many elements taken through the roots, but the chief thing to be taken into account in manures is to loosen the soil and allow the roots to run freely into it. It is very possible that sometimes these manurial substances put upon the soil may quicken the growth, but I question very much whether permanently they do so. I think

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an experiment of that kind which has lasted over a great many years in my recollection would be of great importance, unless some experiments show to the contrary. The underlying soil of these trees was a silurian limestone. A gentleman who spoke here yesterday in reference to the soil around the St. Lawrence, said he could grow profitably only on some gravelly ridges where he has tried upon the limestone. I don't know but what some of these limestones are very compact, and will not allow the roots to penetrate. In other places forest trees as well as apple trees will grow, where the rocks do not lie close together, and among the crevices down I have found the roots five feet below—you know the soil under these limestone rocks is a very rich, black mould—running between these rocks, and the trees would flourish almost better perhaps than on any other soil. At all events that is my experience.

HORTICULTURE IN THE PUBLIC SCHOOLS.

QUESTION.—Will the President please have a resolution passed embodying the report of Prof. Macoun's remarks last evening, requesting the Minister of Education to take steps towards the introduction of horticulture in the public schools.

THE SECRETARY.—This is a very important subject, though we have not time to discuss it at present. I think it would be rather superfluous to have it taught in the schools as a lesson, the children having already so many lessons to occupy their attention. But if in some way it can be made a recreation in connection with the schools I believe it can very successfully be brought into the course. If every teacher had the requisite practical knowledge he could by these arbor days and during recess, perhaps, and at other times, take the children out in the school yard and give them a few little practical lessons in a way that would be a pleasure to every scholar rather than a matter of study, and thus make them practically interested in it. If every school yard in our Province could be made a little arboretum, if the play ground could be made a little larger than was necessary, and a part set aside for a collection of flowers and shrubs and trees of the country, not more than one or two of each variety, and if every first-class teacher were compelled to be sufficiently versed in these subjects to impart the requisite information, I believe a great deal might be done to disseminate information in this respect. I would express my views in this way, and put it as a motion perhaps before the Association, in order to bring it up in some definite shape. But first of all let me say we were studying how we could disseminate among the farmers a spirit which would effect an improvement in their yards. We want practical illustrations, because they will learn faster that way than in any other, and we must make the school yards the illustration as far as possible. I would move the following resolution,—“Having in view the great importance of a more extended knowledge of horticulture in our country, this Association recommends to the Minister of Education the consideration of the wisdom of encouraging the study of horticulture in connection with our public and high schools, both by making it obligatory on first-class teachers after a certain length of time to take a short course of instruction at the Agricultural College, Guelph, and by making each school yard an arboretum of native trees and shrubs properly arranged and labeled.”

MR. MITCHELL.—I have great pleasure in seconding the resolution. We have got too much in the habit of regarding our public school children as a horde of little vandals, who destroy everything they can lay their hands upon. I know in my own district in some of the schools we have little plots laid out, and they do not destroy them but take good care of them. With public school scholars or anyone else when certain results are looked for from them they are pretty sure to follow, but if they see that people place confidence in them, whether little or big, they generally try to deserve that confidence.

MR. WHYTE.—About two years ago I was requested by the Inspector here to give lessons in botany in the school, and the pupils were given a portion of the school yard which was fenced in by the board. I can say that I think it had a remarkably good effect on the pupils; instead of neglecting or destroying the plants they got, they took the most particular care of them, and they were continually doing all they could to

beautify the garden? I understood that afterwards a great many of them carried them home and cultivated plants in their own houses. I certainly think a great deal of good may be effected in the manner suggested.

The resolution was unanimously carried.

BEST VARIETY OF PLUMS FOR THE OTTAWA VALLEY.

The next subject for discussion according to the programme was entitled as above, and the discussion was opened as follows:

Mr. GREENFIELD (Ottawa).—I have tried a great many different sort of plums. Pond's Seedling bears for a year or two, and then dies out. I have Glass' Seedling, which will bear five or six years; I have got very good crops from it, but, like all the rest of the best plums, it will not stand the climate. I have tried a great many; I have got some in flower, but as soon as they come to bearing order they die out. Glass' Seedling I find is beginning too; it is a kind of disease underneath the bark, and where it has taken the disease under the bark I cut the bark all away, and when I do that I find a kind of white scum between the bark and the wood, which I cut away, and then paint it with strong turpentine and paint. I found that preserved the tree for some two or three years, but it went at last. I have a seedling coming now from which I hope to rear some good ones, but as to trying our best plums here it is almost labor in vain, for they will not stand the climate. I have tried them on all kinds of soil, and now I am cutting them down in the Russian fashion to see if I can grow them that way, and some of them are looking very well. I have had the Orleans, white and blue, one we have imported from Quebec, but they only stand a few years; they will not stand the climate any length of time. I would not advise anyone to rear any plums here, unless they are reared in the bough. I think I have about a couple now reared by our seedling from the Glass' Seedling and the Pond's Seedling. I may have some bearing in a short time, but I don't intend to raise any more.

A MEMBER.—Have you ever had the Weaver Plum?

Mr. GREENFIELD.—No, I never had it, but I got a great many from Mr. Leslie of Toronto about ten years ago; I got the best and hardiest plums, that I thought would stand the climate, but they all died out.

Mr. SHEPHERD.—Have any of your seedling plums borne fruit?

Mr. GREENFIELD.—The Glass' Seedling is not bearing yet, but the leaf shows very good quality and strong wood, but I find if you get them from too strong ground they make too much wood and won't stand the climate. I find the best ground you can put them on is cold, heavy clay soil, but it does not do to put them on too strong soil, for they make too much wood.

A MEMBER.—All the red plums have shrivelled up very badly—become spotted and shrivelled up and large quantities destroyed in many instances. In my own garden we had only two or three that escaped, I would like to know if any remedy can be devised?

Prof. SAUNDERS.—Did it occur previous to last year?

The MEMBER.—It began about four or five years ago, and it seems to be getting worse.

Prof. SAUNDERS.—Did the trees lose their foliage?

The MEMBER.—No.

Prof. SAUNDERS.—I know that in the west they would shrivel sometimes in an exceptionally dry year, but I am afraid I cannot throw any light on the subject.

The MEMBER.—I thought it might be owing to the dryness of the season, but although I watered the trees copiously for some time it didn't seem to make any difference.

Mr. WHYTE.—I fully agree with Mr. Greenfield on the folly of spending money on grafted plums, for none of the ordinary plums grown in the west will succeed here. I tried it some years ago, and the growth is very rapid, but they all died out. Since then

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we have got some plums of our own by selecting the best seedlings, which are very good; I have two or three trees quite as good, I think, as most of the western varieties—that is for preserving. They never shrivel or drop or give any trouble of that kind, and they are quite as large as the Black Ball. All our seedling plums are a yellowish red or dark red. I am quite sure there is no use in trying to graft plums in this part of the country.

The SECRETARY.—During last summer Mr. W. H. Wylie of Carleton Place sent up to me a small basket of seedlings, which I think are worthy of notice. He also sent me a few shoots or sprouts which I have planted, and some of them are growing, so I shall have an opportunity of testing them. It is a large, red, native seedling, which has been in his family for a long time, and they have found it far superior to any other plum in that locality.

Mr. HAMILTON.—I have tried plums, and they have failed, but I have had very good success with the De Soto. A tree planted three years ago last year produced a gallon of very large, fine plums. In regard to the subject of plum growing generally, I was down in New Brunswick a few years ago—I think it was four years ago—and I saw a very large plum orchard, and the plums were of a sort which it was generally considered impossible to grow. There was the Green Gage, the Washington and some others, and to say that I was astonished would be putting it very mildly. I was down there in winter, and saw something of the method of treating the plum tree in winter. The gentleman who grew them told me that he spread out the roots to the east and west in planting them, and put none to the north and south. Then in winter he would take a shovel of earth from the south side, and bend the tree down to the south. I saw a tree trampled down in that position. He told me that by that means he had large crops every year, and plums nearly all of the best. Now, that may not be due altogether to the winter protection; I think these plums were planted pretty closely, and I think the ground was shaded. He told me also that the soil was not disturbed—was not cultivated, and that also, I think has something to do with it. I think the bending down prevents the fruit bud from being injured in winter, and the close planting tends to preserve the trees and make them productive.

Prof. SAUNDERS.—Is that orchard protected by a hillside?

Mr. HAMILTON.—I think they were grown on a northern exposure.

Mr. BUCKE.—I have grown a good many cultivated plums, and have not so far succeeded very well except with Pond's Seedling and Glass' Seedling. But the Pond's Seedling is a very shy bearer, and the Glass' Seedling, though grown a number of years, I have had but very few plums from. The tree is hardy, but the fruit spurs are not hardy, and, like Mr. Whyte, I have had to fall back on the natives. Moore's Arctic, about which we hear so much, is no better than the rest of them here. The Weaver is very hardy here, but the plum is very inferior compared with the wild plums, raised here. The great difficulty with the wild red plum is that the stone is too large; if we could get it with a smaller stone I think we would have a satisfactory plum. The plums grown in the Ottawa Valley are very superior to those grown in Minnesota. I have seen a number of Minnesota plums, and they cannot begin to compare with those grown in the Ottawa Valley. I think if we make a collection of some of these plums we are talking about as we are going to do with the seedling apples it will be a great benefit to northern Canada, and perhaps to some of the southern parts of it, where people may perhaps be very glad to grow them. They crop very heavily, are very hardy, and the flavor of some of them is very good. The Orleans plum, brought from the Island of Orleans, is not at all hardy in the Ottawa Valley. I don't know why that is, as the Island of Orleans, as everyone knows, is below Montreal.

Dr. HULBURT.—I had a few years' experience in growing plums here, but succeeded with none but the native yellow plum. It is very different from the red plum in the west—a larger and better plum. The trees grew very rapidly, and bore profusely, so much so that the limbs were almost broken down year after year, and the plums, which were large and yellow, were very luscious. I remember a tree, the largest yellow plum tree I ever saw in my father's orchard, which I always understood was a native. The trunk of the tree grew about as high as a man's head before the limbs went out, and the

branches spread further, and it was a larger tree than most apple trees. I think a foot or two above the ground it was fourteen or fifteen inches in diameter, and the plum was very large. I got down a plum that I used to grow in Hamilton, but it died, and I then got some from the eastern townships, but they died the same. I think these native yellow plums here are well worth cultivation, I think they would give very good results, and the tree is as hardy as our forest trees here.

Mr. WHYTE.—I would not like the members of the Association to think that these stones are all so big here, there are some that are small. They are a very good plum indeed, and lots have a very small stone.

Mr. GIBB (Abbotsford, P. Q.).—My first efforts proved failures; now I have plums every year. I first planted those kinds which did best in the sheltered city gardens of Montreal. Lombard bore one glorious crop and gradually died. Bradshaw, a few now and then; so did Coe's Golden Drop, Quackenbos, Damson, and others. Dictator, Nota Bene, McLaughlin, and many others proved failures. I had a few from the Washington, and then it died; in fact, I might go over a long list in the same way. Later on I tried several varieties of the Prune Plum of western Europe, but they are not hardy. I have tried the Prunus Simoni of China, it is about as hardy as the Lombard. Then I planted some Russian plums, but I cannot speak of them yet; they are making slow growth, in fact all my plum trees are making moderate growth; I have not been forcing them. In the cold belt many have their hearts set on the Russian plum. Let us see what we have. The plums that Mr. Shroeder, of Moscow, has sent to the Iowa Agricultural College, were received by him from Poltava, where the winter temperature is like that of Hamilton. Dr. Regel, of St. Petersburg, has sent out three varieties, from whence obtained he was unable to tell me. The four varieties received from Orel as Orel 19 to 22, are probably the Rothe Lange, Gelbe Lange, Blanc Lange and Tchernoslev, and whether of Russian origin or not I cannot say. Then we have (thanks also to Prof. Budd) in this country the Moldavka received from Varonesh and some from Riga. The plums of the Volga, I regret to say, are not in this country, and are very difficult to get because they are in the hands of little peasant fruit growers. We therefore have not in this country a good selection of the plums of the cold climate of Russia.

In 1873 I planted a number of root grafts I received from Wisconsin, and where the graft failed I allowed the stock to grow. The result was that I had five crops in succession, and a crop nearly each year afterwards. Possibly if I had manured them a little they would have done even better. Some were poor in quality, and some were of good quality for eating and fairly good for cooking, but if you can them, then the astringency in the skin and stone become too strong. Last year I planted for the first time Desoto, which is a decided improvement on these wild plums I have spoken of. It is a young bearer, and the best in quality of these American plums which I have tested. Another plum that has borne with me is the Miner, of which I have about ten or twelve trees. It ripens about the 1st of October and keeps till 1st November. It is a deep dark red, and has the flavor of a musk melon. It is a light or moderate bearer each year. A plum I have not fruited is the Mooreman, but the stone is very small, and it seemed to me to be free from astringency. I have tasted Wolf and Maquoketa on the College grounds at Ames, Iowa, and I feel that the better varieties of the American plum are the most satisfactory for our colder climates. In regard to the question brought up by Mr. Hamilton, if we protect our raspberries why should not we protect our plums? In Central Russia many are planted where the winters are very severe, and they bend them down every winter to the ground. If the trees get too old to be bent down they take their chance. This plan is adopted on a large scale by Mr. F. P. Sharp, of Woodstock, N.B., with Moore's Arctic.

Mr. BRODIE (Montreal).—My experience has been very much like that of Mr. Greenfield. There was a very valuable article in one of our Reports (Reports of Montreal H. S.) by Mr. Spriggins, on growing plums from seed. He sowed the seed, choosing those varieties which had a nice broad leaf, discarding all those with a small leaf and prickly stem, and he has originated some very fine varieties. There is also a Mr. Arnott, of Hochelaga, who has a very fine seedling grown in the same manner. Another gentleman has planted some California plums, and says he has got a very fine seedling

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from them. I have the Yellow Egg grown from suckers, and as the tree gets old and dies there are others to replace them, and it is the same with the Green Gage.

Mr. CASTON (Craighurst).—Thirty miles north-west of where I live is the greatest plum region in Canada. The soil is a rich clay loam, with a large body of water, the south shore of the Georgian Bay on the north. Last summer you could buy plums there cheaper than wood. Now, where I live, about thirty miles south-east of that, it is pretty hard to grow plums, and only a limited number of varieties succeed well. But our experience is that they succeed best on a clay soil. From the remarks I have heard in regard to the Ottawa Valley I would recommend you to do the same as I do myself; that is top graft on the native tree. If you have a vigorous native seedling let them grow in long sod and don't cultivate, and you will find the grafts put on top of them will make a vigorous growth. You can stop that growth in the month of August. Some of you try that for a few years, and you will succeed in growing most of the finer varieties—by top grafting on the native trees.

Prof. SAUNDERS.—I hope that the gentlemen who have the useful seedlings spoken of will send them to the Experimental Farm to be tested alongside each other, so that we may get such material as will be useful, not only in the Ottawa Valley, but in all parts of the country. We are very anxious to have this material got together.

The PRESIDENT.—I think this is a very important point; this question in regard to the different varieties of fruit we grow seems to be continually coming up, and we certainly must see the importance of it. That is, in such a district as this, where you want to attain the highest excellency, and where you can grow a really good variety, but not permanently, then follow it up by getting a seedling from it, and you will succeed with this seedling; and in sections where you cannot grow a tender variety by protecting them in some way so as to get the fruit of it, get it if it is at all possible by the growth in that cold section rather than by importing seed from some other section; I think that would be a point in favor of the future growth of the tree. In regard to Professor Saunders' request, I think you will give every assistance to the Experimental Farm in this respect. I hope fruit growers generally will avail themselves of the opportunities offered by the Farm, and the experience of the gentlemen who are conducting it.

HANDLING OF FRUITS BY RAILWAY AND STEAMBOAT COMPANIES.

"Handling our fruits by the Railway and Steamboat Companies, the accommodation given, the grievances of the past, the requirements of the future, our most reliable markets and the best routes by which to ship," was the next subject that engaged the attention of the meeting. The discussion was opened as follows:

The PRESIDENT.—One of the first requisites towards meeting our requirements in this respect is promptness in supplying shippers with clean, well ventilated box cars, and we want those cars in the early part of the season. I have frequently made application for cars, and, after waiting day in and day out, the fruit in the meantime lying there and suffering damage, had to be satisfied with a car which had been used for shipping cattle, or some other purpose that rendered it quite unfit for carrying fruit. Cars for shipping fruit require to be perfectly clean and devoid of any odor; because fruit very readily becomes impregnated with any odor which clings to the car in which it has been shipped. In regard to promptness, it may be difficult for the railway companies to provide the cars. That, however, is not for us to consider; we have to lay our grievances before them and let them consider that: and I have no doubt that many of them might be much more prompt than they are. I have had many instances during the past season in which severe loss was incurred, one of which I will relate. I was shipping a special lot at the small town of Kincardine—a lot I had sold by cable in London, England. I made my bargain with the local agent strictly, so I might know what I was going to make on the sale. Well, in the first place, the Grand Trunk Railway Company, the company with which I was dealing, forced me, contrary to my desire, to ship by Boston

rather than New York. The rate made by New York was much higher than that by Boston, and the result was that I had to employ Tiffany cars, as it was late in the season. But that was not the worst, although I felt bad enough at being coerced in that way, and remonstrated very strongly with Mr. Earle, the freight agent in Toronto, but before I could get the Tiffany cars I had to wait about two weeks, during which time the fruit sustained considerable damage. Then, instead of the rate agreed upon by the local agent, I was charged an additional fifteen per cent. for the Tiffany cars. I thus suffered a double loss,—in the first place by paying more freight than I expected or agreed to, and in the second by the damage the fruit sustained owing to the delay. Now, that is one instance, and we have many such wherever we go. Then, again, when we have these box cars they are not equipped in a manner fit for carrying fruit. They should be supplied with what in England are called "buffers," to prevent damage by shunting of the cars. This is a point well worthy of consideration by our railway companies, and I hope they will endeavor to do something for us in this respect, as we find by actual experience that the damage to our fruit by reason of this shunting is very great—that no matter how well or strongly we barrel our fruit up, this excessive shunting smashes them open. I may say here that the greater the bilge on the barrel the greater is the liability of its being broken open. That is a point to which we might to some extent remedy the evil by having barrels with as little bilge as possible, and driving the quarter hoops down towards each other. A barrel so treated will not only pack better in the car, but it is also easier on the fruit when it is in the vessel. But, at the same time, I would recommend that shippers of fruit should urge upon the railway companies the desirability of placing these buffers upon their cars, which I am satisfied would considerably lessen the damage from the source of which I speak. Then, the present system of sealing our cars is not at all in our interest,—it is merely by a little wire which anyone may pull out with their finger and thumb, and in shipping we have had many complaints about wrong count, as it is called. Even in cases where we have so thoroughly tested the matter as to be able to swear to our count word has come back of shortage. I was conversing the other day with a gentleman who had a shortage of this kind in shipping a number of car loads of apples to the North-west. In some of the cars he had shipped I forget how many barrels of dried apples, and when they arrived at Winnipeg the dried apples were not there at all in any of the cars. The method of sealing was so imperfect that some rascal had opened the car and extracted the fruit; and it does seem to me that the companies should adopt some means of sealing these fruit cars which would prevent their being tampered with in that way. It is quite possible these cars had been shunted off on to a siding, and at night, or some other convenient time, the apples were stolen. There is always under the present system abundant opportunity for such thefts, and the question of sealing is a very important one for the railway companies to look into, as it could easily be remedied if they did so. Then, in regard to bills of lading, the companies should in every case give their own count on the bill of lading, as is done with almost any other kind of freight. Of course under the present system if they give a bill of lading they would be liable to the shipper for damage in the lost article, but I see no reason why they should not give their own guarantee count upon the bill of lading. Another great convenience to shippers would be the issue of bills of lading not only to ports in the kingdom, but to inland points. It is a great nuisance to the shipper who wants to ship to some inland point not to be able to get a bill of lading through to that point, but only to the port; as then he runs all the risk of transshipment, and has to employ an agent to take it inland. The result is expense upon the shipper, whereas otherwise he would get the competition of that inland market as against the port market, which would be to the advantage not only of the shipper but of this country. Then, as to the method of handling, we have made test cases. In only one case did I notify. At the request of one of the Grand Trunk Railway officials I notified Mr. Earle of one shipment, for the purpose of seeing how well they would handle that shipment, and he said he would be glad to do anything he could to assist the thing forward by the steamship company. I asked him by letter to see as to the transshipment of this particular lot at Boston; to tell whatever steamship company it was going by that this was a test lot, and

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to ask them to use very particular care in the storing away of the goods, and also as to the transshipment upon the docks at London. The result of that was that the handling at Boston was if possible worse than ever before. The handling between the railway and the steamship was something terrible, they were smashed open and tumbled into the vessel in any shape, as long as there was a head in and a hoop on and they would hold together anyway. A point for the railway companies to consider is the reliability of their officials there. We want some different class of men to handle our fruit from those generally known as baggage smashers, or there will be no success at all. Now, I would like to ask the railway companies why this through rate—I can imagine the reason, but I would like to put the question—from the western sections of Ontario to ports in Britain *via* Montreal and Boston should be less than the through rate at New York. The through route by New York is the best route, and here I must make a statement, and it is a pretty strong one, which is this. I have shipped through by New York, and the handling when they are sent by that route is very much better than when they are sent *via* Montreal or Boston, in fact the difference in the handling would make the difference between profit and loss in the old country. On one or two of the lines of steamships there really handle very well, and I believe they are trying their level best to get our trade and to do all they can for the shippers. They have really acted very well, whereas we find that shipping the other way it is quite different. Now, there is one very serious drawback in shipping to London—that our apples go mostly in cattle boats; that is to the London market. We find that our apples delivered direct in London by water arrive in a very bad condition indeed, and more than that, there is always a shortage. That, I think, occurs in going up the Thames; they are plundered right and left. The Allan Line Company wrote me expressing the opinion that the trouble did not occur by their line. I had billed their line through the London Dock Company for a very large amount. Of course the reply was that they were not liable, I went to the steamship companies in London, and they cast the blame on the rascally dock companies, and the dock companies in turn threw it back on the steamship companies. Of course the ground we took with the dock companies was this. We would say, "here is our bill of lading, we want that quantity—what it represents." "Oh yes," they would say, "we have delivered to you all we got, we can show our receipt from the steamship company." No doubt that is true, we had no means of proving it, but there the difficulty exists somewhere; there is that loss between the railway company, the steamship company and the dock company. It is pretty clear to us that it is between the railway company and the steamship company somewhere, and so far as this shortage is concerned we would hear no more about it if instead of giving the shippers count on the bill of lading the company's count was given. Now, it would pay some of our railway companies to try and give us a through rate *via* Liverpool, better than we have now going to the London market. We must withdraw from that direct water route to London; we would like to follow it up if they would carry our goods in proper shape, but the way they have been carried is disastrous to us, and we must go by Liverpool. We have to pay so much more *via* Liverpool that shippers often hesitate about it, but it often pays the difference; it did this last season, for they landed in far better shape in the London market. But the trouble is that we have to pay the local rate from Liverpool to London, and if some of our railway or steamship companies here would arrange with the English lines of railway and get them down to a proportion of the through rate it would be a great boon to shippers here. I did succeed in getting some little rebate from one of the companies in England on condition that I should turn all the freights right in to them, and I did for part of the season. The companies there are very stiff, however. They did not want me to confer with the other companies at all, but to deal with this one line by itself. There certainly ought to be a through rate to London with transshipment at Liverpool that would compare favorably with the through rate by water. Another thing is this; we find a very great difference in regard to correspondence. We find in correspondence with railway and steamship companies at New York and in the United States more promptness in replying. We can get the information we want more quickly. Here we find very great delay, though I will make an exception to a great extent of the Canadian Pacific Railway. So far as my correspondence with them has gone they are

very prompt and obliging, but there is a lack of that on the part of the Grand Trunk, whose authorities are very, very slow, in fact we have sometimes to carry through our transactions somewhere else while we are awaiting a reply from the Grand Trunk Railway. In regard to the steamship companies, it is time for them to consider the question of cold storage for our fruits. Here is one reason why I would like to get the same rate *via* New York as *via* Boston, I find there are steamship companies there which will furnish us that accommodation if they can only get the trade. Now, if our steamship companies here will not give us that accommodation it will be worth our while to pay somewhat extra in freight in order to reach the steamships there. So, as I said, it is time for the steamship companies to take it up, because it is not only in the interest of the shippers, but in the interest of the whole country. The compartment for this purpose should be kept apart from other freight, and ought not to be near the engines or heating apparatus of the vessel, that is evident. As a rule I think they try to carry that out as far as possible. Of course they have to make arrangements ahead of time for these freights in order to know the amount they are going to have, and so on, but there will be no trouble about that if the requirements are met with.

Mr. DEMPSEY.—With respect to that storage, would they ship in the same department as butter and cheese?

The PRESIDENT.—Fruit will partake of almost any odor, but I don't know that shipment with butter would affect it at all, and perhaps not cheese. I don't know that there would be any objection to that, but there are substances having strong odors which would very materially affect fruit, and affect the price of it in the old country.

Mr. DEMPSEY.—We have been corresponding a little upon that point with a steamship company, and they are willing to grant us the same privilege as men in the dairy business, and it occurred to me, if there was no danger of the fruit being affected by the butter and cheese, it might answer. This question of fruit shipment is one of great importance to fruit growers of Ontario, because the production of fruit is almost doubled annually, and it will be almost impossible for us to find a market for our fruit. When it is taken into consideration that our fruit is so much superior to the American or even European fruits, it is very important that we should get proper facilities for shipping them, and that we should learn at the earliest possible date the best form of package and so on. Now, I think that half barrels would be preferable, and it occurs to me in reference to cars, that a simple slatted door on each side would be preferable, and that some end ventilation is wanted, which I think, could be easily done. In regard to shipping *via* New York, there is one very great advantage that the lines *via* New York, whether per Canadian Pacific Railway or Grand Trunk Railway are all double tracked, which does away with a good deal of the shunting which so injurious to fruit. When a locomotive suddenly comes against a car and knocks it almost off the track, there is a kind of second jar of the barrels against each other; I have noticed sometimes that the jar was double, and often a barrel of apples is flattened one-third of the barrel; I have seen them coming out of the car a little crushed. Again when loading on the steamer, they use a kind of endless rope which is brought around half a dozen barrels probably. Of course, if it is done carefully it is all right, but it is sometimes done carelessly, and in such cases I have seen the rope slip and the whole lot of barrels roll down further than the length of this building and come in contact with some post or something, perhaps the side of a building, which would flatten them out, and, of course, some of the apples in those barrels would be crushed. In regard to the tampering that has been spoken of, our apples are sometimes tampered with, there is no question about that. I remember one instance in which we were trying to catch an order late in the English market for Christmas. We had great difficulty in getting it through; it was detained on the road, and when they did arrive there few of the barrels that had the full complement of apples left in them; some had not half a bushel left. Now, I don't want to accuse anybody of anything wrong, but that looked exceedingly suspicious, but how we are to get at the matter is a question. Whether it is done before or after they cross the Atlantic we cannot say, but on the English railways they are carried on what we would call a platform car, and covered with a canvas—about twenty-seven barrels on a car, which is a very small amount compared with ours. They are just set on end on the car and covered with the canvas thrown over

the top, and opportunity to find in any policeman. I had no difficulty in getting to New York and Boston and Portland seventy-five cents. I want to get five cents to \$ five cents, you be told you have regularity in ship company, that they play eighty cents per of our fruit in shipping point even if there is a large quantity damp that the here that six of that condition think the fruit procure storage apples arrive they can be made such system as

Mr. SHEPHERD.—Montreal than when they are steamship lines lines running first-class steam cheap a through other ports.

Mr. SHEPHERD.—harbor accommodation as good facilities New York. One difficulty on the whole on board with business, and I fruit to have a pool.

The PRESIDENT.—little; the railroads mouths on the side of the station from the fruit we should shelves in baskets rate. It is a serious area of their companies are very we cannot get the

the top, and if the car is left in a railway yard, as sometimes occurs, it affords an excellent opportunity for pilfering. Still I must say, their police are about as perfect as you can find in any part of the world, and these things are always under the careful eye of a policeman. Still, however, I know they are tampered with sometimes. Now, we have had no difficulty in getting a bill of lading through by way of New York, and the difference is very trifling, I think only a matter of a very few cents per barrel between New York and Boston. We got them through for \$1.13, and at that time by way of Boston and Portland the bill of lading was very much higher, though now it is down again to seventy-five cents per barrel, so that through rates change very much, and that is a point I want to get at. Why should we be subjected to these wonderful changes from seventy-five cents to \$1.50? Perhaps, when you went there, expecting that the rate was seventy-five cents, you would find on asking that it was \$1.50, and it is exceedingly annoying to be told you have to pay just double freight. I cannot see why there cannot be some regularity in the business. The railway company invariably lays the blame on the steamship company, and *vice versa*, and that is the way it goes, and it really seems at times that they play upon us a little bit too much. I would not object to a uniform tariff of eighty cents per barrel all winter, because I don't think we will ever want to ship much of our fruit in winter, from the fact that during their transportation from here to the shipping point on the cars the apples become so chilled that when placed on board ship, even if there is cold storage, the atmosphere is so much warmer than the car that there is a large quantity of moisture condensed by the apples in the barrel, and they become so damp that the water actually drops out of the barrel sometimes. I need not tell anyone here that six days of that would destroy almost any variety of apples—being six days in that condition in a barrel; so I think winter shipments will have to be abandoned. I think the fruit growers will have to club together and manage in some way or other to procure storage in England and have some person to look after their interests when the apples arrive and such varieties as can be held to advantage stored until such time as they can be most profitably disposed of. I think we shall eventually have to adopt some such system as that.

Mr. SHEPHERD.—As a Montrealer, I am very glad to learn that rates are less *via* Montreal than *via* New York. At the same time I regret to hear that the handling, when they are sent *via* Montreal, is so much inferior. The remark was made that the steamship lines running to London carried cattle. If that is the case, I think all the lines running from Montreal to London are cattle ships; I do not think there are any first-class steamers running to London. But I don't see how we can ever expect to get as cheap a through rate to London as to Liverpool; I don't think it is possible.

The PRESIDENT.—It is not the same rate, it is a proportion of the through rate to other ports.

Mr. SHEPHERD.—Montreal is just awakening to the fact that she has not sufficient harbor accommodation, and if the plans which are proposed are carried out, you will have as good facilities for shipping fruit from Montreal in a short time as can be found at New York. One difficulty in Montreal now is, that they have not sufficient track accommodation on the wharves to bring the cars immediately alongside the vessel and put the freight on board without any intermediate handling and carting. I am in the forwarding business, and I see it every day. I think it would be to the interest of shippers of fruit to have an agent watching their consignments at points like Montreal and Liverpool.

The PRESIDENT.—We have tried that, but these agents were able to accomplish very little; the railway companies would tell them it was none of their business to open their mouths on the subject at all. Then, for small fruit they should supply different accommodation from that furnished for the large fruit. It is absolutely necessary that for small fruit we should be supplied with shelved cars, so that small fruits could be packed on the shelves in baskets or cases; and this should be supplied at the ordinary through freight rate. It is a serious question with the growers of fruit to-day, whether they should extend the area of their fruit growing. It is felt that the railway companies and steamship companies are very far behind the fruit growers—they have not kept pace with the times, and we cannot get the accommodation we want, and must have, if fruit growing is to become

profitable trade for the country. For this reason the officers of this Association feel some degree of diffidence in going to the farmers of this country and asking them to go more extensively into the planting of fruit. We know there are many of them inclined to do so; we know that they know very well that wheat growing for profit is a thing of the past, and that they must look to something else in the future. I do not know anything that is advancing so rapidly as a convenient and profitable trade for this country as fruit growing, and the farmers are learning that they can make more profit out of their orchard than any other part of the farm, and are strongly inclined to extend their operations in that direction; but we cannot advise them to do so unless the needful facilities for transportation are supplied. In buying fruit we are not able to pay them what I consider is a proper price for their product, simply because we run the risk of having a large amount destroyed or damaged, which destroys all the profit of handling them. Now, in my own part of the country we have a great many plums, and we would ship very largely of them were it not that the only way we can make a profit out of them is by shipping them by express in the early part of the season, but the express rates are so much higher than the ordinary freight rates that we are unable to continue that for any length of time. If for the ordinary freight rates we could get a car put on the express train we could easily load it to points wanting fruit like the plum, but we have found difficulty in getting them to do that, and the plum is a fruit that must be transported with rapidity, or it will not keep at all. Now these are serious matters, and if these railway and steamship companies take any interest in the advancement and progress of this province, they will take our requirements seriously into consideration. It is said that corporations have no souls, but we know that they have among them some very good heads at all events—they are reasonable men, and if these matters are laid properly before them, I think they will accede to our demands.

Mr. CASTON.—Have not the Grand Trunk already made a move in that direction?

Mr. A. H. PETTIT.—We have found a great improvement in that respect this last year. The Grand Trunk have taken it up, and we were furnished with shelved cars from St. Catharines through. They were sent by special train to Toronto, and from there sent by fast Merchants' Despatch to Montreal. I believe it took twenty-eight cars to keep it running. We took from two to three cars daily, some days four. We got our fruit put on board the cars in the afternoon, and it was only two nights and one day in going through to Montreal, and the rate we have been getting was very satisfactory indeed. Of course before that all our goods were sent through by express, and many times it cost just half what they were worth, and they were not very well handled either. By the present system we are allowed to load the cars ourselves, and could see the fruit carefully and properly put on the shelves. Another improvement we are in hopes of having effected is in the ventilation of the cars, which at present is not all that we could desire. In regard to shipping apples to the old country, I quite agree with most of the remarks of the President. In reference to shortages, we have never been troubled in that respect, and the bills of lading are generally made out by the agent in this way. The barrels are sent to the station as fast as packed, and as soon as there is a sufficient number there to make a car-load, the porter or some one at the station is authorized to load the car, and they load and give us a bill of lading, with their count, and I do not know of a single instance of shortage when it is done in that way.

The PRESIDENT.—That just proves the point I wanted to make.

Mr. A. H. PETTIT.—There is one great difficulty which arises in this connection. Some seasons you are successful, and another you may not be, in carriage across the ocean. One shipment we had last fall, a year ago, were all wet and wasty. The reply to me was that the apples must have been wet on this side. I knew they were not; they were put up very carefully, and put on board the cars in dry weather, and landed in Montreal in dry weather. I think apples are often far too warm on board ship; but still I don't fancy cold storage; it is too much of a change from cold to warm. Last year we made a shipment of about a ton of grapes to Glasgow. We had them put up in twelve pound baskets, just as we ship to Montreal or any other place. They were placed on shelves in the storeroom, and I asked our agent to see that they got plenty of air, not cold air, but whatever the temperature was, and those grapes arrived in perfect order,

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and I think the every-day air is preferable. It strikes me that it would be a great improvement if a market could be established in this country where the representatives of the old country firms could come and buy their apples at the place of shipment. If this could be done they could follow their shipments, or see them loaded, which would be to their advantage, and their runners could meet the vessel at the wharf and look after their handling themselves. I suggested this to one firm on the other side at Liverpool—that we would be very glad to meet them on this side of the water. I think it would be very much to the advantage of the shipper, and I cannot see why not to the dealer in the old country also. We can put our apples up in very fine order, but we seem to have no control over them from the time they leave our hands until we get our return. We cannot say whether they shall be held for a higher market or sold the day they land, or the manner in which they shall be carried across. If we could combine and establish in this country an apple market, where buyers from all parts would come, I think it would be a great improvement. Take Toronto, for instance, which is the central point of an apple growing country. In time we could establish competition between the old country and the Northwest, for I believe the Northwest will yet take a large portion of our apple crop, and, from the experience I have had, I think the business will be far safer. I have had some ten years' experience of shipping apples to the old country, and it is very uncertain, and I think if an apple market were established here we would receive better prices than in any other way. I don't think it is possible for a man to buy and ship to the old country with any degree of safety unless he buys at very low prices. I have always thought that as high a price should be got for the apple crop as could be obtained, but I do not think it is possible for an apple buyer to pay high prices and ship with any degree of safety. We have been for years discussing the best varieties and trying to get the best, and the more choice the variety the greater is the care required in handling them; yet I think we have neglected the shipping department to a very great extent, not getting those facilities which we ought to have. I am inclined however to think from the experience of the past year, that the Grand Trunk are inclined to take hold of this matter, and improve to a great extent on the facilities they have afforded us in the past.

Dr. HURLBURT.—In reference to shipping Canadian apples, when I was in England I found the impression very generally prevailed that all the good apples came from the United States, and I find the same impression from that time to this. A few days ago I was conversing with a very intelligent gentleman from Scotland, who returns to Scotland every year or two, and he said they had the same feeling in Scotland—that they called all the imported apples American apples, though he had told them over and over again that they were Canadian apples. Can there be no means taken whereby the British public will know that these are Canadian and not American apples—not United States apples. I remember in 1862 some agricultural implements going to Belgium, among them some hay-forks marked "Oshawa, Ont." A buyer who wanted some of them made application to every state in the Union, and at last, quite by accident, discovered that "Ont." was in Canada. It was at that time advised that everything leaving Canada for foreign countries should be marked "Canada." Now, you know perhaps better than I do whether these shipments of apples go through as Canadian apples or not. We know perfectly well that the apple comes to its highest perfection in the higher latitudes, and therefore our apples are quite superior to those of the United States, and the English public ought to understand that the apples we send are from Canada. The gentleman opposite referred to the very important subject of whether apples would be tainted by being shipped with any other article. Now, I have had a good deal of experience in packing apples, and I find that there is scarcely anything that you can leave with them two or three weeks without their being tainted by it, either in the barn in hay, or in the cellar. I have always found that after three or four weeks they tasted of the substance surrounding them. Certainly I question the propriety of shipping apples in cattle ships; they would undoubtedly be very much tainted if shipped in a vessel of that kind.

The PRESIDENT.—So far as I know, shippers always make a point of labelling their barrels as Canadian, and so well known is the Canadian brand, and so well thought of, that I know firms in Chicago and Marquette, Michigan, who bought apples at my town

and shipped them to Chicago and Marquette, made different grades of them, and shipped them through to New York as guaranteed to be Canadian growth, although coming from Chicago. They found it was an advantage to have their fruit go to the British market in that way, and there is no doubt it is a great advantage. If you satisfy people on the British markets that your fruit is Canadian, there is a marked preference shown for it. Our apples land there in much better shape than the Americans' do; there is much more waste from heating and slack packing among the Americans than among ours. Where slackness occurred amongst ours this last season the fault was most certainly with the packer. The season before we expected to find a good deal of that from the fact that our apples were very badly spotted, and a spotted apple in a barrel will damage the others. Mr. Pettit spoke of difficulty in connection with cold storage. When we speak of cold storage for our apples, we do not mean ice-cold storage, but an atmospheric blast through the apartment in which they are stored, and perfect ventilation. When so treated they land in perfect order.

Mr. DEMPSEY—I will mention just here an item of which we should not lose sight. I had in my charge, as you are aware, a large quantity of grapes when I went across, and all those placed packed in boxes, or baskets placed in boxes, had been rolled over until there were scarcely any grapes left. Those, however, which were packed in baskets with handles, and which they were compelled to pick up by the handles and use decently, arrived in perfect order. But just to show you the folly of labelling our packages, I will tell you what I have seen. I have seen cases of honey labelled "Extracted honey, handle with care; keep this side up." Well, the people handling them by express either could not read or else they did it wilfully, but you would invariably see these packages with the wrong side down.

Mr. A. H. PETTIT.—In regard to the prices for the grapes, I may say that some were reasonably satisfactory, some of our twelve-pound baskets of dark grapes brought from 2s. 6d. to 3s. 9d. White grapes were very much lower, but I think our returns would have been satisfactory for the experiment had it not been for the high charges we had to pay. The steamship was going out on the Wednesday, I think, and we sent them through by express, and the charges from Grimsby to Montreal were \$21.80, as against \$8.90 from Montreal to Glasgow. At the time that our grapes were sold in Glasgow, there were large quantities of white grapes being landed in Montreal, and selling in some instances as low as seven cents per pound retail. They said in Glasgow that there was an over supply of white grapes in the market at that time, but they hoped that another trial shipment of the dark grapes would be made, and from conversations I have had with some of our grape growers, it will be made another year, probably to London or Liverpool the next time. I also sent a few pears of the Duchess variety, and they sold very well. I think the Isabella sold the highest of any of the grapes; I think it brought 3s. 6d. per basket.

A MEMBER.—Did they complain of the foxy flavor of your grapes?

Mr. PETTIT.—They did not like the flavor of our white grapes, but they rather liked the flavor of the dark ones.

Mr. BOTHWICK (Ottawa).—In the early part of the season I bring in a large quantity of grapes from New York, which are grown south of New York. They are shipped to New York and re-shipped to me here, and my experience is that I invariably receive these grapes shipped in these carriers in better condition than grapes shipped from Ontario in baskets, so my experience in regard to crates is not such as given by Mr. Dempsey in regard to those shipped to the old country. I sent several of these carriers to my friend Mr. Pettit to have them filled as an experiment, but somehow the crates went astray and he didn't receive them. I might also say that my experience is the same with regard to peaches put up in these carriers, eight baskets in a carrier with a wire handle, and the early peaches that we receive here arrive in very good order in the carriers. They come by express, I think, and I never have any difficulty with them coming wrong side up. I may also say in regard to strawberries that the packages usually used contain fifty-four quart baskets. Well, these crates are not a handy package to handle and we all know they suffer a good deal by being roughly handled, but sometimes I feel that we can scarcely blame the men who are handling them, because the packages are so unsuitable

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to my idea. There are very few men who can pick up a crate of strawberries and lay it down again as they ought, because they have not sufficient strength to do it. A few years ago I got Mr. Boyd, who lives in Brockville, to adopt a package containing forty-five baskets, which is much more convenient to handle, and I think I am justified in saying that the berries which come in these packages realize one cent a box more than those which come in the fifty-four box crates. I think if the growers in the west would look into this matter it would be to their advantage.

Mr. BOTHWICK.—I find they are not strong enough; they are usually set up one on top of the other, and they are not strong enough to stand the pressure, and usually arrive in Ottawa pretty much damaged.

Mr. CASTON.—Are the fifty-four basket crates that you have been getting properly ventilated?

Mr. BOTHWICK.—Yes; I might say that these crates are not made solid, but of narrow slats—the ones I have been receiving.

The PRESIDENT.—The fruits sent to the Colonial were sent purposely from all parts of the country as they were gathered up by express, thinking they would be so much better handled. The Dominion Government were willing to pay the extra rate simply to have those goods well handled. Well, all I can say, and Mr. Dempsey will bear me out, is that they looked when they arrived as if every official connected with the Express Company had jumped on them; they had all the appearance of having been tossed in every direction. There is another question, which Mr. Dempsey brought up, in reference to half barrels. My experience is that being so light they are more liable to be broken, they seem to take a delight in tossing them about, and they have been broken open in proportion far more than the others. The barrels themselves bear evidence of having been thrown from a height or something of that sort. The only conclusion I could come to was that the officials had been tossing them about in a rather lively fashion.

Mr. BRODIE.—I can endorse what the President has said about rough handling in Montreal; I have myself seen barrels with their heads knocked out and stuck in again.

Mr. DEMPSEY.—If a man has fifty dollars worth of fruit it will pay him to pay his fare to Montreal and back. Almost invariably this year where a man has gone to Montreal with his own fruit so as to see it shipped from there himself, he has done well, while those who shipped to agencies came out wanting. In regard to the Express Company, I may say that from Trenton strawberries are shipped by the carload, and we pay a very high rate for them, but they are badly knocked about, and sometimes we find that our car is loaded so heavily that it breaks down; I lost one time by reason of the car being loaded so heavily that it broke down, and they had to leave it somewhere. With respect to these large packages I have had some experience. In shipping to Montreal I have used the 84-basket crate. That bothers a fellow to lift, and he goes and gets someone to help him, for it takes two men to pick that up and carry it. I have gone myself with my shipments to Montreal, and staid there a little disguised, not wishing to be known, and seen how they handled my stuff, and I have seen them act as if they thought it was their duty to destroy all they could. That induced me to make arrangements with a man in Montreal to receive our goods on the cars, and the expressmen were not allowed to touch them. We used to set our stuff on the cars ourselves at Trenton, and our own men would take them off in Montreal. Now, I don't care what sized package it was they invariably went all right, and I say the Express Company ought to employ a more careful class of men.

Mr. MITCHELL.—This is not a matter just relating to the large shipper alone, but the general public are interested in it. I may say that I have suffered myself even as an amateur exhibiting at our fairs by the rough handling the express companies have given my plants. Last year I attended the London Exhibition, among others, and as I am not more than an hour's ride distant from London, you would imagine that the Express Company would be able to get my plants through in good condition for that short distance. But I started with thirteen pots, and when they got there there were only six that were not reduced to fragments, and of course the plants were not in much better condition than the pots. It is a matter of great interest to us all, whether shippers or not.

Mr. HAMILTON.—Is there anything better than a barrel for shipping apples?

The PRESIDENT.—There is nothing better than a barrel, if it has as little bilge as possible; the three bushel barrel, the same size as the flour barrel, is the best size.

Mr. PETTIT.—I want to say just a word for the express agents. We are dwelling a good deal on the manner in which they tumble our packages about, but I think the companies alone are entirely to blame in the matter. Take our own station for instance. We have frequently three or four hundred baskets to go upon the train in the express car, and it is simply impossible for the express agent to do anything with them in the time that is allowed. They are allowed two minutes and a half or three minutes, and sometimes by having recourse to the telegraph we secure six or seven minutes. The agents on the train do their best, many of them, even young men, but they haven't the power; the arrangement does not give them the time, and even fruit growers themselves will pitch their fruit into the car hand over hand to get them in at all.

Mr. DEMPSEY.—We put on a car ourselves in three minutes two hundred cases of strawberries, and handled them carefully, too; but we had men enough to have a continuous string of cases going in two at once.

THE QUESTION DRAWER.

The Question Drawer was again opened, and the following inquiries read and discussed.

PERCENTAGE TO COMMISSION MERCHANTS.

QUESTION.—Is not ten per cent. too much for Commission Merchants to charge for selling fruit?

Mr. A. M. SMITH.—I am not a commission merchant, but I have been connected with a company which handles on commission, and if other commission merchants do not make any more than they do I don't think it is any too much.

The PRESIDENT.—I know that as far as large fruits are concerned five per cent. is usually considered enough. In the old country merchants are very glad to handle on commission for five per cent. Some of them may charge extra for fees, but they will make five per cent. cover everything if you arrange it in that way.

Mr. PETTIT.—I quite agree with Mr. Smith that if the goods are properly handled ten per cent. is not too much, except for very large lots.

Mr. SMITH.—Large consignments most dealers handle by the earload at lower rates.

PARIS GREEN FOR CODLING MOTH.

QUESTION.—What has been the experience of members with regard to the use of Paris green for codling moth?

Mr. CASTON.—That is quite an interesting question, as the codling moth is getting to be quite a pest in our part of the country. It is not convenient to turn animals into some orchards, and the codling moth is increasing very rapidly; I would like to hear from some one who has used the Paris green.

The PRESIDENT.—I have tried Paris green for the codling moth, and there is no question at all that if the Paris green is used at the proper time, when the young fruit is formed and almost upright on the stem, it can be used with very good effect; its effect will be very perceptible in the decrease in the crop of codling moths. I have known many apple growers to fence in their orchards, and allow hogs to run in them, and I don't know anything better than that for the destruction of the codling moth. Where they ring the noses of the hogs there is no digging of holes or anything like that, and we usually find the very best fruit in orchards where this practice has been followed. If there is any high wind at the time it is very easy to jar off the damaged fruit, and the hogs will eat every particle of them. In using the Paris green it is not necessary to use a large quantity; no larger quantity than we use for the curculio in the plum, a teaspoonful to a patent pailful of water, sprayed with a fine spray like gardeners use, and which in a large orchard can be used from a waggon. Taken at the season when the apple is formed and as the bloom is coming off, it will be found very effectual.

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Prof. SAUNDERS.—As between hogs and Paris green for the codling moth, there is this advantage on the side of the Paris green, by using it you take the first brood, and have none of your apples or only a small quantity of them injured, whereas if you wait for the hogs you allow the first brood to have their course before the hogs are any use. I think it would be well to make the best use of both remedies.

The SECRETARY.—This question was handed in by Mr. Fletcher, and I am sorry he is not here, as there were one or two points which he wished to emphasize in connection with it. Something has been said by a correspondent in the *Horticulturist* as to the danger of some harm coming to the apples so treated; that perhaps the poison might find its way into the interior of the fruit, and Mr. Fletcher wished to state most emphatically that no such danger need be apprehended. While I am speaking I may state that I have been using Paris green for three or four years, but particularly the last two or three years quite extensively in a large apple orchard. This last year I used it in alternate rows in parts of the orchard, and the result has been to convince me of its efficacy, so that I have resolved not to omit using it in any part of the orchard again which I could possibly approach with the waggon and pump. The trees in the orchard which were not sprayed have given me a large amount of refuse apples, far larger than where the trees had been treated with the Paris green, and the most beautiful specimens are the ones found subject to the trouble.

A MEMBER.—Do you spray them more than once?

The SECRETARY.—I think if it is well and carefully done at the proper time, and the operation is not followed by any heavy rains the one application is enough, otherwise I give them two applications.

Mr. F. F. SHUTT (Chemist of Dominion Experimental Farm).—I did not come here prepared to speak on the whole question of Paris green as an insect destroyer. I may say, however, that Paris green is practically insoluble in water, and therefore I cannot conceive of its doing any harm to the apples it may be placed upon; there is no risk of its becoming incorporated with the fruit in any way, it would remain upon the surface, and with the small quantity used there can practically be no bad results.

Prof. SAUNDERS.—What about the flower of the apple absorbing it?

Mr. SHUTT.—I don't think it is at all possible. The Paris green is insoluble in water, and the grains would be altogether too large to be absorbed by the fruit.

Mr. BRODIE (Montreal).—I tried it a few years on apples, especially the Oldenburgh and Peach. The codling moth did not affect the Fameuse and St. Lawrence. The Paris Green had quite a good effect, but I would not recommend the use of it on cabbage by any means. Some of our market gardeners used it one year, and some one detected them using it, and it quite spoiled the sale of their cabbage.

Prof. SAUNDERS.—I think for cabbage some milder poison would be more advisable.

ADDRESS BY PROFESSOR SAUNDERS.

The following address was then delivered by Professor William Saunders, Director of the Dominion Experimental Farm, Ottawa:

Mr. Chairman and gentlemen, I hardly think it fair for you to call upon me for an address, or to dignify the few remarks I shall make by any such formidable appellation. As you know I returned from the west by the morning train, and I have not had time to make any notes more than I could jot down on the train, so if my remarks should be somewhat disjointed I trust you will bear with me under the circumstance. I have been so long interested in all matters connected with fruit growing that I should be indeed a dull scholar if I could not say something on a subject so fraught with interest, and of so much importance to the residents of all parts of this country. I think no one will disagree with me when I advance the statement that there is no country in the world in which the fruits of a temperate climate, such as the apple, pear, plum, and in some parts

the grape, can be grown in so high a state of perfection as in many parts of the Dominion. The portions of the country where this industry has been carried on to the greatest extent are naturally those which present themselves to our idea as the first and foremost fruit sections. But the selection of these spots, although of course there must exist in them the conditions material to a successful prosecution of the industry, has often been characterized by the presence of an element which might be termed accidental. An enterprising individual or two get together in a section where fruit can be grown to advantage, and as the result of their united energies and enterprise that part of the country soon becomes known as a fruit producing section, though there may be dozens of others just as good of which nothing is heard. I make this remark because it is sometimes thought that some districts are more highly favored than others for fruit culture, and I wish to guard myself by this explanation, as I feel perfectly assured there are many other districts in our different Provinces which have equal advantages; that outside of these spots supposed to have special advantages will be found many others possessing the same requisites for growing fruit for home consumption and shipping it for export. Now, we have at the present time in the eastern Provinces—I mean as distinct from the Northwest and Pacific Provinces—two special fruit sections; one made up of what is called Western Ontario, covering the district bordering by the great lakes, and not running far north, but keeping south and running into the Niagara Peninsula; and the other the Annapolis Valley in Nova Scotia. We are all tolerably familiar with Western Ontario and know the value of the large amount of fruit grown in that section, but we ought also to know that not one-tenth, probably not one-hundredth, of the quantity that might be grown is produced in any of the districts comprising that section; that the capacity of the soil has never been tested fully, because with orchards we always find associated fields of grain and pasture, which would make orchards just as good as those already in existence; so that in this respect there is practically no limit to the extension of the fruit industry. In Nova Scotia the same may be said. The Annapolis Valley extends about one hundred miles in length and five miles in width, and not one-twentieth part is occupied with apples. But this favored district does at the present time grow some of the finest apples in the world, and the reputation of our Canadian fruit is being built up by what is being done in this famous valley of Nova Scotia. Nova Scotia Gravensteins command a very high price in the British and American markets, and the Annapolis and other apples grown there possess a flavor equal, if not superior, to anything we can grow in Ontario. No doubt many other parts of Nova Scotia would prove equally adapted to apple growing. When last there I was told that formerly no one believed that fruit could be grown in Annapolis Valley, and that they devoted almost their entire attention to the hay crop. After a while, when they could no longer get the prices for their hay, they turned their attention to apples, the result being that the Annapolis apples are now held to be amongst the best grown in the world. The area of fruit culture there is extending very rapidly, thousands of trees being planted every year, and being near the point of shipment they have advantages that we do not enjoy in Ontario. They can put their fruit on vessels almost alongside their farms, or at a small cost they can reach the ocean steamships at Halifax. We have also in the Province of Quebec the Island of Montreal and many other districts in which exceedingly fine apples are produced, and I know from what were sent to the Colonial Exhibition that very large portions of the Province of Quebec could be well and profitably applied to apple culture, which are now occupied by less remunerative departments of agriculture. Now, from this standpoint the question very naturally suggests itself, can we find markets for this fruit if the industry is developed to a greater extent. Those of you who are familiar with the work of this Association for the last fifteen years will know that this is a question which comes up periodically. It is said that strawberries are overstocked, and that the price is lessening, but the consumption increases also; people are becoming educated to love fruit; they find it is a food which increases their bodily health and vigor in addition to the enjoyment it affords in the eating; and when that taste is generally developed people will not be without it if they can get it at reasonable prices. I don't suppose I can tell you anything about fruit growing in Ontario except in a general way. We have, as you know, fruit everywhere; we have

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moths, blight, black knot, spot and a number of other things to contend with, but it is the same in every department of industrial life; there are difficulties to contend with everywhere. The farmer who raises stock has to contend with pleuro-pneumonia or some other disease; so after all the fruit grower who exercises reasonable vigilance is no worse off than is fellows in other departments of work in connection with farming in this country. Perhaps I may say a word as to the other part of Canada which I referred to in my opening remarks—the Northwest. There is no doubt, as was said by one of the speakers here to-day, that the Northwest will from this time on be a very large consumer of fruits grown in Ontario, though we hope before a very great while, if we can find varieties of trees which will succeed there, they will grow fruit there for themselves. In the meantime, however, people are flocking into that part of Canada very fast, and they will be willing to pay any reasonable price for good fruit, and that will be a good market for Ontario—that is Manitoba and the eastern part of the Northwest Territory. When you get still further west into the Territory you have British Columbia to compete with. In British Columbia, between the mountains and the ocean, there are growing some of the finest orchards of apples I have seen anywhere, and as to pear growing, they have the most beautiful pears, and their fruit is very free from spot or any disease such as we are troubled with here. As I do not want to paint it in too glowing colors, however, I may say that their apple trees are subject to a blight. There is also this disadvantage, they have not the large areas of contiguous country as you have here on which to grow fruit, and the fruits will be grown in that country, if I may use the expression, in patches, here and there, with mountains intervening, and not accessible by roads, but accessible by streams which flow through the country. Still I think it would not be wise for Ontario to look too much to supplying the western part of the Northwest Territory, on account of its proximity to British Columbia. The export of Canadian apples varies a little according to the character of the crops. Some years we have abundant crops and at other times they are not large, but I am persuaded that farmers at the present time could not do better than extend their orchard planting; I think the area of land used for that purpose might fairly be doubled or trebled before even all the present avenues for their disposal would be filled. A gradual process of education is going on, especially in Europe, where there are very many people who scarcely ever taste fruit, and the consumption must eventually increase, and I do not think there is any fear of our farmers going into fruit culture to such an extent that it will not pay them more per acre than any other crop they raise, year in and year out. The discussion which took place this morning in regard to growing plums in the Ottawa Valley was to my mind a very strong argument to show the necessity of some place where all these seedlings can be brought together and tested and compared, and their actual value under the same conditions of soil and treatment given to the public. We heard this morning a number of accounts in regard to different varieties of fruit. Some that one person would find preferable others found of no account, but how are we to tell unless their fruit was grown under the same conditions? There might be a variation in the soil. There are differences of situation, more sunlight, air, and so on, that affect the flavor and other properties of fruit. Hence it is clear, so clear that I do not think it is necessary to make it any clearer, that the establishment of these horticultural farms is of quite as much importance as the testing of cereals or any other of farm produce. In the Experimental Farm, of which we have all heard more or less, we are endeavoring to fill this want. A large area has been set apart for the purpose of testing fruit trees, and fruits of all sorts are being accumulated as fast as we can get hold of them. We try many things which we do not expect to succeed in, because if anything is left untried some early visitor is sure to ask if we have tried it, and if we did not why not; how do we know it won't succeed. Acting on that principle we are trying to test everything, and among other things we are testing some of the new varieties of plum, of which you have been told to-day. There are some little points in connection with testing these varieties. Those of you who live in the Ottawa Valley know that the nights are sometimes cold, and then in the daytime the heat of the sun on the partially grown wood frequently causes a rupture of the bark and we are beginning to try and work out in this connection how much protection we can give trees to preserve

them from—if I may use such a word in connection with sunlight—this deleterious influence. If by protection a tree can be brought over the first year or two, until it has reached a proper stage of development, it can then take care of itself. I think that is one of the important things in experimental work—that trees should have a chance to tide over the tender part of their existence, until the bark becomes hardened. We know the bark undergoes very material changes, and I think there is something in this. Then, in regard to new varieties. Those who have experimented in the production of new varieties of fruit know that once the chain of continuity—if I may be allowed that expression—is broken, and one species is crossed with another species, that the seedling of that variety is changed in many directions. Now, if some of these hardy Canadian plums can be crossed with some of the other varieties, though we may not get what we want the first time, or the second or third time, it is worth trying two or three hundred times, in order to get a hardy variety. From this seedling we hope to get a variety suitable to the Ottawa Valley and those portions of Quebec which have a similar climate. If you look back and see what has been done in grape culture alone where the course I have outlined has been systematically followed, you will see that Canadian and American grapes have been crossed with European varieties, and that the hybrids which have partaken more or less of the qualities of both species are the grapes of the greatest value to-day. In the Ottawa Valley grape growing has been more successful than the cultivation of the plum, and I believe I am safe in saying that where Ottawa has competed even with Niagara, they have carried off the palm, showing that we have conditions of soil here, and heat in summer, which favor the maturing of the grape and bringing it to that degree of perfection which is desirable. Mr. Pettit was telling us this morning about a shipment of grapes he had made to the old country; he did not tell us what varieties the white grapes were, but I understand they were the Niagara and the Pocklington. Now, both those varieties are what is called very “foxy” in taste. I had a gentleman from England to see me during the summer, and I took him to see my vinery in London, Ont., and picked him one and another grape of different kinds to taste. Every variety that had this characteristic of foxiness in any marked degree this gentleman turned up his nose at. It is evident that it requires a little education to enable one to appreciate that flavor; I can appreciate it myself, though I don't care about it very strong, but the English public have never been educated to that taste, and I am afraid the course of their education will be too expensive for us to undertake, and I think I am probably correct in saying that the presence of that foxy flavor was more the occasion of the non-success of Mr. Pettit's white grapes than their color. I think in connection with this subject of grape growing that we want to get a variety of grapes free or nearly free from that flavor, large enough to be presentable for market purposes, good enough in every respect to eat, and at the same time hardy enough to stand the climate in most of our territory. We want to pursue that line from year to year, never swerving until we attain the point we want to reach. If we work with sufficient energy and vigor, pursuing those lines of investigation which are indicated by experience to be the best, we shall by-and-by attain the measure of success we all desire. In connection with this system of Experimental Farms we propose to test at all the outlying stations everything that is likely to prove of value in the territories in which they are located, and I hope we shall be able to show the people of Nova Scotia that not only in the Annapolis Valley, but in almost every other valley they can raise good apples; and the same with Prince Edward Island, Quebec, Ontario, Manitoba, British Columbia and the North-west. We want all fruit growers, as well as farmers, to take sufficient interest in these institutions to help us in the work; we don't want money help, but we want their assistance in carrying out these experiments, and if they know of a good variety or a likely seedling in their neighborhood to let us know of it. We want as early as possible to get up a large orchard for the purpose of testing these seedlings now scattered all over the different parts of the country, many of which are of great promise, though having only a local name, not having been seen by more than a few people. You can all help us in this way. I have just been presented with the *Canadian Entomologist*; I am happy to know that it is still in existence; it is the organ of a Society which you all know as a valuable coadjutor or sister, we may call it, of the Fruit

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Grower's Association. I am happy to see here Mr. Denton, a member of the Council, who I am sure will be glad to give any information as to the working of the society, which I believe is doing a good work; the more we have of these societies the better it will be for all of them. It has been my aim in connection with the study of agriculture, and with this Experimental Farm, to do all I can for the country, and I shall be glad to hear from any of you gentlemen, or any others who may be interested in this subject, and to do everything in my power to advance the progress and interest of fruit culture in this Province.

The PRESIDENT.—We have all listened with great interest to the Professor. Although we did not, as he says, give him any notice, he knows it was because we had such unlimited confidence in his ability to speak on this subject at a moment's notice.

FRUIT REPORT.

The Committee on the Fruit Exhibit presented the following report :

We your Committee on Fruits beg leave to report that we have examined those on the table and have arrived at the following conclusions :

D. O'Connor, Ottawa, exhibits fine varieties of grapes, Lindley, Agawam, Brighton, Delaware, and one of Rogers, not named correctly, which resembles Salem. These were kept in shallow, paste-board boxes, in a cool cellar.

Hon. R. W. Scott, Ottawa, showed three varieties, Lindley, Agawam and Iona, packed in layers of cork dust at the time of picking.

Smith & Kerman, St. Catharines, displayed very fine samples of the Vergennes, kept in hardwood sawdust.

These grapes having been kept with different treatment, and all of them in fairly good condition, goes to show that this fruit can be preserved for most of the winter in a fresh state for table use, and that it would be well worthy of the attention of fruit growers to experiment more fully in that direction, the simplicity of the modes of storage being within the reach of all.

APPLES.

G. C. Caston, Craighurst, Muskoka, exhibited four varieties of apples, as follows: Ben Davis, Golden Russet, Grimes' Golden, and one variety shown by him as Red Pound, supposed to be a seedling, of large size and handsome appearance but past its season, so that your committee were unable to report on its merits. He also showed in glass jars some very fine specimens of Cuthbert and Gregg raspberries.

Smith & Kerman exhibited very fine specimens of their new seedling apple, Princess Louise. In color it closely resembles Maiden's Blush, flesh white, tender, crisp and juicy, with a delicate flavor. Well worthy of extended trial.

Mr. P. C. Dempsey, of Albury, showed an apple small to medium in size, in outside appearance somewhat resembling the Snow Apple; flesh yellow and of fair quality—a cross between Golden Russet and Northern Spy, it does not resemble either of its parents.

J. S. McCallum, M.D., displayed a seedling apple originating near Smith's Falls, about the size of Baldwin, yellow ground, nearly covered with red, interspersed with large dots. The tree has proved to be hardy in the locality where it is growing, and on that account it is well worthy of trial in the colder sections of the Province.

A fine seedling was shown by Alba Rose, of Dixon's Corners, Ont. It originated at Williamsburg, said to be as hardy as Duchess. Fruit medium, oblate, light green shaded and obscurely splashed with dull red; flesh white, tender, mild, subacid.

N. Robertson, Superintendent Government Grounds, sent to decorate the tables two pots of beautiful plants. An Orchid named D'Endrobium Wardianum, and *Medinilla Magnifica*.

Respectfully submitted,

P. E. BUCKE,
R. B. WHYTE,
W. W. HILBORN,

THE MOST ADVANTAGEOUS MEANS OF INTRODUCING NEW FRUITS.

The paper on this subject was read by W. W. Hilborn, of the Experimental Farm at Ottawa, as follows:

The present system of introducing "New Fruits" has been attended with a great deal of dissatisfaction, and the loss of thousands of dollars to the country every year. A very large proportion of the new fruits are sent out before they are thoroughly tested by the side of many of our old standard varieties with the same care and cultivation, hence the great number of varieties of little merit.

I do not wish to say one word to discourage those engaged in growing seedlings, but to the contrary, think every man interested in fruit culture should do all he can to encourage that good work, and no one knows better than the man who has disseminated a valuable fruit, what a difficult task it is to introduce a new variety of merit and get ample remuneration, simply because so many worthless varieties (or at best, varieties not equal to our old standard sorts), are being pushed out every year with such nicely written testimonials that, were we to believe one-half what was said in their praise, we would feel like buying out the whole stock; but how few comparatively are heard of after they become distributed throughout the country and begin to bear fruit.

In most cases there is no intention of dishonesty on the part of the disseminator; quite often they are men who have not seen much of the variety they are introducing, but use testimonials from men whom they think are reliable, and no doubt they are usually honest men, but not having had a chance to compare their new fruit with many other standard varieties with the same care and cultivation given their own seedlings. Then again, it frequently occurs that a new variety will do remarkably well in the locality where it originated and prove to be nearly worthless outside of that locality, hence the necessity of having them tested over as large an area as possible before introducing them.

The time has come when fruit growers should do all in their power to encourage a more thorough system of testing new fruits before they are offered for sale.

There is a very strong feeling on the other side of the line that something should be done in that direction.

Having conferred with some of the prominent horticulturists of the United States on the subject, we came to the conclusion that if the various fruit growers' associations and the horticultural press would use their influence for that purpose, a change could be brought about that would be of great value.

Now that nearly every State will have their experimental station, and Canada with her system of experimental farms throughout the Dominion, there can be no good reason why they should not be made use of for that purpose.

Every wide-awake nurseryman must have some new fruit to introduce from time to time; he is anxious to have the best he can procure, and would much rather have a fruit that has been thoroughly tested and proved valuable over a large area, yet if he cannot find such, he takes what is to be had, and we all know the result is that not one out of twenty will compare at all favorably with many varieties already in general cultivation.

If it could be made popular to have the originators of new fruits send out enough of their plants (as soon as they could be propagated), to a number of experimental stations, of any varieties that show sufficient good qualities to be worthy of such a trial and not have them introduced until the disseminator could publish testimonials received from several experimental stations, those testimonials to be only such as would be published in the reports of the respective stations, it would be a great step in advance.

The originators of any valuable fruits thus tested would be able to dispose of their stock to advantage and the disseminator would not require to use so many exaggerations in colored plates and testimonials.

I think this method would be the most advantageous to the fruit grower and also to the originators of any valuable fruits.

It is the object of this paper to bring out discussion and suggestions from this Association, both at this meeting and through the columns of the *Horticulturist*, and if any better method can be suggested than the one hinted at above, I shall be glad to accept it, and do all I can to help on with a work that I believe is very much needed.

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It is a matter that requires a good deal of careful thought, as it is only by combined effort that any good can be accomplished.

I would recommend that a committee be appointed by the President to whom the matter can be referred, and that the committee be requested to meet sometime during the session and report at their earliest convenience.

Mr. A. M. SMITH.—I think Mr. Hilborn's paper is a very valuable one, and the subject of which it treats is one which all engaged in fruit culture are somewhat familiar. We all of us have often put our hands in our pocket to secure new varieties which have been lauded to the skies and which, after a few years experience, we have found to be practically worthless. If something of the kind proposed could be done it would be a great boon to the fruit growers of the country. I think the suggestion to appoint a committee to consider this matter is a good idea.

The PRESIDENT.—I think there would be some difficulty in nominating a committee myself, because it would be hard to appoint a committee that would meet here at that particular time. I think the best committee we could possibly have is that composed of the Professors and Managers of the Experimental Station here. I think the country at large would place implicit confidence in them, and that their experiments would be observed, and their results looked forward to with a great degree of interest by fruit growers, not only in Canada but in other countries. Of course it would not be reasonable to suppose that because an experiment made here was successful, it proved that the tree or plant it was made with was going to be a success all over the country, but it will be a basis for other experiments, and a succession of experiments will go far to prove the thing. We must be prepared to put up with a deal of imperfection, and those in charge of the stations must not, and will not, be discouraged if they do meet with a great many drawbacks and imperfections in their work ; that must be expected, because it is a matter of experiment from first to last.

Mr. HICKEY.—I think the experiments made here in Ottawa would be satisfactory to all the people living in a similar region ; that the tests would be conclusive so far as those living in a region where a similar conditions prevailed.

Mr. CASTON.—I was very much pleased with Mr. Hilborn's very practical paper, and think it contains very many valuable ideas, and I think the plan pointed out by him is very good. Our country, owing to its geographical conformation, varies a great deal more within a few miles distance than any other part of North America, but I think the position of the Experimental Farm will afford a very good test for any part of Ontario. I was going to suggest some scheme under which the Ontario institution at Guelph, could be looked upon as a criterion for Western Ontario, and the two institutions might work together in harmony.

THE ENGLISH SPARROW.

Mr. T. McIlwraith, F.O.S.N.A., and Supt. of the District of Ontario for the Migration Committee of the American Ornithologist's Union, of Hamilton, Ont., contributed the following paper :

Economic ornithology is at present receiving a good deal of attention in various parts of the world, and its importance increase, as we are favored from time to time with the results of investigations which have been made regarding the food of birds in relation to agriculture, horticulture, and forestry. Mammalogy also claims a share of attention in this connection, and though we, in Canada, have no special grievance to complain of in this department at present, yet in the far distant lands of Australia and New Zealand the amount of damage which has been done by the introduction of the English rabbit, is almost incalculable, and may well serve as a warning to other countries to exercise due care when introducing strangers to reside within their borders.

In Canada, when the settler has cleared his first patch and raised a log house on his bush farm, one of his first steps towards making a home is to raise a few chickens, which usually appear in due time; but scarcely are they permitted to become familiar with the surroundings before they are scooped up by the hawk. This, of course, enrages the settler, who brings powder and shot into immediate use, and takes revenge on every hawk and owl that comes within reach. This serves for a time to allay the irritation caused by the loss of the chickens, but a better knowledge of the food habits of the bird would have showed him that the greater number of hawks never touch poultry at all, and that the service they render by the destruction of mice far more than compensates for the few chickens destroyed. As it is with individuals, so it is with communities; hasty conclusions are arrived at which may be acted upon for a time, but eventually they must yield to increased knowledge of the subject under discussion.

As an instance of this may be mentioned the "Pennsylvania Scalp Act," which was passed so recently as 1885. This Act provided for the payment of a bounty of 50 cents each, on all hawks, owls, minks, and weasels, killed in the State, with an additional 20 cents each to the justice taking the affidavit. This Act was in operation for a year and a half, but it was urged by a few close observers that the killing of the hawks and owls removed the check which nature had placed on the mice, which were now on the increase and doing so much damage, that eventually the Act was repealed. Dr. Merriam, in his report to the Department of Agriculture at Washington, for 1886, goes into figures on this question, which will surprise those not used to making such calculations. Here is an extract: "By virtue of this Act, about \$90,000 has been paid in bounties during the year and a half which has elapsed since the law went into effect. This represents the destruction of at least 128,571 of the above mentioned animals, most of which were hawks and owls. Granting, that about 5,000 chickens are killed in Pennsylvania by hawks and owls, and that they are worth 25 cents each, a liberal estimate in view of the fact that many of them are killed when very young, the total loss would be about \$1,250, or for a year and a half \$1,875. Hence it appears that during those eighteen months the State expended \$90,000 to save its farmers from the loss of \$1,875. But this estimate by no means represents the actual loss of the farmer and taxpayer of the State. It is within bounds to say that, in the course of a year, every hawk and owl destroys at least one thousand mice, or their equivalent in insects, and that each mouse or its equivalent in insects would cause the farmer a loss of 2 cents per annum. Therefore, omitting all reference to the enormous increase in the numbers of these noxious animals, when nature's means of holding them in check has been removed, the lowest possible estimate of the value of each hawk and owl to the farmer would be \$30 for a year and a half. Hence, in addition to the \$90,000 actually expended by the State in destroying 128,571 of its benefactors, it has incurred a loss to its agricultural interests of at least \$3,947,130 in a year and a half, which is at the rate of \$2,631,420 per annum, or, in other words, the State has thrown away \$2,105 for every dollar it has saved. And even this does not represent fairly the full loss, for the slaughter of so large a number of predaceous birds and mammals is almost certain to be followed by a corresponding increase in the number of mice and insects formerly held in check by them, and it will take years to restore the balance blindly destroyed through ignorance of the economic relations of our common birds and mammals.

Among birds, the two which are receiving most attention in the United States at present, are the rice bird, or bobolink, and the house sparrow. Of the former we have little to say, he is here a summer visitor, and during his stay makes our pasture fields ring with his merry gurgling song. Early in fall, young and old gather together in flocks and pass away to the south, and it is there he makes his presence known in a manner most disastrous to the rice growers. Hundreds of men and boys, armed with shot guns, are employed to guard the fields, but as the vast flocks of birds arrive from the north, they find themselves quite unable to either scare them off, or sensibly reduce their numbers. A recent calculation has made out the loss of the planters from this cause to be about two million dollars annually. As regards the economic status of the house sparrow, the case is somewhat different.

He is comparatively a recent addition to American birds, and for the first few years of his residence was here in limited numbers and attracted little notice. It was in 1850

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that eight pairs were landed in Brooklyn, housed over the winter, and turned loose in the spring. In 1852 and again in 1858, other shipments were received at adjacent points in New York, all of which were turned loose and appeared to do well. But it was not till about 1870, that the species seemed to be fairly established, and generally distributed throughout the cities in the Eastern States, soon after which it commenced its march westward, arriving in Hamilton in 1874. Here it was welcomed as an old friend by many of the citizens who had been familiar with its appearance in other lands, and a commodious house was erected in a prominent position, at the expense of the city, for the use of the birds. In this they remained till it was filled to overflowing, and the surplus finding suitable accommodation throughout the city, made it apparent that the birds were quite capable to shift for themselves, and the house was taken down.

From that time till the present, the rapid increase and distribution of the species exceeds anything that has heretofore been known in the history of birds. Along the Atlantic coast it extends from Southern Georgia to the Bay of Chaleur, while inland it has got as far west as Central Kansas and Nebraska. A colony is also established at New Orleans and another at Salt Lake City. On the Pacific coast, the only point where they have gained a footing, is at San Francisco, but small settlements have been observed at many intermediate points, which will, no doubt, in time join together and make the chain complete across the continent.

Among the explanations given of the diffusion of the species over so large a territory in so short a time, may be mentioned its extraordinary power of reproduction. Dr. Merriam tells us "that, in the latitude of New York they raise 5 to 6 broods in a season, with 4 and 6 birds in a brood, making, say 26 in all at the end of the first year. If we assume that all live together, the sexes being equally divided, they will thus at the end of ten years have reached the extraordinary number, 275,716,983,698." The house sparrow thrives best in the proximity to the dwellings of man, finding there both food, shelter and exemption from the attacks of birds of prey, which do not often visit cities. It is also hardy in constitution, and capable of enduring the extremes of temperature, as seen in its being found from New Orleans to Lake Superior. On reaching a new section of country, they first fill up the towns and villages, after which the surplus moves off in different directions, and so keep on appearing in districts where they have not before been observed. Much has been written about the migration of birds, and the wonderful instinct which enables them to travel with such certainty between far distant places, but the sparrows, though not migratory in the ordinary sense, go ahead of all other birds in this respect, by getting into empty box cars, travelling hundreds of miles, and being let loose free of charge. In this way the first individuals reached New Brunswick in 1883. in empty box cars from the west, and in like manner several have been carried to the north of Lake Superior, on the line of the Canada Pacific railroad. Having thus glanced but slightly at the extraordinary rapidity with which the sparrow has increased in numbers, and its wonderful adaptability to climatic variations, it becomes highly important to ascertain as far as possible, whether it is a benefit to us or the reverse, and to what extent. As the birds were first introduced into the United States, so the American government has been first in the field in taking notes on these important points, and so far the evidence is almost against the sparrow. Dr. Coues, one of the leading American ornithologists, says: "Imported during a craze which even affected some ornithologists, making people fancy that a granivorous *cenisostralis* bird would rid us of insect pests, this sturdy and invincible little bird has overrun the whole country, and proved a nuisance without a redeeming quality."

Among other charges brought against the sparrow, it is accused of driving away our native birds. That such is the case, no one can doubt, who has given any attention to the subject. The cat bird, oriole, house wren, window swallow, cliff swallow, blue bird, chipping sparrow, song sparrow, yellow warbler, are all subject to continued persecution, and are liable at any time to have their nests torn out, and the young or eggs destroyed. Under these circumstances it is not to be wondered at that many of the native birds have left their former haunts, and in a few years we may expect to find the sparrow in undisputed possession of our gardens and shrubberies. We are thus deprived not only of the cheerful song and sprightly society of our native birds, but also the valuable service they

render in the destruction of our numerous insect pests. Among the gardens and orchards of Canada, the birds have not yet appeared in such numbers as in some of the older settlements, and the amount of mischief they are capable of doing is not fully understood. But if anything can be done to drive them off in some other direction, now is the time to try it, before they get so numerous as to be uncontrollable, as they are in many of the States where they first settled. From the Department of Agriculture, at Washington, have been issued circulars asking for information regarding the habits of the birds, and from every State in which they have settled, the circulars are being returned filled with details of their ravages and the loss thereby entailed on gardeners, fruit growers, and farmers. Indeed, it is safe to say, that it now exerts a more marked effect upon the agricultural interest of this country than any other species of bird, and its unprecedented increase and spread taken in connection with the extent of its ravages in certain districts, may well be regarded with grave apprehension. Not only are the fruit buds of the grape vine, peach, pear, plum, cherry, apple, currant, etc., destroyed, but lettuce, beets, peas, radishes, cabbages, are all liable to be attacked as soon as they appear above the surface, and in some places the seed has been dug up before it germinated, to prevent which the beds have had to be covered with netting.

Abundant evidence is also furnished by farmers in different parts of the Union, regarding the damage to their crops by sparrows, from which the following is selected. Mr. Platt of New Haven, Conn., says: "I cradled a small piece of oats, and the sparrows gathered on it in such numbers that I killed 54 with one barrel and 25 with the other, and in our seed garden we had to keep a boy going around all the time to prevent waste of cabbage and other seeds." Mr. I. H. Gurney, the well known British ornithologist, says: "I think they do enough harm to warrant everybody in killing them, say one-fifth good to four-fifths harm is about what they do, take the country all over, though in certain places at certain times they do nothing but harm. I have striven to say all I could in their favor, being naturally a lover of birds." Miss Eleanor Ormerod, consulting entomologist of the Royal Agricultural Society of England, in her ninth report on injurious insects and common farm pests, for 1885, states, that the sparrows drive off swallows and martins, thus permitting a great increase in the flies and insects destructive in the garden and orchard. Miss Ormerod cites a case in which the destruction of the sparrows, and consequent reappearance of swallows and martins, resulted in the abolishment of the insect pests. Professor Lintner, entomologist for the State of New York, writes in the same strain in regard to the Tussock Moth, the caterpillar of which is very destructive to the foliage of fruit and shade trees. These insects, it is stated, have increased rapidly during the last ten years, owing chiefly to such birds as the robbin, the Baltimore oriole, and the two species cuckoo, which formerly fed on them, having been driven away by the house sparrow. From Louisiana comes a report from one of the rice planters, that the sparrows have now attacked the rice plantation, and threaten to rival the bobolink in the extent of their ravages.

Indeed, so widespread and so general are such complaints, that the house sparrow at the present time promises to be the most baneful pest the American farmer has ever had to contend with. Keeping all these facts in view, the American people do not intend to let the subject rest. They do not think it expedient at the present time to offer bounties for the destruction of the birds, but think it perfectly feasible to accomplish a great reduction in their numbers by the united action of the people, aided by intelligent legislation, without drawing upon the public purse. Among the recommendations are the immediate repeal of all existing laws which afford protection to the house sparrow; the enactment of laws legalizing the killing of the house sparrow at all seasons of the year, and the destruction of their nests, eggs, and young; the enactment of laws, protecting the great northern shrike, the sparrow hawk, and the screech owl, which feed largely on the sparrows. Those who have the sparrows nesting about their premises are also requested to aid in the riddance of the pest, by the systematic destruction of their nests, eggs, and young, a long light pole with an iron hook at the point being found most serviceable for the purpose. A most effectual mode of driving the birds from their roosting places under verandahs, etc., is the occasional use of the hose, a few successive applications being found sufficient for the purpose.

In Canada probably owing call for immediate every year, become our gardens and been longer seen Ontario, there is matches in which number of birds the United States similar action is necessary. This fruit, and it is among us, with who has for several years committed the result appeared in a report and approaches say the most things.

The observations are perfectly reliable. from all of their buds of fruit and some insects; they have been examined, Special mention to be an acquire a sparrow captured individual taste, the engagement attention he has it have failed to mention has been directed close watch on their injurious, for if increase in numbers.

Professor S. should be the target of this Association very rapidly, and a serious source of trouble come to the conclusion quantity of insects then, they are just ones. But even cherries, obtained crops of a number of seasons, the stomach juice. I have a They will devote this mischief which has increased to

THE SECRET
Prof. SAUNDERS

In Canada the sparrow question has not received the attention it deserves. This is probably owing to the fact that the birds have not yet appeared in such numbers as to call for immediate steps being taken to check their increase, but here as elsewhere they are every year, becoming more numerous and there is no reason to doubt that in a very short time our gardens and fields will suffer, just as they have done in sections where the birds have been longer settled. In a report on forestry, recently issued by the government of Ontario, there is a chapter devoted to the preservation of birds. The so-called shooting matches in which young men tramp over a given district and try who will kill the greatest number of birds and squirrels are very properly denounced. The means being taken in the United States to reduce the number of sparrows is also being referred to, but no similar action is recommended for Ontario, neither is it suggested that such may become necessary. This, I think, is a matter of regret, as Ontario may justly feel proud of her fruit, and it is a matter greatly to be deplored, if so severe a scourge is being fostered among us, without anything being done to check its progress. Dr. Brodie, of Toronto, who has for several years past been taking notes on the food of the sparrows, has submitted the result of his observations to the Canadian Institute, an abstract from which appeared in a recent issue of the *Toronto Globe*. Dr. Brodie is an ardent lover of birds, and approaches the subject with an evident desire to spare the sparrow, or at all events to say the most that can be said in their favor.

The observations have been made with a great deal of care, and are, no doubt, perfectly reliable. Several ladies and gentlemen of Toronto have assisted in their work, and from all of them came repeated notice of the birds having been observed destroying the buds of fruit and shade trees throughout the city. But they also get the credit of taking some insects; thus from March 1st till October 31st, 1885, the stomachs of 237 birds had been examined, and 104 or about 43 per cent. of them contained insects of several orders. Special mention is also made of their being observed killing grasshoppers. This seems to be an acquired taste, which, it is to be hoped, may improve on cultivation. I have seen a sparrow capture and devour a grasshopper now and then, but it seemed to be but an individual taste, for where several sparrows and several grasshoppers were near each other, the engagement did not become general. Dr. Brodie deserves credit for the time and attention he has devoted to the subject, which many who are more directly interested in it have failed to do. Its importance can hardly be overestimated, and now that attention has been directed to it, let every gardener, farmer, and fruit grower in Ontario keep a close watch on the movements of the birds, and satisfy himself whether or not they are injurious, for if they are so now, the injury will assume gigantic proportions as the birds increase in numbers, and it may then be too late to cure or prevent it.

Professor SAUNDERS.—I think the paper is a very valuable one, and that its effect should be the taking of some steps in the way of an expression of opinion on the part of this Association as to some action being taken at once. The sparrows are multiplying very rapidly, and where they have not already done so will doubtless soon become a very serious source of injury. I have examined the crops of a great many sparrows and I have come to the conclusion that there is only one period at which they destroy any material quantity of insects—the period during which they are feeding their young; and even then, they are just as liable to destroy those insects which are beneficial as the injurious ones. But even when they are feeding their young, if there is any soft food, such as cherries, obtainable, they much prefer it to the trouble of hunting up insects, and in the crops of a number of young birds which I have had examined I have found, in the cherry season, the stomachs filled with a goodly proportion of fragments of cherries and cherry juice. I have also known them to eat the buds perfectly clean off some of my pear trees. They will devour the buds of the currant very freely also, and if they can compass all this mischief when their numbers are comparatively few, what may we expect when they are increased to the extent which under present circumstances seems inevitable.

The SECRETARY.—Are they protected by the Legislature of our Province?

Prof. SAUNDERS.—I think they are.

Mr. FLETCHER.—In reference to this point, I may say that I recently received a letter from England by which I learn that practical agriculturists are making an effort to have the sparrow removed from the list of protected birds there, as they are giving a great deal of trouble. The letter says, "An effort is being made in England to have them removed from the list of protected birds by practical agriculturists. At present there are heavy fines to those who kill the wretched bits of feathered individuals, and I certainly think the enormous increase in the last few years may be attributed to the natural enemies of the birds' nest, the boys, not pulling down their nests." I think there is a great deal too much sentiment mixed up with this question of injurious birds even now.

Mr. BRODIE.—I have had about the same experience as Professor Saunders in regard to cherries and pear buds. I have noticed that my Flemish Beauties were cleared off by the sparrows.

The SECRETARY.—I observed last spring when the cherry and plum were in bloom the sparrows were congregated in the trees and eating up the little buds of the fruit that was forming. In regard to their destruction, I saw it stated the other day that an excellent method was to scatter a large quantity of crumbs of bread saturated with alcohol around, and that after they have eaten them they will soon topple over and can be easily swept up in large numbers.

Mr. CASTON.—In our part of the country the sparrows are far too cute to eat buds; they just go into the barn and help themselves to grain.

The PRESIDENT.—I introduced this paper for the purpose of getting a resolution from this meeting on the subject of the sparrow. I would like, if the members see fit, to have a resolution passed for the purpose of presentation to the Local Government of Ontario at Toronto, so that we may secure legislation. I think we should have legislation concerning the Dominion, and I think we shall before very long, for people are beginning to see into the tricks of this little bird.

Moved by W. Saunders, seconded by A. M. Smith;

Resolved, that this Association desires, through its officers, to approach the Legislature of the Province of Ontario, and request that immediate steps be taken to so modify the law protecting birds as to permit of the destruction of the English sparrow, including its nests, eggs and young; and further, for the protection of the great northern shrike, the sparrow hawk and the screech owl, which feed largely on the sparrow.

JUDGING OF FRUIT AT FAIRS.

The Judging of Fruit at Fairs being the next subject on the programme for discussion, was introduced as follows:

The PRESIDENT.—The subject before the meeting is the judging of fruit at fairs, and was suggested by me for the purpose of getting the opinions of as many as possible who had large experience in this matter. It is a matter in regard to which I think it is time we had come to some definite conclusion; fruit growing has now reached a point, and the history of our exhibitions has reached a stage, when we ought to proceed with our judging in such a method as will best tend to educate growers up to a higher standard of perfection in growing the different varieties of fruit. It seems to me that in judging, whether plates or collections, at an exhibition, one of the first points is proper nomenclature; to see that all the varieties are correctly named, and that the fruit competing are what they claim to be. That is the first point I myself look to when comparing one collection with another. I then proceed to look over the different varieties by themselves, as to form and size, looking at the variety on exhibition, and keeping in my mind's eye what perfection in the way of form and size in that particular variety is, and comparing the ideal with the specimen before me. Then, the next point is coloring. If it is a variety to which color is common, I pick out the most perfectly colored samples. I think coloring is a very important point in those varieties of which color is a feature. Then I look at the flavor, and in this respect a difference is frequently found in different specimens of

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the same variety; and in that connection there arises a point which, in an exhibition of that kind, ought probably to be taken into consideration—the circumstances under which the fruit was grown, locality, etc.; where there is another of the same grown under very favorable circumstances. At some exhibitions it is difficult to do that; the information is not on the plate before you. At some of the larger ones, however, they give that information upon the entry ticket, and you can judge pretty much by that as to what the soil, climate, and possibly the state of cultivation in that particular section may be. Then I look at the hardness of the variety—whether it is a variety that can only be grown within a more narrow limit, or whether it is one that can be more widely grown, possibly in the whole Province, and the points of excellence will be counted on that variety in proportion to the extent of country in which it can be grown, and the circumstances under which it was grown. Then, productiveness should be taken into account, I think, in judging each of these varieties. Then the shipping quality comes into consideration; when we want to get at the intrinsic value of each variety of any particular fruit, we want to know its shipping quality, because we have now arrived at a time in this Province, as in all other fruit-growing sections, when we grow fruit for shipping purposes. Then the keeping quality comes in with the shipping quality; that, of course, is an important point—the length of time it will keep and hold its best quality. Then, finally, I consider its general commercial value, taking into consideration the different markets and the distance that fruit can be shipped to market where there is a demand for it. The general points of excellence in that fruit combined will rule the point of commercial value. Now, in judging collections, we scale the collections; that is, we take each plate or each variety in the collection and adopt a scale of one to twelve, or one to five; five would be perfection in the best possible variety. Then there may be a variety that is the best possible in some particular section, but it has not got enough points to qualify it for the number of five points; its highest point compared on that scale would only be three or four. I have often thought that possibly it would be better to adopt a higher scale than five, because we find there is a good deal of difficulty in pointing the different varieties, so many points have to be taken into consideration so as to arrive at a perfect variety containing just the number of points. Now, we have arrived at a time in this country when we must look at these points scientifically, and in that way assist in educating growers up to a higher scale of excellence. If we do not improve upon the system generally in vogue and adopt regular rules at these exhibitions the good that is intended to be done to fruit growers by bringing them into competition with each other at such exhibitions, is considerably diminished, if not altogether prevented; but if a proper system is adopted in each, especially at our leading exhibitions, the good will be something considerable, and the educational objects of such competitions will be attained.

Mr. CASTON.—This is a very important matter; we have been listening to probably the best authority on apples in Ontario. I have had a good deal to do with fairs myself, and have experienced considerable disappointment on account of the wrong naming of fruit, and on account of judges not knowing their business.

Mr. MURRAY PETTIT.—I am of opinion that the one judge system would be an improvement, for this reason, that where one judge is appointed he would be on the particular variety of fruit of which he makes a specialty, and with which he is thoroughly acquainted, and knowing that all the responsibility rested on him alone, and that he could not shelter himself behind the others, he would use his best endeavors to give a correct judgment. When two or three judges are appointed on different varieties of fruit, as a rule the judging is done by one in each particular variety of fruit, who makes a specialty of that variety; in that way it is principally left to one individual. But at the same time the responsibility is not all upon that individual. Where a man makes a specialty of some particular line for several years his judgment certainly ought to carry weight over that of some other man who, on account of being a correct judge in some other class of fruit, is putting his judgment in opposition to his.

Mr. BRODIE.—At our Montreal exhibit, we generally have a committee to precede the judges and name the fruit that are misnamed, and I may say that if we did not do that it would be a good thing to have the rules and regulations read out to the judges before they go around judging, for very often they do not take the trouble to read up the rules.

The PRESIDENT.—I certainly believe the point raised by Mr. Pettit is worthy of consideration. I have acted alone as judge in a number of instances in the past few years, and I must say that in judging a general collection of fruit or any special line I much prefer to be alone nine times out of ten. I prefer that the responsibility should be all my own, and if I know my subject I do not shirk that responsibility, but would be prepared, if called upon, to give a reason if there are eight or ten collections, why I placed the first prize on that collection and only second or third on the other; I am ready to show where the difference lies. In apples, you know, it is necessary to have a large amount of the fruit, winter varieties, if you want to get a high commercial value. On points of excellence, too, you are going to score more by putting in winter varieties than by putting in summer or fall varieties, but, on the other hand, the points will go against you if you go entirely into winter varieties; because I cannot give the prize to that collection in that way, because, if I do, people will say, "Here is the first prize, I will plant an orchard of that." Now, I cannot advise them to do this; the collection to be perfect to my mind must contain the variety covering the longest possible season, and the variety covering the points of a cooking and dessert apple, combining them. And there, by-the-by, is a very excellent point in favor of our apples as compared with the British apples; theirs are either dessert or cooking; ours combine to a very great extent both cooking and dessert excellencies. This is a very great advantage.

Professor SAUNDERS.—I think there is something faulty in the wording of our agricultural prize list which makes judges doubtful. In acting occasionally as a judge of fruit I have found difficulties in this way; Some will award the prize to a plate of apples which are perhaps under medium size on account of their color, while other specimens almost equal in color, and considerably larger, will be overlooked by such judges. Others again, will fix upon the largest samples, and the prize lists are worded in such an indefinite way that they do not know what to do. There is not enough definiteness in the prize lists to guide either the judges or the exhibitors.

Mr. HAMILTON.—In Montreal the difficulty has been to what specimens to give the prize. Two or three years ago the judges would have given the prize to a plate of very large apples, while I thought it better to give it to those of medium size, well colored, and showing more of the features of their variety than the larger ones had. The difficulty was that the wording of the schedule was, "For the best dozen or twenty varieties," and there was nothing to guide us as to whether we should give the prize to the largest and finest specimens, or to those which approached most closely in all particulars to what those varieties ought to be. We have always been particular in seeing that they are properly named, and throw them out if they are not.

The PRESIDENT.—I noticed some years ago that the Agriculture and Arts Association had a rule against ringing grapes; we frequently used to put that rule in force. Now, last year I was at an exhibition where there were quite a number of grapes that were thoroughly ringed. When you come to test them on quality, the flavor is evident at once; they have not the natural flavor at all. I do not know whether the Association have discarded that rule or not, but I think it is a good one, because, although it may be all very well for an individual who wants to bring in a few grapes a little earlier for private use, it is not a fair way to grow them for exhibition, and in judging grapes it should be borne in mind that the object is to encourage the general cultivation for profit. Now, no one can tell us that it is going to benefit the country or assist the grapegrowers of this country to instruct them in methods of ringing grapes for the purpose of growing for the market; it never would pay.

Mr. BUCKE.—I was a judge of grapes last year at the exhibition, and there were some gentlemen from Hamilton who exhibited grapes; I said they were ringed, and they admitted it, but they said it was a general thing in Hamilton, and they thought it was an advantage; and as the class was left out of the prize list, I believe these grapes took the prize.

Mr. A. H. PETTIT.—How would it do to furnish printed slips or cards to the judges for them to fill out, giving the scale of points, color, size, quality, etc., and have the judges fill out those forms and have them on the plates, to show to the public in what way they had judged the variety.

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The PRESIDENT.—It is a good idea if you can get the societies to do it, but it is difficult to get them to approach it.

Mr. PETTIT.—In regard to ringing grapes, I may say for the benefit of those growing the Champion for home use in the colder sections, that it does improve them; it is the only one I know that it does improve; it is a much sweeter and better grape by being ringed.

Mr. CASTON.—I think that in offering prizes for certain varieties they should be offered for a bushel or half-bushel, or perhaps even a barrel. When it is for half a dozen, a man will scour the neighborhood to get that half-dozen together, which is no evidence of what he has produced. I think it would be far better to have it a bushel or half a barrel, or something like that, in the same way they exhibit potatoes. In regard to collections, I think in most cases at county fairs it is quite an advantage. If there is a prize for a collection of fall apples, one for a collection of winter apples, and another for early apples, and then another one for a collection of fruit, and if each is governed by the rules laid down I think they would have no difficulty in coming to a conclusion. Of course there is another point, about the naming of specimens; people innocently put wrong names on their samples, and they are thrown out altogether. I think Mr. Brodie's suggestion is a good one in this connection—that a committee should precede the judges for the purpose of attending to this; a committee of men who thoroughly understand their business.

Professor SAUNDERS.—I think there is a practical difficulty in the way of Mr. Caston's first suggestion as to having a barrel or half-barrel of apples. The judges would have to go over them and take points on each apple, and it would take altogether too long, and judges are worked too hard as it is; it often takes them two days to go through even under the present arrangement. There is no doubt the idea has some recommendations, but I am afraid it is not practicable.

The PRESIDENT.—Another very important point, which should be insisted upon, is that the specimens should be perfect ones. Now, an apple is not perfect unless the stem is there, and a pear or plum must have the stem there. I have known parties to exhibit the same plum as being two varieties by simply removing the stem; they would show one plate without the stem as a different variety. I saw it this last fall—I saw the Urbaniste exhibited as Lawrence, and it took the first prize. I therefore look upon it as a very particular point to have the fruit complete and perfect. I have seen the same kind of thing done with grapes; that is where there are two shoulders, to remove one of them. In judging bunches it is important to see that the whole bunch is there as grown. I know there are some varieties it is difficult to do that with, but I have seen so much of this kind of thing that I think it is highly important that the associations should insist upon every point connected with the fruit being present.

Mr. SMITH.—Reference has been made to parties who scour the country for fruit to exhibit. I know a man who has taken several prizes during the last season, some in Toronto, I think, and in London he took the first prize for the best collection of forty or fifty varieties, and to my own knowledge he has only one apple tree on his place.

BEST GOOSEBERRIES FOR THE COUNTY OF CARLETON.

The meeting then proceeded to the consideration of the above subject, the discussion of which was opened as follows:

Mr. GREENFIELD (Ottawa).—I have found the Houghton, a gooseberry introduced by this Association, a very good one; it is an excellent bearer, never mildews, and the severest winter never make any difference to it. Like all the rest of fruits, however, it has a fault, but if you keep it well trimmed and give it rich soil you will find it repays you for the trouble. It is preferred to the Downing here on account of its color. Then the Association afterwards introduced the Downing, which I found a great deal larger

and better berry. It is a very strong grower and heavy bearer, and I have never found that the winter is too cold, neither for the bush nor the fruit, and yet, like the rest, it has a fault too. But if you can plant it so as to shelter it from the mid-day sun it will do a great deal better, for if the rays of the mid-day sun get at it you will often find that it parboils the berries, so to speak, and they fall off. If you plant it on the north side of a tree, however, you will find it one of the best berries we have in this locality. One thing which makes it very valuable is that it will hang on the tree a long time after it is ripe without injury. I have taken as many as three gallons from one bush which was seven years old, but the average run of the bushes is from a gallon to a gallon and a half after they get about four years old; but you must keep them clean and well trimmed. Smith's Improved came to us after the Downing, but I find the bush is rather tender—not as hardy as the Downing. The berry is better and a little larger, but it will not stand shipping; I don't find it anything like as valuable as the Downing, and it is more tender. I have tried many others, but find none of them hardy enough to stand this climate, but the three I have mentioned are well worth planting by anyone who wants gooseberries.

Mr. BRODIE.—Have you tried the Whitesmith?

Mr. GREENFIELD.—Not yet—not to try it; but I have heard a good deal about it. I have had several English gooseberries, but they all mildewed except one, and this season it had some very fine berries, but not many of them. I had it planted on the north side of a tree so it would be sheltered from the sun, and if you want to rear good gooseberries here you must protect them from the mid-day sun which, if it does not parboil them as I have already described, takes away their flavor; they haven't the same flavor as when kept in the shade.

Mr. WHYTE (Ottawa).—I have had some experience with gooseberries, and although I never saw such beauties as in Mr. Greenfield's garden last summer, I cannot agree with what he says about shade, and I have tried it in every way too. Three years ago I planted a number of gooseberries and one end of the row ran down under an apple tree, and there was no crop; there is no crop unless they are in the sun. I have noticed to a small extent that the sun parboils them when exposed to its direct rays, but a properly trained bush should be in such a position that it does not affect many. It seems to me that Smith's Improved is superior to all others for quality. There is nothing I like so well as gooseberries, and Smith's Improved is beyond comparison better than the others. There is another young berry I have tried, which has not been disseminated all over Canada; it is grown by Mr. Conn of Kemptville. It grew last summer about an inch and three-quarters in length, and it is of very fair quality. I would not say it is as good as Smith's Improved, but it is very good, and perfectly hardy; I think it will be the coming gooseberry. I had a very nice crop of Whitesmiths two years ago, but since then it has been going down. As long as I can grow Smith's Improved I do not think it worth while bothering much with the others.

Mr. BRODIE (Montreal).—My soil is not very well suited to gooseberries to grow them to perfection, but the Whitesmith with us is the kind most grown for market. There is a gentleman down near Hochelaga who has grown something like two thousand gallons off a small piece of ground—

A MEMBER.—In how long?

Mr. BRODIE.—He has been for years at that business. He has just about four acres of ground, and he has got plum trees and gooseberries. I have had a good deal of trouble by the sun scalding them in the manner described by Mr. Greenfield.

Mr. BUCKE (Ottawa).—I believe I am responsible for the introduction of the King Conn, as we call it. Mr. Conn, of Kemptville, got it somewhere, but does not know exactly where. I do not know what its origin is, but it is certainly by all odds the finest gooseberry grown in Canada; there is no comparison at all between it and any other. It is perfectly free from mildew, and the bush is a fine grower in every way. I have had the Houghton, Smith's Improved and the Downing, but none of them can compare with the Conn. Mr. Conn has had an offer of \$150 from a grower up west for the sale of plants.

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Mr. MATHEWSON.—I have been growing gooseberries thirty years. I did at one time attempt to grow some of the English varieties; the Whitesmith did fairly well the first year, but after that it failed me; all the other English varieties introduced were failures. I attribute that to some extent to the lightness and dryness of the soil and climate. I think myself, that gooseberries require a great deal of moisture applied at the roots.

Mr. GIBB (Abbotsford, P.Q.).—If I am not mistaken, in that garden referred to by Mr. Brodie, these berries were grown for about twenty-six years. One year they did mildew, but the next year they did not, and have not since. Further down the river, on clay, several others have been growing gooseberries, that is, the Whitesmith and Crown Bob, with good success.

Mr. BRODIE.—I may say that just behind the mountain a few miles they cannot grow these varieties, but along the river front seems to be a favorable locality.

Mr. A. M. SMITH.—I would suggest to the members living in this locality the advisability of keeping an eye on the Experimental Farm. I think Professor Saunders has a collection of seedlings which will prove valuable in this locality. I fruited some at St. Catharines which I considered superior to the Downing, and there will be a good chance for you to examine them and make a selection.

The PRESIDENT.—Those who were present at our last meeting in the city of Stratford will remember that the Crown Bob and other English varieties are grown to perfection there; they don't seem to have any trouble with mildew at all there, but further west, where I reside, we cannot grow these English gooseberries. I have tested most of them, but have invariably lost them through mildew; the bushes would grow all right, but I could never get any fruit worth anything off them.

After the passage of a resolution thanking the municipal authorities of Ottawa for the use of the Council chamber, the President declared the meeting adjourned *sine die*.

THE SUMMER MEETING.

The Summer Meeting was held in the Shire Hall, at Picton, on Wednesday, July 11, beginning at ten o'clock.

President Allan opened the meeting with words of greeting to those who had attended. The subjects on the programme were all so interesting that he scarcely knew what topic to take up first. Several questions would have to be laid over till the arrival of other gentlemen. Meantime, he would call upon the Secretary to read a paper on "The Farmer's Fruit Garden."

THE FARMER'S FRUIT GARDEN.

The following paper was contributed by the Secretary :

Every farmer does not want to engage in fruit culture for profit. Tastes differ. Some prefer stock breeding; some, grain growing; some, dairying; while still another class are enamored with fruit growing, and prefer it to any other occupation. It is wisely so arranged, else, if all chose to grow one thing, all would be in poverty.

But every farmer does need to have a well-stocked fruit garden for home use, and this is what I want to impress upon all present. Evidences do not appear to favor my statement. It is the exception to meet with a well-stocked garden in country places, except for market purposes. Its importance is not appreciated. The farmer's table is often more scant in its supply of fruit in variety than is the table of the citizen who depends upon the market and must pay cash for it. Now, I maintain that this is a great mistake.

I am aware that the idea is gaining ground that in this age of specialties it does not pay to attempt anything out of one's line; that the farmer should devote his whole time and thought to grain and cattle, and the fruit grower to his fruit; that the farmer would make a mistake in growing strawberries, because the time and labor spent on them would, if devoted to his potato patch, produce more than would purchase all the strawberries, and *vice versa*. Now, I believe this principle is a sensible one, and I advocate it heartily, but we are not ripe for it yet. The fact is the farmer will not buy fruit for his table, to any extent. He can live without it, and unless he grows it on his own farm he goes without it and his family must do the same. It reminds me of a story I read of a farmer who was at a hotel for dinner. There was some excellent cheese upon the table, and he helped himself several times, evidently enjoying it very much. A gentleman observing him said, "You do not get good cheese down your way." "Yes," he replied, "they keep it at the grocer's, but as we do not make cheese, we do not have it on the table one week out of fifty-two." And yet this man lived in a \$5,000 house, and had plenty of means. So, then, the surest way to ensure the abundant supply of the tables of our farmers with the various fruits of the season is to encourage them in its cultivation.

If merely as a *luxury*, it would be worth all the trouble and expense it costs to grow the various kinds of fruit that are most desirable for home use. Not to speak of apples, raw or roasted, in sauce, or in pies or in dumplings, how delicious are cherry, blackberry and gooseberry pies, raspberry jams or plum preserves! And what is more palatable for dessert than a well-ripened, luscious Bartlett or Duchess pear? And why should not the most delicious pears be found upon the farmer's table from August to April of every year, when varieties may be planted whose fruit will ripen for use in each of those months as in each intervening one.

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But I urge the claims of the fruit garden for *health's sake* also. It is well known that that most dread disease among sailors, the hateful scurvy, is induced by feeding upon salt meat for a length of time without the counteracting influences of fruit or vegetables. Dr. Allinson, of London, Eng., says that fruit carries away injurious mineral matters which tend to accumulate in the system, and that a mixture of fruit and grain is the best possible diet.

A writer in the *Nebraska Horticulturist* speaks in the following suitable terms concerning the use of currants for health :

"I shall not lay stress on the old, well-known uses to which this fruit is put, but I do think its value is but half appreciated. People rush around in July in search of health ; let me recommend the currant cure. If any one is languid, depressed in spirits, inclined to headaches and generally 'out of sorts,' let him finish his breakfast daily for a month with a dish of freshly-picked currants. He will soon almost doubt his own identity, and may even think that he is becoming a good man. He will be more gallant to his wife, kinder to his children, friendlier to his neighbors, and more open-handed to every good cause."

Miss J. Power, in the *English Horticultural Times*, is well supported by the best authorities in saying that grape juice is the finest medicine for correcting a feverish, bilious state ever known. It has the hypophosphites which doctors prescribe for wastes of tissue, and taken freely will arrest even critical stages of disease. People, she adds, fed on pure food, with abundance of fruit, need never dread cancer, Bright's disease, gout, neuralgia, dropsy, or a dozen other of the worst scourges of our race.

I think I am making a strong point in favor of the farmer's fruit garden in thus emphasizing what is an acknowledged principle among medical men, that the acids of fruits are of the utmost importance, for the medicinal virtues, to the human system. Dr. Allinson even admitted that a diet of fruit and vegetables would go far toward dispensing with the services of the physician. If, then, the fruit garden may be the means of preventing much of the sickness in our homes, how soon will it pay financially even in the saving of doctors' bills?

The experience of a great many stockbreeders goes to prove that it pays to grow apples for stocks as well as to grow roots. Prof. L. B. Arnold writes the following to the *New York Tribune* :

The feeding value of apples is not large ; they rank with mangels, turnips, cabbage, and the like. Their food properties are mostly carbo-hydrates, or heat producing, their protein being only about one-half of one per cent., and their nutritive ratio about one to thirty, and hence are most effective when fed in connection with more nitrogenous food, like clover, but may be fed sparingly with grass. They have a higher value than the weight of their food constituents indicates, on account of condimental qualities, and from having a larger per cent. of those constituents in a condition to be at once absorbed and appropriated without waiting for any special action of the stomach. Using hay as the unit of measure, apples compare with it and other common feeding stuffs as follows, per 100 pounds of each :—

Hay.....	\$0 50	Cabbage.....	17
Cornmeal.....	1 12	Apples, ripe.....	16
Oatmeal, bran and middlings.....	1 00	Turnips.....	16
Potatoes.....	29	Rutabagas.....	15
Sugar beets.....	19	Mangels.....	14
Parsnips and carrots.....	18	Pears.....	13

Good ripe apples have a feeding value of not less than eight cents per bushel of 50 pounds, and are as good for other stock as for milch cows. For any one who has stock to consume them, it is as much of a loss to waste good apples as to waste good roots. When fed with reason and appropriate food they are health-inspiring as well as nutritious, and are only injurious when fed immoderately. An experiment in feeding three cows with moderately sour apples, ripe and mellow, for several weeks, at the rate of 12 to 20 pounds to each cow daily, gave me a finer flavored butter than I ever saw from grain or grass. I have known others to feed them in larger quantity and for a longer time with satisfactory result, and their butter to be not only fine flavored, but to have remarkable keeping quality, and the stock to remain perfectly healthy. I have also proved them to make excellent milk for cheese. The managers of cheese factories have noticed an improvement and increase of milk when their cows have been fed moderately with apples.

Prof. L. B. Arnold, whose decease at Rochester was announced 9th March, 1888, was one of the best American authorities on dairying, and his work on *American Dairying*, published in the year 1876, is a standing proof of the assertion.

Do I need to emphasize the importance of the farmer's garden any farther. Need I refer to the proceeds in dollars and cents? Will any one dispute the statement that, aside from considerations thus far presented, the highly cultivated acre of garden pays better, financially, than any other acre of ground upon the place, even if no part of the crop ever goes to the market?

My next purpose is to show how to make such a garden yield the best possible return. I will speak first of the small fruit garden, and secondly of the large fruit garden or orchard.

For an ordinary family, from one-third to one-half an acre of ground will be sufficient. Let it be the very choicest on the farm, and, if possible, near the house at the side or rear. Of course it must be safe from cows, pigs, sheep, fowl, etc., but if in the situation described it will be a portion of the house yard, and so need no separate fence, but only be screened from the lawn by a hedge of arbor vitae, privet or ornamental shrubs and roses. No pains must be spared to have the ground in the best possible condition, else of course there will be a waste of time and money. I mean it must be well drained and well manured. I do not mean a thin top dressing of manure, but heavily coated with good manure, at the rate of say thirty or forty loads to the acre, unless the soil is already better than that of most farms I know of.

In shape it should be longer than broad, admitting of rows at least two hundred feet in length, for convenience in cultivation with the horse. The time is gone by for doing with the spade and hoe what can be so much more quickly done with a horse, little plough, and cultivator.

Now for the kinds of fruit to plant and the number of each for the home garden. We want a succession. We want our tables furnished with fresh small fruit all summer. Then we will begin with strawberries, which in this district begin ripening in June. Planting them one foot apart in the rows, 200 plants would be required for each row, and three or four rows three feet apart would not furnish too large a quantity of this, the first and one of the most luscious fruits of the season. For varieties we would suggest Crescent, Wilson, Sharpless and Manchester, in about equal quantities. For best results constant cultivation should be given the strawberry right through the season, and a mulching of straw or coarse manure should be applied before the time of freezing nights and thawing days of early spring. All runners should be kept cut off after the ground is once sufficiently covered with plants.

Raspberries follow closely upon the heels of the strawberry, and are almost equally delicious in their three colours of black, red and yellow. To our taste black caps are the most desirable for canning and for pies, and the red for preserves and for jam, while some varieties of the yellow are beyond comparison for eating fresh. They may be planted about three feet apart, in rows six feet apart. A half row of each variety suggested would be a sufficient quantity. In black caps I would suggest Doolittle or Souhegan for early, and Mammoth Cluster and Gregg for late. These need to be on soil that does not dry out, crack, or bake, else the fruit will dry up in the hot July sun. A deep, rich sandy loam is best, and this kept well cultivated and stirred up, even during fruiting season, unless the weather is wet. The pruning shears should be freely used to keep the canes within bounds, unless it is necessary to layer the tips for propagation. The old canes may be removed and burned either in the autumn or in early spring, and only four or five new canes be permitted to grow in each stool. In the planting of these and of the other plants, a stout garden line is of course indispensable. In red raspberries I would recommend Highland Hardy and Marlboro' for early, Turner for medium, and Cuthbert for late, and these will extend over a period of about six weeks. Last year my raspberries began with the 16th June and ended about the first of August. In white raspberries, the best varieties are Brinckles' Orange and Golden Queen. This year the first were not ready until July 6th.

Currants and gooseberries will also come during the months of June and July, and no one need be discouraged about growing these fruits, because of the currant worm, when an occasional sprinkling with hellebore and water, in the proportion of an ounce to a pailful, will so easily keep them in check. One row of currants and gooseberries, planted about three feet apart, in rows six feet apart, would perhaps suffice. In kinds I would recommend the following currants, viz., red, the Cherry and Fays; white, the White Grape; black, Black Naples and Lee's prolific. In gooseberries, I know of none so reliable as Smith, Downing and Industry. The latter, however, is said to mildew in some locations.

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The currant bush needs to have the new growth cut back early every spring, one-half, and kept somewhat thinned out, while the gooseberry needs only the annual thinning out of old wood. There is a great satisfaction in a row of bushes thus kept in good shape and well cultivated, but if neglected they are neither useful nor ornamental.

Heavier soil may be used for the currant and the gooseberry than for the raspberry. Indeed, in my experience, the Cherry Currant bears much more freely on clayey loam than upon sandy loam.

The large blackberry comes next in order, and is a most valuable substitute for peaches for table use in the month of August, when peaches fail. If properly ripened the blackberry makes an excellent sauce for the table, being just acid enough to suit many people's taste; and for pies it is not excelled in the writer's estimation by even the Kentish Cherry. One row of these will suffice, and the following kinds will be suitable for the Niagara District, viz., the Early Harvest, the Kittatinny, and the Taylor. I add the latter because it is more hardy than the others, and will often produce a crop when the others might fail on account of the severity of the season. For convenience in cultivation it will be necessary to cut back the canes at a height of two and a half or three feet in the summer. By this means they may be made to stand firmly upright without support, and there will be no sprawling canes to obstruct passage between the rows.

I will close this first part of my subject with some references to the grape. This can be planted in many places, otherwise waste. It may be trained along the side of a building, or upon a fence that is intended to screen unsightly objects. It is an ornamental vine along the side of a back verandah, or trained to cover an arbor in the corner of the garden, or retired part of the lawn. Or it may be trained upon a trellis in rows.

Grapes should be planted about ten feet apart, in rows about the same distance. Thirty or forty vines of several of the best varieties of each color, will not come amiss. The time of grapes for family use can be extended over a very long season, by packing away such varieties as Salem, or Vergennes, which can be kept until spring. Thus, for at least six months of the year, the medicinal and agreeable virtues of fresh grapes may be utilized in the family. In varieties I would recommend the following, viz., red, Delaware, Lindley and Brighton; black, Moore's, Worden and Wilder; white, Lady, Jessica and Niagara. To these I would add Salem and Vergennes for their keeping qualities, although the former is much subject to the mildew.

Too much barn manure is not best for the grape. A surplus of nitrogen produces too much wood growth at the expense of the fruit. Phosphates and potash are specific manures for the vine; the former is found in bone meal, or in the mineral apatite which is now being so extensively worked in the vicinity of Ottawa, while the latter is a constituent part of wood ashes.

I have thus given a general view of what should, in my opinion, constitute the farmer's small fruit garden. Such a garden will yield him more pleasure and profit than any other equal portion of the farm, not excepting the orchard, which I shall have to leave over to be treated of on another occasion. I hope that these few hints may help to increase the general interest in the home garden, and result in the more abundant supply of fruit for the farmer's family, and in the freer use of the same in all our county homes.

The President called for a discussion on the paper.

Mr. WELLINGTON BOULTER, Picton, said:—It seems strange to me that in this age of improvement there should be any necessity to impress upon the minds of the farmers the necessity of endeavoring to grow something to make their homes pleasant and comfortable. Many of the farmers even in this county, I am sorry to say, have very little to eat upon their tables except what they grow in the way of grain and beef and pork. When they can be cultivated so easily, and add so much comfort to the living of the house, it seems strange that any man for a moment should forego the little time and expense necessary for the cultivation of strawberries, raspberries, plums, grapes, etc. I welcome the Fruit

7 (F. G.)

Growers' Association to this county. I trust that their visit will be profitable to this county, and that those members who have spent the time in coming to Picton will feel pleased that this place was selected. Sorry am I that we have suffered what we have with the unfortunate drouth, because the county does not show off to that advantage that we Prince Edward county people are proud to acknowledge it usually has; but as the elements are governed by a higher and wiser power we cannot complain. I trust the farmers will come in and say something on these subjects, and interest themselves in it. I hope a stimulus will be given to many in this locality to go more into fruit in the future.

Mr. P. C. DEMPSEY.—In riding over the county I saw a man with a superior 100 acre farm that \$7,000 would not buy, and he failed to have an orchard on it. He could draw his whole crop this year, including hay, on one waggon load. If he had had currants or strawberries he would have had something worth while.

QUESTION DRAWER.

The question was asked, In what state and where does the Rose-leaf Hopper pass the winter?

Mr. MITCHELL, of Innerkip, replied:—The question was asked by myself. A discussion took place on the matter some years ago, and even entomologists disagreed with me as to where this insect does pass the winter; and does not seem to be settled or understood. I wish to bring it up on that account, because I consider it would be more easily managed if we understood it. Although not an entomologist I hold that the insect passes the winter in a larvæ state in the bark of the rose itself. Leading writers have disagreed with me, but I think it will be found that I am correct in the matter; and I hold that it is a great thing to understand the habits of the insect so as to get at them. I think any one studying the matter even with the naked eye will discern them coming through the bark of the rose just at the time the leaves are expanding. I wrote Mr. Saunders, and he informed me that he had never taken the matter up so as to study with any certainty on it. I also wrote a number of our rose-growers—those who had investigated among the rose—Mr. Webster, of Hamilton, who agreed with me. It was brought out originally by an article of mine in the *Canadian Horticulturist*, where I was criticised. I did not know that I was making any new discovery, but I just mentioned where it did pass the winter, and it was criticised; but if there is an entomologist present here, or any one that has investigated the matter, I would like to hear from them. To rose growers it is quite an important matter.

The SECRETARY.—I am only an amateur entomologist, and therefore cannot answer from the entomologist's standpoint. I find that Mr. Packard, in his "Guide to Insects," states that the Grapevine-leaf Hopper, which is somewhat similiar, passes the winter in a perfect state under dead leaves, etc., and that very early in the spring the perfect insect deposits its eggs in the young leaves, which very soon develop into the young larvæ, and at once proceed to extract the juices from the leaves. I suppose that the Rose-leaf Hopper would pass the winter in the same way, and perhaps very early in the spring deposit the eggs in the bark, from which the practical rose-grower would observe the young larvæ issuing, and would naturally suppose they had spent the winter in that place.

FRUIT

Mr. William

The progress of my first selection of fruit was very late for the people of the fruit growers' tances for drying while our larger of apples was to and took up new wonderment. Compared with what Mr. McGill, from a dozen trees through Mundi, Pound S Golden Russett of the shipment of the shipment fruit we were economical and natural results, there was a manifest short time though that as the volume and the same finest kinds of fruit that at one time I had chiefly to find natural of the appointment, if name when coming an order for 150 only trust fifty fifteen trees were continued to battle and adverse to the or volume of trade which your humble was shipped to a barrel. The soil planting out this then cultivate year from the soil in the 120, viz.: 20 specimens on different largely for exhibition wanted for shipping get thirty to forty for shipping purposes Blush, Jeffries' W Tom, Rhode Island Smoke House, Grand suitable for both

FRUIT GROWING IN THE COUNTY OF PRINCE EDWARD.

Mr. Williams read the paper on this subject as follows:—

The progress that has been made in Prince Edward County since 1848, when I made my first selection and purchase of fruit trees, has been great. At this time our grafted fruit was very limited; the recommendation to any fruit was that it was a graft, therefore the people should not question. Our tables were very scantily supplied, even among the fruit growers themselves. The natural seedling was eagerly sought from long distances for drying purposes for home use, and brought from 10 to 20 cents per bushel, while our larger markets were chiefly supplied from over the border. My first shipment of apples was to Ottawa, or Bytown, in 1846, by the old Rideau Canal, from Kingston, and took up nearly as much time as now in going to London, and was then a greater wonderment. They brought from \$3 to \$4 per bbl. This sum seemed immense compared with what was generally realized at home. The first trees were purchased from a Mr. McGill, from a place called the Gallows, on the American side. Parties taking a dozen trees thought they were making a large purchase. The old varieties were Gloria Mundi, Pound Sweet, Red and Black Jilly-flowers, Flushing and Esopus Spitzenbergs, Golden Russett and Pinnock, which trees are still alive and bearing fruit. The result of the shipment was that where our apples came into competition with the American fruit we were equal if not ahead. This gave the impetus and courage to cut away the naturals and re-top with the best we knew of. This method produced quick and satisfactory results, which fact gave a lively interest to the cultivator. From 1860 to 1870 there was a mania for planting fruit trees, from the small garden to larger areas, and in a very short time thousands of barrels were shipped to foreign markets. Fears were entertained that as the volume grew so rapidly that foreign markets would soon be over-supplied, and the same fear is in many minds to-day, as the markets are educated to appreciate the finest kinds of fruit, which supercedes or gives a large class of inferior fruit the "go by," that at one time commanded good prices and a ready sale. The best grades are now confined chiefly to few varieties, making it as important now to top-graft as with the old naturals of the past. The fruit growers have not been exempt in this county from disappointment, if they *have in others*. In ordering trees many have proved untrue to name when coming into bearing. Excuse me if I state here that I gave a nurseryman an order for 150 Ribston Pippin trees, stating I wanted to plant them myself. I could only trust fifty on sight, and in that fifty I had six different kinds of apples and only fifteen trees were true. Notwithstanding many drawbacks the cultivators have continued to battle along, and have achieved a grand success. The past year was very dry and adverse to the fruit interests of many in different parts of the county, yet the yield or volume of trade in fruits was very large, amounting to tens of thousands of barrels, of which your humble servant put up of his own growing over 1,100 barrels, a portion of which was shipped to London, as in the previous twenty-seven years, realizing over \$3 per barrel. The soil preferable is strong loam, fit for a good corn field or garden. After planting out thirty feet each way cultivate and manure for five years with hoed crops, then cultivate yearly and sow to oats for pasture for sheep and pigs, but take nothing from the soil in the shape of grain crops. The varieties cultivated of the apple are over 120, viz.: 20 summer, 34 autumn, and 66 winter. Our shows have given so many premiums on different kinds of fruit bad results have followed. Trees have been planted largely for exhibition purposes; as the trees grew up there is a large variety that is not wanted for shipping. Parties formerly in ordering trees were not satisfied if they could not get thirty to forty kinds to the hundred trees. From the 120 varieties I would select twelve for shipping purposes: Duchess, Chenango, Twenty-ounce apple, Colvert, Maiden's Blush, Jeffries' Winter Golden Russett, Northern Spy, Vermont Pippin, Baldwin, King Tom, Rhode Island Greening. Add five more for home use, viz.: Pimate, Wagener, Smoke House, Green Sweet, Tolman Sweet. This will give a continuous supply and is suitable for both market and home.

PEARS.

There is no money in growing pears, in comparison with apples. I have often said when asked "will pears pay?" my answer was I could make more money with apples at 25 cents per bushel than with pears at \$2. I have had no reason yet to change my assertion; they have not awakened the same interest, being short lived—having to be replaced often—not so much from the blight as from the severe climatic changes from heat to cold in the winter and spring months. I have tested over fifty sorts. In growing the tender sorts I succeed by far the best in growing the Flemish Beauty, and top-grafting. Out of these I would name ten varieties that have proved to be the best: Doyenne de Ete and Madeleine for early, Clapp's Favorite, Bartlett, Belle Lucrative, Tyson, Doyenne Boussock, Flemish Beauty and Beurre de Anjou for fall, and Josephine for winter.

CHERRIES.

In cherries there is nothing doing. There are a few old trees of the very old stock left here and there that thrive and do well. The cultivated varieties burst their bark and die. This is caused by warm open weather in the winter months followed by zero weather. I am fearful if the Russians that are introduced at present can withstand these changes.

Aside from the apple, the grape, I think, in the near future will have the second important place both at home and market. It is beyond question that the grape can be had in abundance through the whole of the winter months fresh on the bunches. I had them for the last two years up to June 1st, and up to April as fine as when first taken from the vines that were grown in the open ground. Grape culture as a whole throughout the county is but in its infancy. There are a few persons that are succeeding admirably, though with but few varieties on very small areas. The interest is growing and will be like leaven, soon to make rapid strides. One great hindrance has been so many poor grapes forced on the market as superior to all predecessors, and when proved not fit to be retained in cultivation. I would name a few that have succeeded best in this locality: Jessica only for early, Brighton, Delaware, Early Dawn, Rogers' 3, 4, 9, 22, 44. I am speaking now of grapes for the household exclusively; were they wanted for marketing then I would in all probability add a few to my list.

The soil generally throughout the county is well adapted for growing currants and gooseberries in great abundance. There are four kinds in cultivation, the White Grape, Raby Castle, Cherry and Fays. If I could choose but one for the family I would take Raby Castle, as it has a thick leathery foliage, holding both leaves and fruit till all others are naked and bare, and keeping nicely till September. The Downing is the principal gooseberry, the Houghton and Whitesmith are grown to a small extent only.

There is a lively interest just now in the red raspberry. We have been very backward it taking hold of this fruit. For canning purposes they are preferable to all but the large blackberry, and there has been quite a number cultivated. Cuthbert, Turner, Clarke, Hansell, Philadelphia, etc. I am still holding on to the old Red Antwerp, and think it has not yet been beaten. The blackcaps are being rapidly superceded.

Strawberries are a very good cropper here, on suitable ground where not too dry, and with a fair share of care and attention are profitable to grow for shipping and canning. The new varieties have not been taken hold of very much. Most growers are keeping hold of the old Wilson, Crescent, and Manchester. The James Vick proved worthless.

Take fruit as a whole I would report advancement in every branch as to quality, quantity and profits.

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Mr. WRIGHT, (Renfrew).—Does the Raby Castle keep?

Mr. WILLIAMS.—I have kept it till the 15th September on the vine.

The SECRETARY.—You speak of keeping grapes till June. How do you do it?

Mr. WILLIAMS.—They are simply taken from the vine and put in small boxes, probably nine inches by two or three inches deep. They are taken to the vine, and the grapes are cut off without handling and laid in and put into a room that is airy, but not covered; and allow them to be in that cold room until the frost sets in; then put them in the cellar. They will shrink a little, and the surplus juice appears to be evaporated a little; and we keep on using them.

The SECRETARY.—Don't you close up the boxes at all?

Mr. WILLIAMS.—Oh no; I failed entirely with sawdust or cork or anything I put them in. The best way is to have nothing in them, and not to put them much one upon another nor rub the bloom off.

The SECRETARY.—No leaves with them?

Mr. WILLIAMS.—No, nothing at all.

The SECRETARY.—What kinds?

Mr. WILLIAMS.—They were the Rogers. Brighton I kept very nicely till the first of March. The Delaware I could not keep. A good many kinds won't keep, but those I mentioned are very good keepers.

Mr. SMITH.—Have you the Victoria currant?

Mr. WILLIAMS.—I have had it. It grew small. It did not grow nearly so large and fine as what I have now of the Raby Castle. I was in the cellar to-day, just before I came away, and there are about a thousand boxes of grapes there yet, sweet and clean.

The SECRETARY.—Are they not shrunk or shrivelled?

Mr. WILLIAMS.—They are shrivelled; the juice appears to condense.

The PRESIDENT.—Your fall apples you use for local markets; do you never ship any to foreign markets?

Mr. WILLIAMS.—I have shipped the Duchess and the Colvert and the Maiden's Blush. The Colvert also ships well.

The PRESIDENT.—The Twenty-ounce you refer to is the Cayuga Red Streak, is it not?

Mr. WILLIAMS.—Yes.

The PRESIDENT.—The other Twenty-ounce is the highest priced apple on English markets on account of its size.

Mr. A. H. PETTIT.—Why did you discard the Worden grape?

Mr. WILLIAMS.—They ran all over; they dropped from the cluster very badly, and the flavour itself I don't like.

The SECRETARY.—You discarded the Concord also.

Mr. WILLIAMS.—Yes; I have grown the Concord for twenty years, and I have never eaten three bunches in all that time.

Mr. M. PETTIT.—Did I understand you to recommend the Early Dawn for family use?

Mr. WILLIAMS.—For family use, for keeping.

Mr. MORTON.—I have been trying the Early Dawn, and I don't think it will bear before the day of judgment. I have been working at it now for about six years.

Mr. M. PETTIT.—I can't get from Early Dawn more than two pounds to the vine.

Mr. WILLIAMS.—I get nearly as much as I do from Concord.

Mr. W. BOULTER.—Eight years ago I put out 150 pear trees. I have been a little unfortunate. I would like to see pears cultivated, for we had to go to the other side for them last year. I had very few varieties. I have lost all the winter varieties but one tree. The principal ones I put out were Sheldon, Clapp's Favorite, Flemish Beauty, and a few Osbands. I lost them in the winter of 1884-5. The only trouble with Flemish Beauty and Clapp's Favorite is that the bark on the south-west side is cracked or killed, I suppose by the sudden changes of the weather. We have had pear blight in our orchard now the last three years. I believe that pears can be cultivated successfully, but there must be probably something in the soil that is the cause of so many failing. My land was a clay loam, very fine. I was able to cultivate. My pear trees were fifteen feet apart each way, and I put the raspberries between the rows. I set

out one tree in the corner of the fence, and have been mulching it—throwing ashes and one thing or another, and the scrapings of the barnyard around it. That tree has gone ahead of any other, and has never been effected in any way. The bark is perfect. It bore last year. This year is the first year my pear trees have borne. Have any of you ever tried wrapping the trunk up with straw, or putting up a board to protect the south-west side?

Mr. WRIGHT.—I have. Where the rope touched it was as green as could be, and all the rest black right up. The straw covered it all.

Mr. WILLIAMS.—I have not tried to set a board up. I have wound them around with the hay rope. Rain would get in and wet it, and the thing would slip off in the spring.

Mr. BOULTER.—Have any of you ever washed your pear trees with lime?

Mr. WILLIAMS.—I have not. I frequently do it with apples.

Mr. BOULTER.—I think Flemish Beauties, and Clapp's Favourite, and Sheldons can be cultivated. In 1884-5 I put out seventeen Buerre d' Anjou in a row. They all froze. I can corroborate Mr. Williams in regard to planting trees years ago. My father kept a nursery, and twelve trees was about the greatest number he could sell to a farmer. He generally tried to get him to take two bunches of a dozen each for twenty-five cents.

Mr. WOODROW.—I have just cut down an orchard that did not produce much, and set out strawberries. We picked 20,000 boxes of strawberries off the two acres. We grow strawberries and raspberries principally; strawberries, Crescent and Wilson; raspberries, Cuthbert and Sharpless. I have a few Golden Queen, that is new. (Specimens of these were shown.)

The PRESIDENT.—Do you grow any other fruits?

Mr. WOODROW.—Nothing of any account. I have a few currants and gooseberries. The White Grape currants are the best I ever had, I don't grow White Grape for money; I grow strawberries and raspberries for money.

DELEGATE.—Are those white raspberries (Golden Queen) grown for use?

Mr. WOODROW.—Yes. I have had an experience of two winters; I find them hardier than Cuthbert. I think it is fully equal in productiveness. It lacks a trifle in quality. I don't think it is quite so good.

The SECRETARY.—Have you tried the marketing of the Golden Queen?

Mr. WOODROW.—Not at all. The man I deal with in Kingston says a limited quantity will sell well, and will bring a high price. I set out six or seven hundred plants this spring for test. They are a good growing plant, and they winter well.

Mr. DEMPSEY.—When I heard Mr. Woodrow talk about his Snow apples failing up to two years ago, I know perfectly well that mine failed for a few years, and I have a nice little orchard of Snow apples, too. I felt like cutting them down. I did saw the tops off, but last year's crop excelled anything I ever saw of any variety of apple; and, strange to tell you, those that we took from the trees in good order, and got to market in good order, brought \$4 a barrel. The whole crop averaged us \$3 a barrel. I would ask Mr. Woodrow or anybody else, if with strawberries, taking the same amount of land occupied, and the same term of years, he can get that much. On the same ground I grow my apples I have taken six thousand quarts of strawberries off the acre, and they brought me very remunerative prices. I have also taken from the same acre that I have taken apples, about 50 barrels of apples last year from the acre. I have at the same time taken 200 bushels of potatoes per acre; and, take the whole of it, I must confess it was the most profitable crop I ever grew.

Mr. BOULTER.—Were the Snow apples a little spotted last year?

Mr. DEMPSEY.—There were no spots on them last year. We gathered them from five hundred trees. The year previous they were specky. There are no spots on them now. I am not going to recommend the Snow apple, because if I was going to plant an orchard I would not put out one. We have a lot of Wealthy apples. They are just as pretty on the tree; they bear an enormous crop on the tree, and I have yet to learn of any spot on a tree in the county, although Mr. Croil has had them spotted. Our Wealthies are always clean, and they bring a little more than Snow in the market. I will make more money on our slow-growing Wealthy apples than I

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can of strawberries. I differ with Mr. Williams in the collection of apples, because if I were going to plant out a thousand trees to-morrow for profit, they would consist of Wealthy, Duchess of Oldenburg, and Ben Davis, and I would just stop there; and the latter one would produce more money than all the rest, too.

The PRESIDENT.—I suppose what you would keep for your own use for winter, would be Ben Davis altogether. (Laughter.)

Mr. DEMPSEY.—Certainly; but I would just want some juice of lemon squeezed into them, and they would make one of the most delicious sauces you ever got out of an apple. With respect to pears, perhaps I have not had so much experience as Mr. Williams, but I have imported two hundred varieties of pears, and out of that number there are very nearly two hundred failures. (Laughter.) But I feel very thankful that there are a few successes; and that is the only way that we can ascertain whether fruit growing is going to be profitable in the county of Prince Edward or not.

Mr. BOULTER.—Were those the standard pears you planted out or dwarfs?

Mr. DEMPSEY.—They were standards trained very low. Now I am sure we can grow certain varieties of pears very nearly as cheap as we can apples, and with a certainty of success. The pears Mr. Williams mentioned, Doyenne Boussock, we have cultivated that for twenty years, but it is just being boomed now, and the people are beginning to appreciate it. It is not a first-class table pear, but where parties have canned it, they don't want the Bartletts. It is a prettier pear than the Bartlett in the basket. It grows larger than the Bartlett. Our trees have obtained a height of twenty feet or more, and we have the pleasure sometimes of taking as high as six bushels from a single tree, and they bear every year. I would advise the people of our county to plant largely of Doyenne Boussock pear, Mr. Boulter will want them all. Grow as many as you can. I never saw a branch yet of the Doyenne Boussock blighted; I never saw a branch frozen, either, with us. We have had them growing right by Flemish Beauty, and the Flemish Beauty blighted and passed away. We would saw them down. We have grown them by the side of the Bartlett where it would freeze to the ground. There is another pear I want to speak of—Josephine de Malines; we grow that and place it in our cellar in boxes as carelessly as we would the apple, and in the winter season we just bring them up in the living room, place them in the drawer, and in about a week they are fit for the table. When there is a wedding anywhere near us, we have an invitation to furnish them a few Josephine de Malines. They come in a little after Christmas, and keep till spring. We usually get \$1.50 a peck for them, and any man that is not satisfied with \$6 a bushel for pears had better grow strawberries, and take \$2 a bushel, and pay a little more than a dollar a bushel for picking.

Mr. SMITH.—At what time does the Doyenne Boussock ripen?

Mr. DEMPSEY.—Just the next day after the Bartlett is done. The last of our Bartletts we usually ship with the first of the Doyenne Boussock.

The PRESIDENT.—Have you noticed that buyers, when there is no pear fit for use except the Bartlett, will take the Doyenne Boussock at the price of Bartletts?

Mr. DEMPSEY.—Yes; I shipped some Bartletts and Doyenne Boussock two or three years ago to Montreal in three-half-peck baskets, and when they arrived my agent there wrote that they did not sell as well as Bartletts. I replied to him to change the tickets—put the Bartlett ticket on and let the people have them. The result was they brought twenty-five cents a basket more than the Bartletts. This was only the superstition of the people; they wanted the Bartlett pear because of the name, and in my opinion it is only a second-rate pear after all.

Mr. BOULTER.—Is there a musky flavor about this pear similar to that of the Bartlett?

Mr. DEMPSEY.—No; they possess an acid that seems to give them a proper flavor when they are canned. They are not so good, as a table pear, as the Bartlett. There is a pear that I must speak in favor of, that is the Beurre Hardy. It is a very pretty golden russett, and attains a considerable size—about the size of a Bartlett—and the flavor is something delicious. We find that when our customers get a basket of the Beurre Hardy they want more. The Beurre d' Anjou with us is very shy in bearing. We get a few pears every year. I have only once taken as many as three or four bushels

in a year. As to Flemish Beauty, I would not plant it if anybody gave it to me, and it is the poorest stock I ever tried for grafting on. Clapp's Favorite was a favorite of mine once, and I planted it to a considerable extent, but the trees are subject to blight, I find. They are hardy, it is true; but if they will die of blight in summer of what use is their hardiness? They bear a very light crop—perhaps produce as much as the Beurrd' Anjou, and the trees is sure to blight, so that I would neither plant it nor graft it.

Mr. WILLIAMS.—My experience with the Ben Davis apple has been very poor. I got some when they first came out some twenty years ago, from Ellwanger & Barry. I planted them in the garden in a good place, and for twelve to fifteen years I did not gather one bushel. There were four trees of them. I have re-topped them—that is, put the Ben Davis top on some other trees—put them in different ways, and I never succeeded well. I have noticed them through the locality about there, different places, and there is one orchard not very far from me has quite a number. I have never known them within the last fifteen years to have one good crop. A great many of them are inferior and worthless.

Mr. BOULTER.—I have twenty-five trees, and they never failed yet of having a crop each year, and bear very early. I think the Snow apple should be planted in a gravelly soil. It originated on the Island of Montreal, so I have always understood from my father. Two years ago they were so spotted that we discarded them. Three years ago we put down quite a lot of them. They are no good to evaporate; but for market purposes in Montreal there is no apple brings more money in certain seasons of the year than they will. The Maiden's Blush has been a very successful grower. Four years ago I grafted quite a number of Flemish Beauties on the Tolman Sweet. I believe if they can be made a success it is going to be a good tree to graft pears on. I don't know whether one could grow pears on a sour apple tree; but I never saw thriftier grafts than are growing on my Tolman Sweet trees. A neighbor took first prize at our township fair, for pears grafted on Tolman Sweets.

The PRESIDENT.—Have you ever heard of the grafts breaking off?

Mr. BOULTER.—No, I have not.

Mr. YOUNG.—Have you ever seen pears grown on thorn?

Mr. BOULTER.—I have seen them.

DELEGATE.—Did they have the same flavor?

Mr. BOULTER.—I don't know. These were a good flavor that were grown on the Tolman Sweets.

Mr. WILLIAMS.—My experience in putting pears upon apples is very much like grafting the pears upon the Thorn apple; they did not unite well. I have had the graft four and five inches around, and the apple stock did not increase in proportion. You would have to tie up the scion to keep it from blowing off with the wind. It never appears to unite its wood well with the apple; and I have seen the Thorn that is grafted with the pear in the same way.

Mr. YOUNG.—I tried pears on thorn once, and it did not seem to have the same flavour as it would if grown on its own stock. I never tried it on the Tolman Sweet. In the Thorn the pear seemed to grow so much faster that it bulged out and grew very slender, it grew in a few years twice as big as the Thorn, and after a while it grew so large it broke right off. The pears were very fine, but I don't think the flavor was quite as good. Can any person tell why it was that last year the Snow apples were very smooth and nice, and heretofore they were specked and spotted? Mine were spotted, so I cut the tops off and grafted Ben Davis in. They grew up into bearing, but I found they were a very poor apple. I said to myself, "As soon as the Englishmen find these apples out they will be disgusted with them," but if we can add lemon juice to them and make them all right, probably we will get rid of them anyway. The strawberry business I have some experience in. I use the Wilson altogether. I have grown 2,400 quarts in a quarter of an acre, but that, of course, was a very good year for them and they grew up all right, good size.

The PRESIDENT.—Which of the old varieties of apples do you prefer for the market?

Mr. YOUNG.—The Spy; and I have planted the Spy chiefly.

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Mr. DEMPSEY.—The great difficulty with the Ben Davis is that it inclines to crop too much, and we must thin it. The way we usually thin ours is by using a pair of shears that we work with a little lever, the same as we do for cutting branches off the trees for telegraph wires, and with it we cut off the fruit spurs. When the tree over-bears the fruit does not color properly nor does it attain a good size. There is an idea here about the apple spot. I noticed in the *Horticulturist* the sulphate of copper in solution is recommended for the apple spot—that it would destroy this fungus growth on the apple. I have never tried that, but I have tried the sulphate of iron and by frequently using the sulphate of iron in a liquid form at the roots, I have more than doubled the size of my fruit. I remember once taking the fruit I had grown that way and shewing it at the State Fair in Utica, and even Barry could not recognize some of the common varieties, such as Belle Lucrative, Beurrd' Anjou. I took a specimen of Flemish Beauty that weighed fifteen ounces. These results were produced by the frequent use of the sulphate of iron. I am not going to say it adds to the flavor of fruit; I would not advise it for that purpose.

The PRESIDENT.—Did you not find that it added to the color?

Mr. DEMPSEY.—It heightens the color some, but not materially. It prevents any rusty growth on the fruit. The fruit is invariably smooth and fine where we used it. Sulphate of copper is nearly the same nature, somewhat stronger; we would use it in smaller quantities than sulphate of iron, would we not?

The SECRETARY.—Yes.

Mr. DEMPSEY.—One is ordinary copperas or green vitriol, and the other is blue vitriol, that is all.

Mr. YOUNG.—Don't you think by opening the top of the Ben Davis you would color the fruit?

Mr. DEMPSEY.—I don't believe in this pruning out of the interior branches. We try to encourage branches in the inside of the tree, and I find the specimens grown inside color fairly, even though they are almost entirely shaded.

THE FUNGUS ON THE APPLE.

The PRESIDENT.—As Mr. Dempsey touched on the fungus scab on the apple, we will take question 5, viz., "What is the cause of the Fungus-scab on the apple?"

The SECRETARY produced a diagram sent by Prof. Panton, of Guelph, who could not be present owing to his college duties. The Secretary said: I find on this paper an illustration of the apple spot which might help us at this time. Here is a section of the apple, showing how the apple scab develops and grows. The apple scab is a fungus; that position has been thoroughly demonstrated by botanical students. It is a fungus that grows on living matter, not on dead matter as the mushroom, and it affects the pear, and also the leaves of the apple as well as the skin of it. It is propagated by little spores, very tiny indeed. About three thousand of them might be placed side by side lengthwise in an inch of space. They float about through the atmosphere very easily, and light upon the leaves and upon the fruit in the spring time. They live through the winter, and are carried around in the atmosphere in the spring time, ready to light on the leaves or upon the young fruit, and develop. As soon as one of these little tiny spores lights upon a leaf or upon fruit, it immediately throws out little threads, which penetrate into the cells of the interior of the apple or the leaf, and this growth continues among the cells. It can be very poorly represented here, of course. These, after a time, thrust out through the little openings or stomata of the apple or leaf a little growth of threads, and each of these threads bears spores which propagate the disease. This spot has been troubling us for about ten or twelve years in Canada, and yearly growing worse, and we have been discussing it at different meetings, watching its development and fearing we would never find any means of getting over the difficulty; we have been trying various experiments, such as hypsulphite of soda, hoping it would prove destructive of it. I tried this solution very care-

fully and very faithfully last year, but as there was no fungus scab anywhere, I could not tell whether the hyposulphite of soda was a success or not. The proportion recommended is at the rate of one pound to ten gallons of water. Another remedy, which, should the spot prove troublesome again, we might try, and therefore I will give it. This is recommended by the Botanical Department at Washington. It is Eau Celeste, and this is the formula: one pound sulphate of copper in three or four gallons of hot water. When dissolved and cooled, add a pint of liquid commercial ammonia. Dilute with twenty-two gallons of water. This should be applied twice in the spring, in May and in June. Two or three applications would be better than one application.

The PRESIDENT.—Can you give any reason why some varieties are attacked and others not?

Mr. GIBB.—The Russian varieties appear to be clear of it, while the native varieties, such as the Snow, appear to suffer the most.

The SECRETARY.—I don't know the reason, except it be that some varieties have a glossier surface. Perhaps it is not so easy for the spores to find entrance through some of those thicker-skinned varieties that have a varnish-like cover; and some of those varieties, I think you will observe, have it more than others.

DELEGATE.—The Snow has a thicker skin than the Duchess.

Mr. GIBB.—I don't think it would be the thickness; I think it would be the smoothness. The spores being borne around would naturally attach to the rougher.

Mr. YOUNG.—Do you think it would make a difference between a dry or wet spring?

The SECRETARY.—Yes; I think that a partial explanation of the question asked why last year it so suddenly disappeared. It is possible it was owing to the dryness of the weather at a certain time of the year, and we may suppose that the fungus was largely destroyed, and the spores therefore were very few.

Mr. GIBB, of Abbotsford, P. Q.—This spot is rather an old affair, but people don't seem to know it. With us we had it in a small way, and our people hardly noticed it. Of late years it has been increasing rapidly. We find the spot appears on the apple when it is about the size of a pea. We think it depends then on the kind of weather we have from that time on. If from that time on we had a good deal of moisture in the air, that we think is why it increases; but if we had dry weather we think we have very little. This year rather corroborates the point that our Secretary has just stated.

PRUNING AND TRELLISING THE GRAPE.

On resuming after lunch, the next question taken up was, What is the best way to Prune and Trellis the Grape?

The PRESIDENT called on Mr. M. Pettit to describe his method.

Mr. M. PETTIT (Winona).—It is a very difficult thing to describe how to prune the vine; there are so many things to be considered—the strength of the vine, the age, and many things in that way.

The PRESIDENT.—Begin with the first year after blooming.

Mr. M. PETTIT.—The first year after planting I cut them back two buds; that is after they have had the summer's growth. When I plant the vine I cut back to a bud or two, then after the summer's growth cut it back again two buds, letting only one cane grow the third summer. That cane the following spring I would cut back according to the strength. After making a good growth I would leave it say from two to three feet long. After it starts rub off several of the lower shoots. Leave four or five shoots to form the vine, and of those shoots I would select two that are in good shape the next season's pruning to make permanent arms. Although I prune principally on the fan system, we generally have something in the way of arms to support the vine. With regard to trellising I use three wires on posts or stakes; the first one about two feet high, and the upper one six feet.

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The SECRETARY.—It seems to me that far the neatest system is that what is known as the Fuller system, described several times in our journals. We have been practising the fan system in Grimsby, that is, simply spreading out in the shape of a fan, the different branches you wish to retain for fruit, over the different posts. I have posts twenty-five feet apart, and three wires; but I don't like the fan system nearly as well, as the Renewel system; according to the latter, we train first two main laterals, which are permanent, to reach four or five feet in each direction, and from those to train fresh upright branches every alternate year for fruit, training these up the wires to the top; and I think nothing makes a vineyard look so tidy. There are some vineyards in the vicinity of Hamilton that have been pruned in that way, and I don't think anything is so tidy, and I don't think anything is so satisfactory. It may be a little more trouble than the ordinary way, but I think it is so satisfactory that we ought to adopt the best method.

J. A. MORTON (Wingham).—You say fresh alternate branches; what do you mean by that?

The SECRETARY.—The one that is bearing you leave two years. The one that you grow up this year you let it remain two years with spurs for fruit bearing, and then cut it out entirely after that. These are alternate. There will be one branch a year old, and one two years old, all along the whole vineyard.

Mr. WILLIAMS (Bloomfield).—What height from the ground would the main leaders be?

The SECRETARY.—I think one foot is plenty high enough. In that case it would be necessary to have the wire about a foot from the ground. If you wish to lay the vines down you have to loosen all the strings, and the main laterals ought to be very close to the ground. The main, after it gets old enough, would require very little support to keep it in its place.

Mr. CASTON (Craighurst).—I followed the Fuller system laid down in the *Horticulturist*, and I found it very satisfactory so far. The first year I rub off all the shoots except the stronger one, and I train that to a stake, let it grow four feet, and then stop it; then in November I cut it back two buds and cover it in the winter time. We have to do that in our section of the country in order to be safe. Then in the spring I train up two shoots, let them grow the same distance, about four or five feet, and the next year I cut them. On the trellis I put the first wire one foot from the ground, and on this I extend the two main laterals. Then I train up branches to run up to the top of the trellis. Near the bottom of these branches is where the fruit forms. I pinch out all the side shoots. It is principally Concord I grow. My idea in asking this question was to see if there was any better way. After you get the branches trained to the bottom wire there are two methods; one is to cut back the two buds every year, and let the strongest of those two buds grow the following year, and the other is to cut out alternate years, leave one branch to bear the next year, and the following year cut that out and let another one be. My idea so far is to cut back two buds, and I lay them down and cover them with manure; and if I can't get enough of that I cover with earth and leave them till growing weather sets in in the spring. In the Grimsby district they don't cut them down at all. By the fan system it would be difficult to lay them down in the winter. The Fuller system would be best where you have to lay the vines down.

Mr. MORTON (Wingham).—The system I adopt is not usually pursued. I believe the Kniffen system is the best, and I believe it would suit Mr. Caston best, because the stock would not grow so much in the same length of time, and therefore would be easier bent. The Kniffen system is to train two branches one at three feet high, and the other at five feet and a half high. You string two wires—one three feet high, and the other one on the top; and that is all that are used. You can train the vine either of two ways. The best way I find is to run two shoots from some branch commencing at the bottom, running one to the top of the trellis, and extending one out, and also a pair on the two and a half feet wire. One reason why I like the Kniffen system is this: In the Fuller system you have to allow the growing branches to go upwards; that is the only way that they can; there is not room enough to allow them to grow down. Now, the natural tendency of the grape vine is to grow upwards. You all see that

if you look at the wild grape vine. It will climb in a few years up to the top of a tree forty or fifty feet high; and your grapes grow right at the top, right at the end of the branches. If you train the vines so that they grow upward you are going to have a great growth of wood. In the other system there is nothing for them to take hold of; they have to drop down; and that checks the growth of wood, and you have less pruning to do for your vine; and a vine has a certain amount of energy, and if it does not expend it in fruit it is going to expend it in wood. You control it, therefore, by the position in which you have forced it to grow, and that energy is devoted to fruit instead of wood. Take two vines, one according to the Fuller system and one according to the Kniffen system, and you would have three times the wood in the Fuller system. Even in the Fuller system you cut back the greater portion of the wood, and the fruit grows on the two or three joints nearest to the old wood. What is the use of having a vine expend its energies that way, when you have to cut off and give yourself trouble? Some people have trained the straight stem up five and a half, and two branches at about two and a half feet high, and another one up five feet. The effect of that will be, there will be more fruit growing on the top branches than on the side branches. That can be obviated by growing the two separate vines from the root, so that the top two branches spring from the vine at a point lower than where the lower two branches leave the vine. I have had great success with that. It cost me less labor. I don't know that I am any lazier than any other man in the world, but probably I exhibit it more. (Laughter.) I think a man is a fool who would not adopt a system that will give him the least work.

The SECRETARY—You train back to the horizontals every year?

Mr. MORTON (Wingham).—Just exactly; it is the spur system of pruning.

Mr. MITCHELL (Innerkip).—I have found that there is a certain balance between foliage, or top, and root; and if we prune anything too heavily we do it at the expense of the root and the vigor of the plant.

Mr. A. M. SMITH (St. Catharines).—My system is generally a combination between the fan system and Kniffen system—sometimes one and sometimes the other, just according to the habit of my vine. If I have a very rambling growing vine I generally take the fan system and give it plenty of room. I generally take that system which will give me the less trouble in pruning. I believe in renewing crop wood as often as possible. There is one difficulty in the Kniffen system, in renewing, to get the arms in the proper shape. You want to bring out perhaps a new shoot, to train it over the top or bottom of the vine. It may accidentally get broken off, and you are one arm short. That is the only objection I have to the Kniffen system. On the fan system you can take any strong leader you like and train it where you like; and the same with the Fuller.

Mr. DEMPSEY.—We prune our vine as Mr. Morton was saying, but have also the we fan system. It is natural for the larger clusters to grow on the extreme ends of the vines when it is grown upright or nearly so. In the open air there is no system equal to the two wire or Kniffen system.

FRUIT GROWING FOR CANNING FACTORIES.

Mr. Wellington Boulter, proprietor of the Bay of Quinté Canning Factories, Picton, read a paper on "Growing Fruits for Canning Factories," as follows:

As all fruits used in hermetically sealed cans require to be fully matured naturally before delivering at the factories, the advice given bears more directly in that direction than to marketing otherwise.

First, we will take the strawberry. In selecting varieties agents will attempt to show excellence in many new high-priced and untried varieties. I do not nor will I attempt to argue even on the many tried varieties suitable for eating fresh or adapted for different markets. For hermetically sealing, preserving its natural color, flavor and

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shape, none will bring so much money at my factories or sell for as good a price when put up as the old fashioned Wilson's Albany. Many others have been tried but none will so far compare with it.

Strawberries will grow on any kind of well-drained soil, provided the season affords the requisite moisture. A sandy or clay loam is the natural home of this plant. Do not confound a moist soil with a wet or springy one; better a dry soil, that would suffer during a drouth, than springy land, as it would generally prove a failure. Land sloping to the south will produce earlier berries, but would not be of any advantage in growing for factory purposes; for early marketing it would have some advantages. The ground must be thoroughly tilled the season previous by a hoed crop, such as potatoes or beans, or early crops, so as to get it off early in the season; then plow as many times as possible before frost sets in, care having been taken to put a heavy coating of manure on before the hoed crop is put in; it is hardly possible to get too much manure on the land, at least thirty wagon loads to the acre would not be too much.

Get good plants from the first growth of the previous year's setting, and particularly from a reliable grower who has kept his patch clean—*be particular concerning this*. The plant must be put firmly in the ground, as deep as possible without covering the crown. The small roots shooting out from the main roots of the plant must not be disturbed. Once a plant is firmly set it must not be loosened; if it is, possibly it might recover, but the chances are against it. Cultivation must be attended to soon after the plant is set. Hoe very shallow near it; many hoe too deeply near the plant, cutting off the small roots that should remain. The ground must be cultivated so that no weeds will show themselves. As soon as the ground is frozen hard enough to bear the weight of the wagon, cover your plants with straw about two inches deep—the object is to keep the ground from freezing and thawing with every change of temperature. No particular time for removing the straw in the spring can be given definitely. It should remain on the berries until there is growth in the ground, but the plants should not be allowed to grow under the straw. If your patch has been properly cultivated the previous year as described, keep yourself and everything else off it until the berries are ready for picking, and they will likely be clean and free from sand; strawberries that have to be washed before hulling are nearly worthless for canning purposes.

The same soil that will grow good strawberries will grow raspberries. The land should not be so heavily manured as for strawberries, if it is it will produce a rapid and long-continued growth of canes, which will likely be injured by the frost during the winter.

In reds, a dark colored, firm berry is required. So far with me, as an all round variety, the Cuthbert fills the bill. Many of the new varieties may be equally as good after being thoroughly tested.

In blacks, the Ohio for early and Mammoth Cluster for late have given good satisfaction. Although the Gregg is some later than the Cluster, and Souhegan and Tyler are the earliest so far tried in this locality. *Not many black raspberries are required, there is very little demand for them, the reds being principally enquired for.*

In reds, select ordinary suckers of one year's growth; in blacks, the tips. In reds, set in rows seven feet wide and about eighteen inches in the row, unless party fancies hill culture; from experience I prefer hedge rows. In setting out I run a deep furrow, pressing the dirt firmly about the plants, finish by plowing two furrows on each side of the plants; many lose their plants when the dry weather comes on by not having covered them deep enough. After cultivation is about same as for corn—keep the cultivator moving. Tomatoes can be profitably grown between the rows the first season. Last year Mr. Wallace Woodrow, near here, from two thousand tomato plants, which would fill about three-quarters of an acre, four feet apart, picked four hundred and twenty-five bushels of ripe tomatoes, grown in this manner, besides a large number of green ones, which make splendid feed for cows, increasing the flow of milk. Should a vigorous growth of cane take place the first season, clipping off the ends in August and September will be beneficial. In the autumn plow through the rows, throwing the furrows towards the plants. In the spring cultivate the land thoroughly as soon as it is fit, hoeing them frequently; keep them clean; do not allow them to become matted. Never throw

manure under the rows, keep it in the center so that any weed seed it may contain can be destroyed by the cultivator. Unlike the strawberry the more you hoe and dig around the raspberry the faster it fills up in the rows. As soon as berries begin to form cease cultivating. If the season is likely to prove dry, using clean straw is advisable for mulching your ground. Cut out the canes that bore as soon as the berries are picked. Do not let the rows get too wide as they would generally grow so rank as to exclude the sun and air, which will detract much from the flavour. In blacks, as soon as the new growth gets about three feet high, nip off the ends. Shoots will spring out, then nip them off again, and you will soon get a large and vigorous bush. The old cane must be cut off at the ground every year, either after picking or early in the spring. The secret of success in growing raspberries is cultivation. They cannot grow if choked up by weeds or quack grass.

If you are near a factory it will pay you well to put out red raspberries. Much of the cultivation can be done with the horse, although forking up in the spring is a great advantage. So far we cannot get enough of them. If you wish you can fit your ground up early in the autumn, and set your plants in September or October, or before freezing; many have succeeded well then.

In other fruits, such as red and black currants and gooseberries, so far the supply has been so limited we have packed very few. They are principally used for jams and jellies. Grapes are packed largely in California, so far there is very little demand here for them.

In pears we can only sell the Flemish Beauty, Clapp's Favorite, or varieties similar in taste. Bartlett's are also in demand. So far we have had to import largely the latter from the U. S.

Apples are used now for canning purposes, the demand has grown largely in the past few years; the well-known early and late fall varieties being used. The best flavored varieties are the best, as whatever flavor it contains when peeled is retained when hermetically sealed. Do not pick up and bring to a canning factory wind-fall or bruised apples; they are useless; no man can use them successfully.

In plums, none excel the Blue Damson, the large varieties generally cook to pieces, they will remain natural. Green Gages and Egg plums are also in demand. So far the demand in Canada is limited for plums, but steadily growing.

Peaches in fruits, like tomatoes in vegetables, are the staple, but Canada so far has not produced enough peaches, not being a peach-producing country. To sum up, bring only the best that grows.

Make up your mind that you are in partnership with the packer; what is his interest is yours. By the growing of vegetables and fruit combined many comforts can be added to your homes, and you will be much better off financially than in the past, when attempting to depend entirely on grain growing.

Mr. MITCHELL.—Is it best to cut the straw with a cutting machine?

Mr. BOULTER.—No; put it on long.

Mr. MITCHELL.—They cut it up with us and then leave it on.

The SECRETARY.—What have red raspberries been worth here to the growers for canning?

Mr. BOULTER.—The average price has been six cents; it is according to the quantity of course. At present prices of selling no man can successfully pay quite as much as that.

The SECRETARY.—What varieties do you like best?

Mr. BOULTER.—In reds, the Cuthberts.

A DELEGATE.—How did the Shaffer do?

Mr. BOULTER.—Turned out to be an excellent berry and keeps its color well. The trouble with most of these berries is they won't cook in the can. Understand that hermetically sealed goods are put in the can in a natural state, just as they grow, and the cooking is done in the can, so that you must have a berry that will not cook to pieces and will keep the flavor. Cuthberts stand very well. In Winnipeg last year one wholesale man said they were so good that you could taste the dew on them. (Laughter.)

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Mr. CASTON.—The Wilson is the best strawberry.

Mr. BOULTER.—Yes, I would not put up any other variety. Others are very nice, but you have got to have a dark red berry.

Mr. BOULTER.—You can't get as much from an acre of ground from raspberries as you can from strawberries; but the farmers generally succeed best with raspberries.

DELEGATE.—What would you consider a good average crop of red raspberries?

Mr. BOULTER.—From two to three thousand quarts per acre. Had I known that little point about throwing manure under the rows two years ago I could have saved many dollars. It does just as much good, however, to keep the cultivator going between the rows.

A. A. WRIGHT (Renfrew).—Since I have commenced selling Mr. Boulter's fruit I have not had one bad can. That is a very important item to you people around here who grow the fruit, because if Mr. Boulter can sell cans that will sell again, your trade of course is going to grow. You don't know how a merchant feels when a man comes back and tells you that he bought a can of your fruit and it made all the people who ate it sick. If Mr. Boulter continues putting up good fruit it will be a grand thing for us merchants, because we can sell two or three times as much. With reference to planting out strawberries, I understood Mr. Woodrow to say he transplanted them the second time.

Mr. WOODROW.—When I set my plants this spring I set them in rows five feet apart and let them run and made yearling plants for setting next spring.

Mr. BOULTER.—I took a trip out to Winnipeg and Victoria last year. I sent the first can of goods that ever went over the Rocky Mountains to the Pacific Coast. They turned out all right. I was within two days' journey of San Francisco. They said the goods shipped them were better than any goods that ever came from San Francisco or Victoria; then they gave me an order for five cars of goods, which I shipped out there last year. The only complaint was that the labels were not got up as tastily as the American ones.

Mr. WRIGHT.—When we open the cases we find the labels are all worn and musty.

Mr. BOULTER.—This party in Victoria said the Americans could grow better grapes, but the other goods—apples, pears, plums—here are superior. I put up five thousand bushels of Damson plums and sold them for \$14,000 in the city of Rochester—sold them to the Americans. We grow as fine plums as ever grew anywhere. The most successful growers are those who have Blue Damsons. The plums we grow are far better than they grow in the Maritime Provinces.

BLACK WALNUT TREES FOR LUMBER.

The PRESIDENT.—A gentleman living near Montreal would like to know if black walnut trees are sufficiently hardy to grow, for the purposes of lumber, in this locality.

Mr. GROVER (Norwood).—After I first began to plant black walnut I made the same enquiry as this gentleman. One of my neighbours said it would not grow here at all. I accidentally heard of Mr. Joly, of Quebec, and wrote to him. He sent me back a little pamphlet he had published a year or two ago saying that he had planted twenty-five bushels of black walnuts and they were then bearing their first crop at or near Quebec. I thought there would be no trouble, therefore, in central Ontario. I planted a large quantity and imported a large quantity of seedlings, and they are doing very well indeed. I don't see any trouble in raising them here as well as hickory or butternut; they seem to do as well, or perhaps a little better.

The PRESIDENT.—The next question is, will it pay a farmer to plant good land to walnut trees?

Mr. GROVER.—That involves a further question. The first factor is, What is good land worth? If you have had the experience I have had, there is very little profit in farming. Prof. Brown has figured out that every farmer of 200 acres ought to clear \$2,000 an acre. I cannot find that any other farmer thinks so. There are very few farms that

are worked to the fullest extent. There are a few acres that we never can reach, perhaps across the railway track, or across the river, or across the hill, which, although just as good land as right near the homestead, are not conveniently worked. My experience is that that land cannot be profitably worked by the owner of the farm; it is not so convenient to manure it and harvest it, or to work in any way whatever. It seems to me that is the very land we can afford to plant in walnut trees. I have laid out the best land I can find to see what walnut will do on good land. I have also planted on poor land. My experience is that it is just as satisfactory on good land as any other crop you want to sow. Land not occupied by the owner at all, in the hands of a female or of a corporation, where you have to pay for superintendence and management, counting the time lost, putting on improvements and repairs, etc., will bring very little income. I have looked up the amount of rent that land will bring in Ontario. The Government report in Ontario represents it \$3.60 an acre in Brant or Oxford; \$3.60 is what the tenant pays. That includes \$3,000, or \$4,000, or \$5,000, or \$6,000 worth of buildings—say \$2,000—and includes a lot of fencing which is rapidly deteriorating. Now, count the odd years when a man is to get no rent and pay for the repairs; you find you will lose from one-seventh to one-third of the whole rent and bring it down to a little over \$2 an acre; and I am certain that, counting Prof. Brown's estimate of walnut trees, you will see that, after four or five years it requires no labor, or superintendence, or expense, at the end of four or five years it will pay a very good profit. Prof. Brown also found that small walnut trees, three or four inches, can be sold for veneers. In Essex, and Lambton, and Kent they are digging up old walnut stumps and carrying them off to the States to manufacture. All over Ohio they are hunting around for any old remains left on the farm. Black walnut is to-day the most valuable timber, and the most rapidly growing into value, of any timber a man can plant.

Mr. BOULTER.—Give us your information where the walnuts could be purchased.

Mr. GROVER.—Any nursery in the States can furnish any of them. Mr. Smith, in St. Catharines, can also furnish them. I notice an advertisement here in the *Horticulturist* of seedlings. It is just as easy to handle as the potato; all you have got to do is to stick it in the ground, and you can't help it growing.

Mr. BOULTER.—You plant the nut itself and grow your own?

Mr. GROVER.—Yes; I put them out last fall myself. Plant them in fall wheat stubble, or plant them in any ordinary soil. They are very thrifty; they will grow from the nut. I have arranged them four feet apart every way. I planted them more for the purpose of cultivation, eight feet apart in rows; then you could cultivate those rows with currants or any thing you like. It takes 4,700 trees to an acre at four feet apart. 2,000 walnut trees on an acre of land would be a pretty handsome piece of timber.

TRANSPLANTING SPRUCE TREES.

The PRESIDENT.—A delegate would like to know the best method and best time of year to transplant spruce trees. Will they succeed on high, dry ground, or must they be grown on moist ground?

Mr. SMITH.—He has reference to native spruce. I have never had much experience in transplanting spruce from the forest, but our best time for Norway spruce we consider is in the fore-part of May, about the time the buds are starting out. The Norway spruce will grow on dry ground.

Mr. BRISTOL.—I bought eighty spruce trees for the use of the cemetery. I put out about eighty last year, and out of eighty some eight or nine are alive. I put out about a hundred this spring and about eight out of ten are now dead. The most of the land is high and dry. They live much better down in the valley.

A Delegate.—What time did you plant them?

Mr. BRISTOL.—About the last of April. Last year we planted them about the middle of June.

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Mr. SMITH.—The great secret of transplanting spruce or any kind of evergreens is in keeping the roots moist. If they are at all exposed to the influence of the sun or dry winds between the digging up and the planting out, you might just as well throw them on the brush heap. There is a resinous substance which, if it once becomes dry, it closes up the pores of the roots, and they are gone.

Mr. BRISTOL.—Do you think that if we get them from the nursery that would be any better?

Mr. SMITH.—I think so, if they are properly packed.

Mr. WRIGHT.—Send your man out to the forest on a rainy day, and set them out at once and they will grow.

Mr. CASTON.—To my notion there is nothing prettier than our own native spruce, and I find nothing easier to grow.

The SECRETARY.—The white spruce.

Mr. CASTON.—Yes. It grows to be a very beautifully shaped tree. A good time to plant it is the first week in June, on a rainy day; and if you can't get a cloudy or rainy day in the first week of June, you had better postpone your planting till next year. Take as much soil as possible, and they are almost sure to grow. I have them living this year that were transplanted the first week in June, and I only watered them a few times after planting.

Mr. WRIGHT.—As fine a row of spruce trees as I ever saw was planted on Dominion Day, the first of July; everyone lived.

HYBRIDIZATION.

Mr. P. C. DEMPSEY said: This subject I feel very delicate in undertaking, when I look about me and see so many persons that are well up in botany, in fact, botany their hobby. However, allow me to acknowledge certain authors upon this subject. Some years ago we posted ourselves in VanMons' theory in producing new fruits. VanMons' was in the habit of growing from seed first, and of the first fruits that these seedlings produced he would plant the seeds, and by passing them through two or three generations in this way he would generally find that he had arrived very nearly at a state of perfection. By this means he produced some very fine fruits. In VanMons' day, however, such a thing as crossing was unknown. It is, comparatively speaking, a new theory in the production of new fruits. Again allow me to acknowledge some individuals. I have learned much in private conversation with men like our own Mr. Saunders upon this subject; from Mr. Ellwanger, who was so successful in producing new roses from crossing, and from many others that have been successful. Now what we usually understand by the word hybrids is only cross-bred. The producing a hybrid would be the result of crossing two different species, but we often miscall it hybridizing where we are simply crossing two varieties of the same species. Mr. Hilborn was telling me to-day that they had succeeded in Ottawa this year on the experimental grounds in crossing the strawberry and the raspberry. That, I presume, might be called hybridization, but in crossing two varieties of the same species, like the pear or the apple, it is really not producing a hybrid. The object in crossing them is simply to get a variety for instance possessing the constitution of an inferior fruit and the quality of a superior fruit. That is the main object we have in cross-breeding. Now in order to do this, let me describe the principle of operating upon the blossom. Let my hand represent a flower. Let my fingers represent the stamens, and my thumb the pistil with the stigma at the terminus and the embryo fruit at the base. In order to hybridize or cross that flower with another variety we simply have to open a blossom artificially just before it is ready to burst, by hand, and pick off with a small pair of tweezers all these stamens, and we have the naked pistil exposed. Then we gather when ripe the pollen that is contained in the anther of the stamen when perfectly ripe, ready to burst, or rather have burst; we gather it on a fine camel's hair brush and apply it to the stigma of the flower

from which we have removed the stamens. We don't always use a camel's hair brush. I have done it with a pencil, or my finger, or anything that is most convenient at the time. When we remove these stamens it is necessary that we should protect this flower, either by a bag made of paper or one made of thin cloth; but the cloths should be very fine and very close in order to insure against the air carrying these small grains of pollen—they are very small, indeed; we scarcely can see some of them with the naked eye, and they are in danger of passing through a coarse gauze, consequently it is necessary to use a paper or a very fine gauze. Then, again, we run another risk when we open this for the purpose of applying the pollen. The plant should be examined twice at all events after removing the stamens, and when we open this we are in danger of the flying pollen in the atmosphere dropping on the stigma of the plant, and so we fail in getting a cross between the varieties we wish to cross, so that we often are looking forward to a success when we fail entirely. After we have a blossom crossed we simply watch the fruit to see that nobody gets it and runs away with it. We take good care that we have that fruit matured. We plant the trees growing from its seed and watch them very carefully until we get them into fruiting.

The PRESIDENT.—When you bring your tree into fruit then you ascertain whether you have succeeded in the crossing or not?

Mr. DEMPSEY.—You can always tell from the growth of a tree whether you have succeeded in having a cross or not. For example: I have a pear that has fruited for some few years. There are some here that have had the pleasure of eating it. That tree was the result of a cross between the Bartlett blossom fertilized with the pollen of the Duchess de Angoulême. You can see the cross in the growth of the tree. You can see the two appearances distinctly in the tree; the form of the buds resembles the Duchess, though it is produced from the seed of a Bartlett. The growth of the wood looks like the Duchess, and you will see this even in the fruit and even in the foliage, both the Bartlett and the Duchess; you can see at once that there is a cross effected there. Again, in the flavor you can taste the flavor of the two varieties. The season of maturing is nearer that of the Duchess than that of the Bartlett. It is a late pear. We have crossed several other things, and perhaps I will be digressing if I told of them, such as vegetables, flowers, etc.

The PRESIDENT.—In planting the seed of that first fruit, the result of the cross, do you find that each seed, if it is a success, produces the same or a different variety?

Mr. DEMPSEY.—Each seed produces a different variety, and then you select from that. You would be surprised to see that perhaps from the same fruit one variety would be large and another small, and one variety liable to rot at any time from the core and the other improving the longer you keep it—commencing to ripen, in other words, from the outside. This is a very important point in pears, to get such varieties as do not commence to rot from the core, because we are often disappointed in pears—they are rotten and yet look perfectly sound.

Mr. CASTON.—Do you find it a difficult matter to hybridize a grape?

Mr. DEMPSEY.—No, it is no difficulty at all. It is all done as I showed you, and what will apply to a pear will apply to the grape. There are some varieties of strawberries, such as the Manchester or the Crescent Seedling, on which there are no stems to remove and which do not produce any pollen; and all you have to do is gather the pollen from the variety you wish to cross them with, protect the pistil and dust the flowers, and you have a cross. In vegetables, for instance in the cucumber family, the pollen is on the stem, that is, stands up near the foliage, while the pistil blossom is attached to the embryo fruit running almost horizontally on the vines. It is a little difficult to cross the apple with the pear. We did produce, however, a couple of trees that I supposed to be a cross. A neighbor of mine was quite conceited in his knowledge of varieties of fruit, and told me he had never been shown a specimen of fruit, except three, in all his life that he couldn't tell the name of, so I took one of them out of my pocket and asked him what variety that was. "Oh," he says, "You can't fool me, that is a little Tolman Sweet." And I told him to be sure and look very carefully before he decided, that he might be mistaken, and so on; and his son was by and said, "No, father, you are mistaken this time, that ain't an apple at all,

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it is a pear." "Well, they two had to argue the thing out, one arguing that it was a pear, and the other arguing that it was an apple. However, there is one thing I will say, that it was just about as worthless as anything that ever grew in the world (laughter), but it shows that a cross may be effected. That was a genuine hybrid.

Mr. CASTON.—In crossing the grape do you just hybridize one blossom or go over the whole bunch?

Mr. DEMPSEY.—The blossom that we don't operate on we simply cut off, and that is necessary. You could not protect one blossom simply, but you must protect the whole bunch—have a bag and draw it over. There is one theory that Professor Saunders has been advocating that we should not lose sight of, that is, the constitution of the progeny invariably comes from the female. Now this, I think, can be adopted, from the fact that he has crossed a great many different species of fruits and flowers, and this, he says, is the result of his experience. If you want a strong tree don't fail to select a variety for the female parent with a strong constitution, and for the quality of fruit you can almost invariably depend upon the male. This theory, of course, fails to a certain extent under some circumstances but generally you can calculate that it will be correct. Now to prove to you the influence the male has over the female parent in the producing of cross breeds I will mention that we crossed some corns last year. Where we had a cross between the Yellow Flint Corn as the male, and the Stowell's Evergreen, a sweet corn, we found invariably it produced a Yellow Dent Corn. Then we reversed that, and where the cross was reversed the Yellow Flint Corn used as the female, and Stowell's Evergreen used as the male it produced a sweet corn. We crossed a few flowers some years ago. You that have a great amount of patience I advise you to try. I crossed some Japan Lilies with the Amarylises, and I was able to show the result some thirteen or fourteen years after I made the cross. (Applause.)

FORESTRY AND TREE PLANTING.

Rev. George Bell, L.L.D., of Queen's University, Kingston, read the following paper:

In the thoughts which I desire to present to the Association, I do not expect to offer anything new, but considering the immense importance of the subject, I shall be satisfied if I can awake attention by reiterating truths known to you all, but the force of which is overborne by the inertia of ordinary human nature, and other causes.

In its state of nature, our Province was largely covered with thick forests, and the severe labor imposed on the first settlers of hewing out homes among them and clearing the land for agriculture, and the building of towns and villages, very naturally led to the belief that all trees were man's natural enemies, to be got rid of as speedily and completely as possible. The same process of cutting and burning went on in this country, as formerly in older ones, until we are beginning to find our rivers destructive torrents in spring, and so dried up in summer as to be in many cases worthless as water-powers or waterways; our lands dried up and scorched with sweeping winds in summer, and our tender fruits damaged by the blasts of winter. At the same time our supply of valuable timber for building and other purposes is in many localities becoming scarce and expensive.

In many of the countries of Europe large tracts of forest are owned or managed by the Government, and, although involving heavy expense for management, furnish some return of revenue from their annual produce. Our country is younger, and the same necessity of careful attention to forestry is not so apparent, yet everyone who gives the matter much thought must be aware that it is none too soon that something very decisive should be done, and very widely done, if as a people we are not to suffer serious loss from the bareness of the country turning it into a partial desert.

Let me refer for a moment to the ways in which the country is being denuded of trees:

1. *Cutting down in clearing.*—It has often been said that farmers should not make a clean sweep, but should leave some young trees to grow up. But some make that suggestion who do not know the difficulty in the way of carrying it out. It is extremely

difficult to save small trees growing in dense forest during the process of clearing, and even if saved then they would die afterwards, or only prolong a sickly life in their new environment. The true remedy in this case is replanting. In open copse wood the case is different, and where small trees are growing where they can be easily preserved and are likely to make a healthy growth, some should be saved.

2. *Wasteful lumbering.*—The incidental destruction of living timber, directly in connection with the getting out of square timber and saw logs, and indirectly by increased danger of fires, is enormous.

3. *Fire.*—The annual loss from this cause is a fearful source of injury.

4. *The construction and maintenance of railways.*—Few have any idea of the extent of the consumption of timber by railways, or of the incidental destruction caused by providing this timber. I submit some statistics respecting American railways from the United States Department of Agriculture, Forestry Division, on this subject (for the year 1886): *Ties*, 187,500 miles of track at 2,640 ties per mile, 495,000,000 ties, containing 1,485,000,000 cubic feet of timber. *Bridge and trestle timber, etc.*, 2,000 feet per mile, 375,000,000 feet. For both, 1,860,000,000 feet, or allowing $1\frac{3}{4}$ foot of round timber for each cubic foot in use, 3,100,000,000 feet of round timber. *Telegraph poles*, 5,000,000 at 10 cubic feet each, 50,000,000 feet. For 5,000 miles annually of new construction, add 13,200,000 ties, 10,000,000 feet of bridge timber and 150,000 telegraph poles. As ties last about seven years and the other timber about ten, the maintenance of the work involves an annual requirement of 254,643,000 feet. It is estimated that for the railways in existence in the United States, about 8,500,000 acres of timber land have been cut off, and for annual maintenance and new construction 297,000 acres of heavily timbered land will be required. It is impossible to give an estimate of the consumption of timber for fencing, fuel and other railway uses, but the amount must be very large. As only a few kinds of timber are suitable for ties and some other railway uses, it follows that the supply is being rapidly used up, and that the certainty of a famine can even be only mitigated by an immediate attention to economy in use and extensive renewal of growth.

I have not at hand the information necessary to show in what ratio these figures will apply to Canadian railways, but as the consumption for equal lengths of track will not be very different, any one who has the figures of the comparative mileage (of track, not length of road) in the two countries, can make the calculation for himself.

The question of lumber supply for buildings and other domestic purposes is a very important one, and in this the danger of famine and necessity of foresight are still greater than in the case of railways. Steel bridges and ties will in time supercede wooden ones in railway construction, but it is difficult to see what can take the place of sawed lumber for house building. Add to this the question of the supply of lumber for the manufacture of furniture, and the general question becomes a very serious one. Black walnut, our best cabinet wood, is already at famine price, and will soon cease to be obtainable at any price. Even basswood is becoming scarce. Cherry, white ash, white-wood, chestnut and butternut are not very abundant, and they can never fill the place of the walnut. In the absence of this, probably our best furniture woods are black birch and birdseye-maple, but these also are not plentiful. Swamp elm will for a time fill a useful place in cheap furniture, but the outlook generally is discouraging. The serious nature of the case is in this, that many years must elapse before the evil can be undone, even if the most vigorous measures were taken for its removal. The inertia of human nature stands in the way of individuals making great efforts to secure a benefit of whatever value if its enjoyment is to be long deferred, while with corporate bodies such as railway companies, the directors have to show the best financial results annually, and their constituents would be very impatient of expenditures the returns from which can only be realized in the next generation. Yet the importance of the matter is such that railways should certainly enter without delay on the work of planting groves and blocks of timber. It should occupy the attention of Dominion, Provincial and municipal authorities, and efforts should be made to wake up every owner of a farm or large tract of land to the pressing necessity of tree planting. It has been suggested that railways should have rows of trees planted along their lines, but the value of this may be doubt-

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ful so far as their being snow guards is concerned, the right of way being too narrow; but in exposed positions, if the land required can be procured, thick groves placed farther from the track would afford protection from snow-drifts.

Every farm should have a timber reserve for fuel and other purposes. Trees should be planted for shade and shelter near the farm buildings, and wind-breaks should be provided. In many cases the timber reserve may be made to serve as wind-break also. I now venture to offer some recommendations to which I ask the earnest attention of the Association. I would not advise the scattering of trees over a farm to give it a park-like appearance. Let those who have land and means to spare to do so produce park scenery, but for farms generally I suggest something more practical. I recommend that every farm should have a wide, thick belt of trees, either reserved from natural growth or planted, on the side of the lot most exposed to the wind, and that if fenced fields are to be continued in use, groups of trees to afford shade for cattle should be planted at the principal intersections of these.

2. I ask for the abolition of the present very expensive and unsightly system of fencing. It would be much better and cheaper for all to fence in their own cattle than to fence out those of everyone else. Wire fences banished, trees should be planted along the lines of public roads, which would at once bound the lots, beautify the country and make the roads more pleasant for travelling.

3. I would ask for the beautifying of the homestead by judicious planting of both fruit and forest trees. Of course I do not mean to recommend (what I have sometimes seen done) an entire removal of every vestige of natural growth, and then planting two straight rows of such abominations as Lombardy or Balsam poplars from the gates by the roadside to the front door of the house.

4. The whole subject of forestry should be taken up and systematically studied by the Dominion and Provincial Governments. A careful survey of the whole country should be instituted, and those portions mapped in which the laws of nature require the existence of forest. Then, as far as practicable, large tracts of the original forest should be reserved and settlement excluded from them. The principal purpose in view should be to make these reserves at the head waters of river basins so as to affect the flow of the water along with the general production and saving of timber. Many other desirable results would follow, which need not be discussed here. The Association might properly urge this matter on the attention of the Governments of the Dominion and of Ontario. The Dominion experimental farms should go into extensive testing of many varieties both of forest and fruit trees, to ascertain what sorts are best adapted to several localities as regards climate, soil, etc., so that the public may be guided to a correct selection.

5. Planting should be begun with well-known varieties of value. In the Lake Erie region, the walnut, chestnut and tulip tree, with others, should be tried. In other localities groves of larch, spruce, maple, birch, hickory, ash, elm, cherry, beech, oak, pine, hemlock and cedar, may be tried according to circumstances. Especially valuable, it seems to me, would be larch, spruce, pine, maple, hickory and cedar for this purpose. A belt four chains wide, quarter of a mile long, would cover eight acres, a half mile, sixteen acres. On every farm there should be a reserve of sufficient extent, probably not less than from twelve to twenty-four acres. The position of this will be determined by local circumstances. If entirely new planting, it will be influenced by hill and valley, wet or dry land, stony or rough land, etc., but wherever practicable it should be so placed as to afford protection against stormy winds. It should be planted very thickly to induce upright growth, and after some years a periodic thinning out would be a source of profit, while the main harvest was being waited for. The cost of such plantations would no doubt be large in the cost of the trees, the preparation of the land, the planting and several years' cultivation, but it would be money well spent, and it would add to the value of farms much more than its cost. The work would of course usually be spread over several years. I cannot take up your time by dwelling on the resulting benefits, but if such planting became general, farms would be enhanced in value, protection would be afforded to animals, to gardens and orchards, more moisture would be retained in the soil and the air, and gradually timber would be provided for fuel, building and railway uses, and the whole country would be improved and beautified.

Mr. GROVER.—I fully concur with everything Dr. Bell says there. He takes up the matter exactly as anybody should. The recommendation to look after the wood we have got on our farms, and to look out a proper place to put more wood, not only to preserve our own wood but the wood in the hands of the Crown, is not spoken of a bit too soon. I think that remark would apply to the farmers of Prince Edward. I heard some farmers were cutting down the hickory trees on their farms. I sent down for hickory nuts, and I found the man I got the nuts from is the man that was cutting down the hickory trees.

Mr. BOULTER.—I was talking with my brother about preserving wood on his farm. "Why," says he, "one growth of grain would pay for twenty years growth of the wood there." If all were of that opinion we would soon have very little wood. I have taken a great deal of pains in planting out trees on my farm, and the farmers around here have done so, making it a very desirable road to travel. We had a very serious wind here two years ago, and a great many of our best maples were blown down—so much so that the price of wood dropped down very much. Many fine maple groves were completely blown down. I have noticed that where trees have been cut out and the cattle allowed to run the trees die off very rapidly, the maple particularly, and we should plant out more trees than we do. Unless people take action, the Government should take action as recommended in the paper. Any who have travelled to the Western States particularly would see the beneficial effects of planting out trees; and even in our North-west last year in some places they were planting out, but they have not had the chance or time there to do it on an extensive scale.

Mr. CASTON.—The Government have already done this much in the matter that you are allowed so much of your statute labour for every tree planted. The tree requires to be three years old, and you are allowed twenty-five cents for every tree. In our section of the country we have planted rows of maples, and we intend to string wires on these trees for fences. I think the Government should take further action. It is a question whether the lumbermen have been a great blessing or a great curse to this country. They circulated a great deal of money in the early days among the farmers, and made a home market for the farmer's produce, but they have destroyed a great many forests, and coming down your bay here yesterday I noticed that in every place there is a saw-mill, so I presume your forests are disappearing rapidly. There is a great deal in what Mr. Phipps has said about the want of timber having to do with the drouths. There is a great deal of land that is sold for taxes where the lumbermen have gone over it and taken the lumber off it and are not paying the taxes. I think it would be nothing but right that the Government should expropriate that land and let it be planted with some kinds of timber, and let it become Crown lands again, and, when it became valuable, sell it again.

Mr. MORDEN, (Picton).—We have seen the effects here in this county where the farms are laid out to run north and south, one hundred acres a mile long, and an eighth of a mile in width. They have cleared the land by leaving the timber at the north and south extremities, and this allows the west wind to drive through and sweep the country. If they had the timber along the west or east side of the farm so that it would be a wind break, it would be a great benefit to the farmer in ways mentioned here. I can remember myself when all the wheat fields in the county were winter-killed, except a little streak along the footings where the snow remained in the banks. It is a great loss that way, the destruction of timber. I know a farmer who allowed the trees to grow the whole length of his farm, and he grew wheat and he got rich while the neighbors didn't get along. Now one neighbor has stimulated another, so that the whole township has planted trees along the roadside. In another township north of this you would find very little planting. I have observed, in travelling through the country, one large tree in a field, and all the cattle gathered under it from the hot sun on a warm day for shelter, and perhaps the next winter there would be a great deal of snow, and they would go and cut that tree down; and many times I have seen cattle suffering from the heat and from the flies. Such conduct lessens the success of the stock raising, the animal would not give nearly so much milk by being exposed to the sun and flies without any comfort or shelter.

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Mr. BOULTER.—I heard one farmer say he chopped down his trees because the geese were lying under them when they ought to be eating. (Laughter).

Mr. MORTON.—I have seen a beautiful elm planted along the roadside, and farmers would go and cut down the elm because they didn't consider it a valuable tree, and perhaps it was the most beautiful tree on the roadside. Even in the winters you find them destroying trees along the roadside for firewood because they had not access to their fields.

Mr. GIBB.—In the spring of 1879 I planted about a thousand trees to test a timber plantation. My object was to see which were the best trees, the native or European species. I planted them side by side, three and a half feet apart each way, but I planted them in such a way that if I had to thin them afterwards to seven feet each way I would have a certain amount left of each kind. I found our white pine a little better grower than the Scotch, and better than the Austrian pine. I found the Norway maple a little faster grower, though not always perfectly certain of growth, than the hard-leaf maple. The ash-leaf maple failed because I got a Southern form of it, and it was not hardy. The European larch was a better grower than our native tamarac. It is too soon to say which is doing best; a number failed. I think the best field trees I have are the European White Birch and the Silver Poplar of Europe. The Silver Poplar is a rapid grower, and it has suckers, which are a good thing in a forest tree. It has a better quality of wood than the other poplars. But for any other purpose than field it is not much use, because you can't get a straight stick off it. A perfectly straight stem like the mast of a vessel we have not got in this country. Though Prof. Budd, of Ames, Iowa, has imported a good many, he has not imported that, because I have looked at all his poplars and they all wobble. The Yellow Locust is not perfectly hardy. If it was it would be the best for fence posts.

The SECRETARY.—Mr. Gibb has spoken of the Yellow Locust, and just here I think it would be very interesting to know just where it will grow, how far north it may be grown. He said it is tender with him. I have noticed a gentleman, Mr. Hicks, of Rosslyn, Long Island, speak of it in a forestry report as to its value for fence posts. He says he knew of posts three inches through lasting thirty years. That would be a great durability. He states that it would be very valuable as a tree to grow for profit. You can grow some twelve hundred per acre, and at twenty-eight years of age they would produce from two to four posts each and these posts would be worth fifty cents each; that would be a total yield of over \$2,000 from an acre.

Mr. CASTON.—Was this in Ontario?

The SECRETARY.—No, it was on Long Island. Where we can successfully grow these locusts, they would be a very profitable tree. In Grimsby the Pseudacacia or Yellow Locust is not affected by the borer in the least and it is perfectly hardy. I have some trees of it planted some fifty or sixty years ago, and they are about seventy-five feet high, with trunks over eleven feet in circumference. They grow faster than any other tree I know of.

Mr. GARDNER.—Thirty years ago this spring I set a Balm of Gilead, and it is now over three feet through.

The SECRETARY.—Do you know the value of that wood here?

Mr. GARDNER.—It is worth about \$15 or \$16 a thousand—about the same as bass-wood.

Mr. CASTON.—There is another tree that has not been mentioned here to-day, that is the white ironwood. Carriage makers are now using it in preference to hickory for wheels. Second-growth white ironwood makes better wheels, and you have to pay three or four dollars a set more for them. It is a very slow grower.

The SECRETARY.—The locust tree is used for the same purpose, and is ever so much faster a grower.

Mr. CASTON.—For wheels?

The SECRETARY.—Yes. The yellow locust is used for wheels, not the clammy locust, which is a much smaller tree and often riddled by the borer.

Mr. GIBB.—There is a great difference in the hardness of the locust. Mr. Beaver, of Milwaukee, had some trees that he sent to Dakota. They had proved perfectly hardy there, but whether it was in Central Dakota I don't know. The tree is certainly long-lived.

in many instances, for that which is said to be the first tree that was carried from this country to France is still living in Paris, and it was planted about 1680. I do wish we knew where we could get the seeds from the northern limit of this yellow locust and the Platanus, the Plane tree. I have a Coffee tree I got from Rochester. It sometimes goes back six inches, and in other cases it is quite hardy. There are a number of trees which, if we can only get them from their northern limits, are hardy and will stand our exceptional winter; but if we get one that will stand only our ordinary winter, some day when we get an exceptional winter they will fail.

Mr. GARDNER.—We have any amount of this seed, and it is flying all over.

Mr. GIBB.—I don't want to get it from here; I want it from some higher limits. We are continually getting seed from the southern limits. Another thing: I wish we knew where we could get the nuts, for planting, of the sweet hickory, that is, a selected sweet hickory of the largest size and thin shell.

Mr. GARDNER.—Come here in the fall of the year and we can furnish you any amount of them.

Mr. MITCHELL.—Is the Plane tree you mention sometimes called the sycamore?

Mr. GIBB.—Yes.

Mr. CASTON.—There was a tree sent out three or four years ago, the *Catalpa Speciosa*, by the Association. Have any members got it growing? There is a specimen three years old where I am living—a very remarkable tree, nine or ten inches across, which has very large leaves and looks very well.

A DELEGATE.—I have had one three or four years; it is perfectly hardy.

The PRESIDENT.—The tree is perfectly hardy in the Province of Quebec. Mr. Gibb has several.

Mr. GIBB.—I would not say hardy. The wood is often rotten on the inside, and I have lost a number of them. It shivers during winter. For a climate a little milder than Abbotsford it is all right.

Mr. MORTON.—Last summer we saw a number at the English Church clergyman's place in Collingwood, and they were perfectly hardy there.

WHEN AND HOW TO CULTIVATE THE STRAWBERRY.

Mr. HILBORN.—The method that I generally adopt is to have the ground well prepared to plant as early in the spring as possible in rows about four feet apart, and a foot apart in the row, and to keep the runners cut off up to this time, and to thoroughly cultivate as near the plants as possible without interfering with the roots; and the little space you can't reach with the cultivator go over with the hoe, and weed out with the fingers any weeds growing close to the plants. Constant cultivation, constant stirring well is what they require early in the spring and about the middle of this month or a little later. If you let the runners begin to grow they will form a narrow matted row by fall; and continue the cultivation through the whole season. Then in the fall, as soon as the ground freezes two or three inches deep, cover the places between the plants with wheat straw. It is very important to get the straw between the rows and to place very little over the plants. If there is much over plants and heavy snow falls during the winter, they are almost sure to be smothered. Early the following spring, when growth begins, part any straw from over the plants, draw it towards the centre of the row so as to give them a free chance to come up, and leave it there until the fruit is gathered. After the fruit is gathered, if you want to continue them the second year, you have to remove the straw from the tops of the plants and cultivate up between the rows again; narrow down the rows a little, make them considerably narrower than they were the previous season, and let them grow again in the same way; but I think, as a rule, it is more profitable just to take one crop and plow them under. In that way you grow better fruit on the first season, and you can also grow plants to supply your plantation. If you keep it up two years you run out of plants, as the plants that come out of the second

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season are not so good. It is better always to take plants from newly planted plantations; they are more vigorous and seem to do better. I think that is the reason why the old Wilson has been running out. People use the little weak plants of the second year's growth; they will use those plants to replant again, while if they would take plants that had never borne fruit and dig up the old rows so as to get good, strong plants, there would be no danger of the varieties running out.

Mr. MORTON.—Do you give them no spring cultivation at all?

Mr. HILBORN.—Well, that is a matter of fancy; it depends a good deal upon the circumstances. If the season is likely to be a dry one it is better to remove the mulch and cultivate and then apply the mulch again; but that means a good deal of labor.

INTRODUCTION OF RUSSIAN FRUITS.

The next question was: What has been done to introduce the hardier varieties of fruits from Russia?

Mr. GIBB said: The time will come soon when I can report from my own orchard. We have got to have our reports from different lines of latitude. Prof. Budd, of Ames, Iowa, in latitude 42 or 42½, will not be a guide to me at Abbotsford, in latitude 45½. I can only say I have got now something over a hundred varieties of Russian and German apples in my orchard, and I have got in one instance the same thing from five different sources in Russia. There are many mistakes, but we are trying to reduce the mistakes to the lowest possible number. The first is the early Thaler, or Yellow Transparent. This is an early apple, fit for table on the 25th of July. It is riper and better of course a week or so afterwards. This is the earliest fruit I have. Then there are a lot of others. Longfield is a very awkward tree; it is a weeping tree, in fact, but it is very young bearer and a hardy tree. The fruit is not suitable for shipping, and I don't think the tree is one of the hardiest, but I must say it is quite a success with me at Abbotsford. I had some three bushels of the fruit last year and some the year previous, but the tree is very young. It is an unusual bearer considering it is making a fair growth. I have seen one or two varieties in the west that are doing remarkably well. One was Golden White a fall apple, but a very good producer, and hardy. Another one I like very much, a bright, glossy little apple, with white flesh, is an apple called Raspberry. It comes in a little after Early Joe.

Mr. HILBORN.—Do you know anything about MacMahon's White?

Mr. GIBB.—No, except that it is getting a very good name for hardiness in the Northwestern States. I must say a large number of these Russian trees are remarkably promising; and I think your President will bear me out in saying that the most of them look very healthy.

The PRESIDENT.—Very healthy. I never saw finer.

Mr. CASTON.—Can you give us the name of any of these Russian apples that are long keepers?

Mr. GIBB.—No. I can give you other people's opinions. When you get into the southern part of Russia, where grapes like the Concord would ripen year after year, they fall back on the German late keepers. That is not a question we went to Russia to look up. We kept entirely out of the grape growing regions when we went to Russia. In the opinion of Prof. Budd the longest late keeper is the Pointed Pipka.

The PRESIDENT.—Can you suggest anything that this Association could do to promote such experimenting?

Mr. GIBB.—Yes, I would like to see your north frontier counties test these. Reports from Abbotsford ought to be useful to your northern latitude. Many of them won't be failures; they are going to be fair bearers, hardy trees, and produce a fair quantity of fruit. I don't say they are going to be long keepers, but they will be worth trying. Then of the Russian pears, there are one or two that I think will be useful where you can't grow ordinary varieties and where the Flemish Beauty begins to fail. I am a

little afraid of these pears for growing in climates where you can grow the Concord grape, and ripen it thoroughly, because there they are very apt to rot at the core. They are much more likely to rot at the core in a climate like this than in Russia; you have so much more heat. Some Russian pears are doing very well with me, but they can only be looked upon as a fruit for cooking. One thing I am sorry for, and that is, that the plums of the Volga have not been imported in this country, and are rather difficult to get; because they are growing in little peasant villages that would not understand correspondence. The cherries I have more hopes of, but most of these cherries color some little time before they are thoroughly ripe. They are acrid and astringent a little bit when first they begin to color, but when thoroughly ripe they are sweetish rather than acid or sub-acid, and they are very nice indeed, but they must be protected for two weeks, and if not the birds will have them instead of ourselves.

Mr. WRIGHT.—Which variety is that you are speaking of?

Mr. GIBB.—Several varieties called Vladimir. Some are weeping in form, and some are upright. Some have dark-colored flesh, and some have light-colored flesh. The cherry that is going to be most successful with us is what they call in Central Europe the purple-flesh Morello.

Mr. HILBORN, (Ottawa).—My experience is of a short duration. I am not able to give anything of much value at present. We tried a great many varieties, I think about two hundred varieties of north Russian apples, and perhaps seventy-five of pears, fifty of cherries, and forty or fifty plums, we got the first of them a year ago this spring, and the balance this season, so that our experience at the Experimental Farm is so short that it is of very little value. We hope to be able to give you some results later on. We got some of them through Mr. Budd and Mr. Gibb, and some from Washington, and some from other sources.

UTILIZING WOOD LOTS FOR PROFIT.

The next question was, How can a natural wood lot of Beech, Maple and Elm be best utilized for profit?

The SECRETARY.—I think that Mr. Caston might reply to this question so far as the maple is concerned. He has been utilizing the maple woods to pretty good advantage, as we can see by the fine samples on the table before us of maple sugar and maple syrup.

The PRESIDENT.—We will take the next question in with that, What profit may be derived from an acre of hard maple by sugar making?

Mr. CASTON. I would very much regret to have a spring go by without making some syrup. I consider maple syrup one of the greatest luxuries we have, because it is the purest of saccharine matter, and the sugar we get from maple is the purest sugar under the sun. As to the other kinds of timber, I don't know how you would best utilize the elm and beech; but I regard the maple as one of the most useful trees in Canada; and I think when they took the Maple Leaf as the emblem of Canada they did a very good thing. The maple is useful not only as a shade tree; it is the very best of fuel, outside the use of the wood as timber for vehicles that have to carry heavy loads; it makes good, stiff axles. Most of the carriage-makers in our part of the country have always used it for axles; and we most of us know what beautiful furniture some kinds of maple will make. It is a beautiful shade tree; for growth it is hard to beat it; and among our deciduous trees I don't think we have anything that looks nicer than the maple, and it is not very long in growing to quite a size. With regard to maple syrup, we make it out of our original woods. Any trees that blow down we use for fuel, but we leave the maple standing there, and tap them in the spring. This last spring was a very favorable one and we made a large quantity. I have about five acres of land in maple trees and on this area about five hundred trees far enough apart to grow to nice size. Some of the largest ones we had two buckets from, and we made about two hundred gallons of syrup.

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The SECRETARY.—What profit would there be per acre in making syrup?

Mr. CASTON.—Out of four or five hundred trees you would make, in a favorable season about two hundred dollars worth of syrup. It is not merely the value of it, but the luxury; you get it long before fruit season, and you make it in the slack time when you are not doing much else, so it does not take valuable time.

The SECRETARY.—Counting the labor, would 500 trees yield a profit of \$200.?

Mr. CASTON.—The labor is not much, because it is done without hiring hands. Of course it would cost something for the outfit; that is, tin buckets cost about twelve cents apiece. The faucets cost a cent and a half, etc. The hole in the tree should be made 9-16ths of an inch. The old custom was to make a great gash with an axe; that in a very short time ruined the tree, but now it is found that this little instrument will get as much sap out in the course of a season, and more than we will by the use of the axe. The axe will cause more to run for the first two or three days, but then it will dry up. This mode will cause it to run all the season. We use a bit to bore with. With this there is not a drop wasted. There is no farm but might very well have a few acres in maples. Almost every farm has an odd corner where they might have them. Five acres would hold about 500 trees, and off that quantity of trees when grown up, you can make from 150 to 200 gallons of syrup in a season without a great deal of labor.

A DELEGATE.—What about the boiling.?

Mr. CASTON.—We use an evaporator; there are thirteen apartments in it, and the raw sap runs in at one end, and the syrup runs out at the other, not finished up as it is in this can, but very nearly as good; with a very little finishing up in the kettle it would be like this. I venture to say that there is more sweetening in this maple sugar to the pound than there is in any other sugar you can get, no matter where you get it; and it is more wholesome. More than that, I have to say that this syrup in the spring of the year, acts as an alternative on the system, and if you have a cold there is no way in which you can cure it quicker than going into the bush and drinking lots of this hot syrup. These trees on waste land would be a very profitable investment. You can put them in a place where they would act as a wind-break and as a shelter, and utilize it in a great many ways. The sap as soon as it runs should be manufactured as quickly as possible. The quicker you can manufacture it into syrup or sugar the better, not letting it stand any longer than you can help. This is the way we have it fixed: we have a trough with a strainer in the trough, and it runs from that into the evaporator. There is a continuous flow all the time. It is very clean, because we get it in tin buckets, and scarcely any dirt gets into it.

Mr. WRIGHT.—In the County of Leeds, which is further south than we are, the maple trees are much more productive than they are in our section. There is a man named Smith in Harlem, and I purchase every year from him a thousand pounds of maple sugar. I gave him ten cents a pound for it, and he tells me that he makes more out of his sugar bush than out of any other part of his farm. He makes it when he has very little else to do, and he makes it by the same process as Mr. Caston.

Mr. DEMPSEY.—Did you ever try to make sugar out of the sap of the butternut tree?

Mr. CASTON.—No; I have heard some of the old settlers say they have tried it years ago out of pumpkins, but it was such a slow business that it was far better out of the maple. This is the first time I ever heard of the butternut.

Mr. GIBB.—I have an impression that the sap of the butternut is not much less strong than that of the maple, only the trouble with it is that the bark is bitter, and the old-fashioned way of cutting it with an axe made the syrup bitter; but with these little taps that would be avoided. You could not make a syrup that would crystallize, but you could make a good syrup. If you are planting the maple as a sugar tree along your lakes, where you have not the alternate freezing and thawing that we have inland, you may not have sugar seasons. You might have bad sugar seasons in that case.

Mr. DEMPSEY.—I have a neighbor who taps butternut trees. I have never seen the sap or tasted the sugar, but he told me it ran more than the maple and made a better quality and brighter sugar than the maple tree.

The PRESIDENT.—Have you ever made use of the sap of the native birch?

Mr. CASTON.—Only for vinegar. They are the greatest trees to run I ever saw; they would run themselves to death if you would let them.

Dr. MORDEN.—I have seen sugar made from it.

Mr. CASTON.—I never did; there is a very small quantity of saccharine matter in it. With regard to planting maple for that purpose, a low, damp place is the best. There is another little wrinkle about it; the deeper you tap your tree the better the color of the syrup will be.

Mr. GIBB.—The soft maple also makes sugar. The white birch makes sugar, but you have to boil it a long time because the sap is so very thin. The yellow birch makes sugar, and the sap is stronger and needs less boiling; but our Indians at Caughnawaga make a certain kind of sugar. It is not crystallized, and it is always made into little patties with the hand; I think it is strained through a blanket or a moccasin, and that which is really genuine has always the print of their fingers on it. (Laughter). It has some flour in it, and it is made of yellow birch and hard maple and soft maple and butternut all mixed up together. It is not bad. (Laughter).

At 5.30 o'clock the meeting adjourned till eight o'clock in the evening.

A NOTE ON FRUITS.

The following letter from Mr. P. E. Bucke, of Ottawa, was read by the Secretary:

I had hoped to have been able to visit you at this time, but my chief having been obliged to absent himself on sick leave I have been detained to do duty in his place. I could not allow the meeting to assemble without a few words and a small contribution in fruit.

I send some samples of the Conn gooseberry which I much regret is still lying in a partially dormant state, as it has never been propagated and placed on the market, yet it stands to-day without a rival, for size of fruit, and as an absolute mildew proof plant. Mr. Conn the proprietor has offered the right of sale of the whole stock of four hundred plants, for the sum of one hundred and fifty dollars. I also send some Downings picked on the next row six feet apart to show the difference in size at this season when neither have come to their full growth. The Conn has so often been described in our paper and reports by myself that it is useless saying anything further about it. The Secretary has two or three plants if they are yet bearing, he can speak of it also.

I send some Fay's Prolific currants, Moore's Ruby, London Red and Red Cherry, all red currants, as samples of small fruit grown by myself. They are not ripe, but they are a fair size and show what can be done by the haphazard cultivation they receive from my own hands on very light soil. On heavy well tilled rich soil they could be vastly improved, and yet the small fruits are despised by many, and are only cultivated by the few. It has been wisely said "he who gives quickly gives best." It is so with the small fruits; in one, two and three years any of these may be brought to perfection. There are nurserymen in almost every town of any size in Ontario or parties who have plants for sale, many people give them away. A prize is offered every year of some fruit with our own paper, the *Horticulturist*, from these with a little skill in a few years the fruit garden may be stocked, whilst the paper gives direction for cultivating them.

There is no reason why almost everyone should not have fruit of his own raising, if he has not the fault lies with himself, and he has himself only to blame. The time required is slight, the price to be paid for plants is nominal, and the crop, if insect enemies are warded off, is certain.

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PARIS GREEN FOR CODLING MOTHS.

The PRESIDENT.—Have we any apple-growers present who are confident that spraying the trees with Paris green is a remedy for Codling Moths?

Mr. DEMPSEY.—If you use Paris green too strong it will destroy the foliage of the apple, and it only requires caution. A teaspoonful to a pailful is sufficient, and it will destroy the Codling Moth or any other insect if you apply it in season. I think every person who has tried it will endorse those sentiments.

The SECRETARY.—I have been trying it every year for some years past quite extensively. I every year compare parts of the orchard where I omit spraying with those parts that I spray carefully, and I observe the great difference. This year I left two acres of orchard where the ground was covered with strawberry plants, wholly unsprayed. I sprayed the whole orchard that was accessible very carefully with a large force pump, fixed in a waggon. I have been observing very particularly within the last week or two the part that has been carefully sprayed, comparing it with that small portion which I have left without the application of the poison; and where it has been well and carefully done the apples are clear; I could scarcely find any apples that are affected by the moth, whereas in that portion where I omitted to apply the poison it is quite easy to find them, so I am more than ever convinced of the effectiveness of the application. I am expecting fine clear fruit all through the orchard where I applied the Paris green.

Mr. CROIL.—How often did you apply it?

The SECRETARY.—Only once, except that we had been at it only three or four days when there came a heavy rain, and we had to do that much over again. It needs to be done early—I think very soon after the bloom falls—as soon as the apples are well formed. Two applications would be more effective than one; the second one about a fortnight after the first. I notice that it is not merely in the blossom end that the egg is deposited; it is on the side of the apple as well. If you will observe you will find there are fully as many apples stung on the sides as on the end.

Mr. DEMPSEY.—Is that by the second brood or by the first? I notice the second brood almost invariable deposit their eggs on the side of the apple, while the first brood deposit theirs on the calyx.

The SECRETARY.—The second brood would not be so early, they do not appear until about the middle of July.

Mr. WILLIAMS.—I have been working with Paris green for seven years. This year I have used nine pounds. I have used it largely with water, with lime, and with plaster by dusting. Where I use it heavily with water I prefer to dust the trees with lime afterwards. The foliage is not injured, and with plum trees particularly I put one-half a teaspoon of Paris green to a pail of water, and use three applications to the plum trees. By the use of slacked lime directly after the trees are wet it keeps them fresh, vigorous, and a lively green color. Last year I had plum trees that only had a few blossoms on, and I sprayed them and saved the fruit. I sprayed the Duchess of Oldenburg that stood near the house, from which for nine years I had never gathered one apple. I gave that tree three applications of Paris green, with about one-third of a teaspoonful of Paris green to a pailful of water. That year I put up three barrels of apples. The next year it failed. The next time I sprayed it I put up four barrels of apples. I would spray one side and not the other; where I sprayed it I would get fruit, and where I did not I got none. Last year we sprayed nearly the whole orchard, and this year we have gone over the whole of it. They are very clean and fine so far. I don't see any spots or worms on them.

Mr. PETTIT.—How soon did you spray your trees?

Mr. WILLIAMS.—I began before the blossom dropped, with both apple and plum.

The SECRETARY.—Would you not kill a good many bees?

Mr. WILLIAMS.—I never noticed any fatality to the bees.

The PRESIDENT.—As soon as the fruit is fairly formed you begin.

Mr. WILLIAMS.—Yes; on some specimens I noticed the blossom had been stung by the curculio, the large kind, of a steel color, and it stings the fruit of the apple as well as the plum. I lose as many Duchess apples from the curculio as I do from the moth.

Mr. PETTIT.—In spraying for the curculio, which do you destroy, the insect that lays the egg, or the larvæ after it hatches? In what way is it effectual?

Mr. WILLIAMS.—I could not say which. I spray the trees, and the fruit comes out clean, that is about all I know about it. I don't know whether it kills the insect itself or the larvæ.

The SECRETARY.—Is the fruit stung at all?

Mr. WILLIAMS.—No; the fruit is perfect, without a sting.

The SECRETARY.—Then it must ward off the curculio itself?

Mr. PETTIT.—How do you apply the lime after spraying?

Mr. WILLIAMS.—I have a duster with a handle about one and a half feet long, and I put a cedar pole in that so as to make it twenty-five feet high. I have a force pump for the Paris green, which I put on a waggon in a tank, and drive from tree to tree.

Mr. PETTIT.—How many ounces to the barrel do you apply?

Mr. WILLIAMS.—I calculate half a teaspoonfull to a pail of water, measure the barrel, and put in the poison in that proportion. In using it in the lime or the plaster, I made it about the same strength as I would to kill the potato bug.

The PRESIDENT.—I suppose your experience is that the old custom was to use altogether too much green. It requires a very small quantity, you find?

Mr. WILLIAMS.—Very small. I began very small, then continued trying it to find how much they would stand before the leaves gave way. I handle the hose with one hand, reaching the highest trees, and at the same time work the pump with the other hand.

DANGERS OF PARIS GREEN.

The next question was, is there any danger from the use of Paris green as an insecticide by absorption in the soil, or absorption in the fruit?

The PRESIDENT.—It strikes me that the one that wrote this question is the one that should answer it, Mr. Morton.

J. A. MORTON (Wingham).—I don't think there is any danger of poisoning by absorption in the soil. I believe that even if Paris green were put upon the soil in moderate quantities, that it would not reach the fruit, because the plant itself has the power of eliminating from the combination of substances such things as are essential for the growth of that plant, and rejecting those portions that are not necessary. We find that other poisonous substances, capable of thorough solution, are fed to plants, and that they have the power of rejecting the poison; those substances are not found in the fruit, because in order to obtain the fruit it would have to go to the leaves, be liberated there, and return to the fruit. I don't see, therefore, any danger on that ground. As to whether it could be absorbed by the fruit or not, I think that is out of the question. Botanists tell us that fruit does not absorb anything from the outside—that anything that goes to make it up is received through the circulation of the plant. The only difficulty would be small portions of it lodging in the calyx end of the fruit. The fatality that could have resulted from that could only be ascertained by experimenting, by examining the fruit to see how much arsenic was in the end. I think it is referred to in Mr. Fletcher's last report. Experiments have been had to determine whether any appreciable arsenic has been found in the calyx end of the fruit, and in only a few instances out of five hundred was there found any trace of arsenic, and that was in such minute quantities that a man would be liable to die in some other way than by poisoning if he ate the apples.

Mr. DEMPSEY.—Can Mr. Morton tell us whether the arsenic contained in the Paris green evaporates as it does in the pure arsenic itself? I heard a gentleman say, not long ago, that his dog ate half a pound of arsenic that had been exposed to the atmosphere, and it only made the dog better, made him healthier.

Mr. MORTON.—I have no doubt if your Paris green were exposed under certain conditions, that it might resolve itself into arsenic, and thereby be volatilized; and from what I have seen of arsenic that remained open for eighteen months, in my experience, not exposed to the wet, but in a dry place, it was quite as efficacious at the end of that eighteen months as it was before; and all I can say about that dog, is that it was a dog peculiarly well adapted for the eating of Paris green. I don't think any other well-bred dog would have that experience. (Laughter.)

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SPRAYING PUMPS.

The next question was this: Two spraying pumps are spoken of in the *Horticulturist*. One has been used by the President and the other by our Secretary. We would like to know their respective merits; the cost is very different.

The PRESIDENT.—I have Brooks'. It had not been used much before I left home.

The SECRETARY.—This is something like asking me which is the best instrument, a hoe or a plough, for cultivating the ground? It depends on what you want it for. The two pumps are for wholly different work. One is a large pump, and the other is a small hand pump for use in the orchard. The pump that is made at Oakville, which resembles the Field pump of Lockport, is the best I know for orchard use. It will send a spray from the wagon over the orchard tree of any size. The Brooks' Champion, which is also referred to, is the best one I know of that I have tried for the garden and for small trees. It will send a spray perhaps twenty or twenty-five feet very nicely, but it is only adapted to be used in a pail, not for a tank or barrel.

The PRESIDENT.—They have an attachment to it where it is used in a large tank or barrel.

Mr. HILBORN.—Does this pump throw a continuous stream?

The PRESIDENT.—Yes.

Mr. CROIL.—How many trees would you spray with the Oakville pump?

The SECRETARY.—I never counted, but as fast as you can walk along with a horse. I have a man driving who works the pump, and another man who works the hose. The work is done almost as fast as a horse will walk along, stopping a minute or two at a tree.

OUT-DOOR ROSES NAMED.]

The next question was, name the five best roses for out-door cultivation, giving the reasons why they are given the preference.

Mr. MITCHELL (Innerkip).—It is rather a hard matter to decide which are the best roses. I find that beginners very often don't value to the same degree the same roses which we old growers do. Beginners generally choose some extreme of color; they prefer a very dark rose or a very light one. Old growers prize continuity of bloom as of more value than perhaps some extreme of color. On my way here I spent two days at Ellwanger & Barry's, at Rochester, and I there made a note which coincides with my own experience as to which were the most valuable perpetual hybrid roses. I have marked a doubt whether Victor Verdier or General Washington should be placed first. The Washington possess no fragrance, but it is a most continuous bloomer. We can get good blooms, I believe perfect blooms. I believe General Washington has been the means of getting me more prizes on roses than perhaps any other rose. It is a first-class free-blooming out-door rose. It is red—not very deep or very brilliant in color, perhaps, but old rose-growers value it very highly indeed. The Victor Verdier is also another perpetual blooming rose. We get blooms all the season till the frost prevents them blooming any longer. The Victor Verdier also is not fragrant. As some one has remarked, it is very hard to get the whole round of perfection in anything, and some way these very valuable perpetual bloomers lack something. They generally lack fragrance. I find I have placed next on the list La France—a hybrid tea-rose. It possesses fragrance in addition to its many other qualities of value, but in our rather harsh, dry atmosphere, it sometimes does not open freely; but La France is a very valuable rose, not only for out-door cultivation but for conservatory in pots. Gabriel Luizet is another very valuable rose; it is a perpetual bloomer, which, if we count it by points, is a very essential thing in a rose in this country. It is a new one. I have entered Coquet des Alps, which is such a thoroughly good bloomer that it deserves the first place in any collection of roses; and of course in making up a small collection like this we try to get over the different range of colors as far as we can, and it is nearly white. The Victor Verdier is nearly pink.

Among the very dark roses I have found the Prince Camille de Rohan to produce a very great variation. There are many other roses that are so nearly identical with Prince Camille de Rohan that I have been forced—and much against my will—to put upon some occasions several labels on roses picked from the same bush. (Laughter.)

Mr. WRIGHT.—What color is your Prince Camille de Rohan?

Mr. MITCHELL.—Pretty dark, almost maroon, not so bright as Baron de Bon Stetten at very best, but it far exceeds either of these in its perpetual blooming qualities, and they are fragrant, very useful roses.

QUESTION.—Are roses difficult of cultivation? Can you give plain directions for an amateur?

Mr. MITCHELL.—I could not give a complete formula of instruction in the matter, but I will tell you the main secret in rose-growing. The insect pests have prevented people from cultivating them. Begin before you think it is time to use insecticides. Rose-growing has been a hobby of mine for a long time—as long as I can remember; and I find the out-door rose to be one of the easiest managed plants I have anything to do with; and I only attribute my success with roses to the freedom my bushes have from all those insect pests, because everything I do, I do it before any insects make their appearance at all. People consider perhaps, that roses need some special soil or some special aspect—that they need an unusual amount of fertilizers; but I have not found such to be the case, particularly when you plant out young plants. Very often I find that too much fertilizer is used at first. A heavy fertilizing is not good for fruit growing. If you wish to fertilize do it after the plant has got established. As to soil, you must not plant roses or anything else which is to pass the winter in a state where the roots of these plants will be virtually immersed in standing water the whole winter, or the roots will perish; but where land is naturally drained or artificially drained, with sufficient depth so that there will be plenty of roots left to take up what sap they require in the spring, in almost any soil roses will do. As a preventive, I go over my rose bushes with a solution of tobacco. I get the stumps from the tobacconists where they manufacture cigars; we get them for nothing, and I suppose any of you can. Some use the chewing tobacco, but it absorbs the water more than the refuse does. I go over them with that solution just before the leaves are coming out. This is to prevent the ravages of the rose-hopper, or what is called thrip. I go over the bushes, either with the water-can or syringe. The smell of the tobacco makes it distasteful to the insect. For the rose-slug we use hellebore. Some will tell you that you have to syringe on the under side of the leaf, because the most of the day the rose-slug is on the under side of the leaf; but at night it goes forth and eats the leaf on the upper side, so if you syringe the leaves on the upper side, the rose-slug will do you no harm. I use ordinary barnyard fertilizer, and gentlemen from England, which is considered to be a particularly favorable climate for rose cultivation, have stated to me that they never saw, even in England, finer roses than mine are.

Mr. MORDEN.—What do you do with the green rose aphid?

Mr. MITCHELL.—While you are syringing for the thrip you are syringing for the aphid. Tobacco doesn't seem to be good for anything but a human being. (Laughter.)

A MEMBER.—What do you consider the best mode of cultivating and managing the out-door roses in the summer season—spring, summer and autumn? Should they be covered during the winter, and what ones?

Mr. MITCHELL.—I do very little indeed more than I have told you to keep clear of the insect pests. In the spring time sometimes I omit manuring for a year, as long as I feel that the bushes have plenty to feed upon. I find, even myself, sometimes, that I am not better for being over-fed. (Laughter.) I used to prune too heavy in the spring. You must bear in mind the balance between root and branch. The branch or foliage is just as necessary to the root as the root is to the top. I pruned at one time at the expense of the vitality and vigor of my plants. Now I don't prune much in the spring. I let them bloom out free. I prune enough to preserve symmetry, and prune out any weakly branches, but even this spring, in standard hybrid perpetuals, I had some of them six feet high, and so I had on other seasons, and I found that it adds to the root growth. I prune after the heavy spring blooming—prune pretty heavily; the roots have made their growth

to a great extent easily affected if it is dry. With a large lot of roses will not. For a rose plant. For over-protection and there is no we have harsh, you will have that I believe a garden.

The PRES.

Mr. MITCH.

are very hardy still it takes very it. I find a good find a limb that to one side of down a foot or broken the large again in the spring altogether. But we dig a bit of will pass the winter

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The next question other trees be in counties?

Mr. GIBB.—in, and then plant found it best to plant. A year ago that I had for so

to a great extent, and more than that, in the later season of the year roots are not so easily affected. When the ground is wet you can far more easily kill the root than when it is dry. When it is near the winter a waggon-load of evergreen branches will go over a large lot of roses. Cedar is the best. Hemlock sometimes will drop its leaves, but cedar will not. For protecting roses there is nothing like placing an evergreen bough on each rose plant. Pea-straw is a bad thing. Manure is very bad; you kill your plants by over-protection. Give them a certain amount of food; give them a fairly drained soil, and there is no reason why you should not have good roses. There will be occasions when we have harsh, dry air for a period, when numbers of our roses will not open well; but you will have so many periods throughout the season in which you will have good roses that I believe after all the rose is one of the most satisfactory plants we can grow in our garden.

The PRESIDENT.—Would you cover them all?

Mr. MITCHELL.—No, especially our summer roses such as the Cabbage rose; they are very hardy, and they don't require it to the same extent as hybrid perpetuals, but still it takes very little time when you are doing the rest, and they are all the better for it. I find a great many say that they cannot bend their roses down. Well, when you find a limb that seems so stiff that you would break it, don't bend the limb; dig a little to one side of it, the root will bend and this does the plant no harm whatever. Dig down a foot or as much as is necessary so as to bend the root. I have broken or half-broken the large leading root off, so that many would suppose the bush could not grow again in the spring. It does not make a bit of difference as long as you don't break it off altogether. But the root won't break easily. In such kinds as the Baron Rothschild, we dig a bit of earth with the spade and bend it over, and put the bough on it, and it will pass the winter all right.

RASPBERRIES FOR THE HOME GARDEN.

The next question was, What are the most desirable raspberries for the home garden? Name three red and three black; and is there any desirable yellow?

Mr. SMITH.—I would name for the three red for this part of the country, the Herstine, the Outhbert and the Turner. For three black I would name Souhegan for the earliest, the Hillborn and the Gregg. The best yellow or white that I have tasted so far is the Golden Queen.

The SECRETARY.—Don't you like the Marlboro for red?

Mr. SMITH.—In quantity I consider it a poor bearer. If I were naming for market I should say the Marlboro. I consider it one of the poorest in flavor. It is very showy, but in quality it is not there.

The SECRETARY.—You don't mention the Schaffer for canning.

Mr. SMITH.—For canning purposes it is very good. I don't know whether you would call it a black or a red.

TRANSPLANTING.

The next question was, At what age, other conditions being equal, can apple and other trees be most successfully transplanted to withstand severe cold in our more northern counties?

Mr. GIBB.—I have always dug my trees, or procured them, in the fall, heeled them in, and then planted them out next spring. I had heard it said by Prof. Budd, that he found it best to wait in spring till buds were just beginning to swell, and then transplant. A year ago I did that, and I had the poorest growth from my transplanted trees that I had for some time. I remember getting a number of budded trees; they were the

Fameuse ; I got them in the fall and heeled them in ; and in a budded tree the stem is never perfectly strong, and in heeling in a tree you would naturally take advantage of the bend in the stem instead of turning the crook upwards. In that way I could tell which side of the tree was downwards and which was up when they were in the orchard afterwards, and the side of the tree that was upwards, though pretty fairly covered with snow-drift during the winter, did not make anything like as good a growth the first year, and perhaps the second year, as the side that was down near the ground. That made me still more in favor of this heeling in. Of course heeling in needs a little care. I usually cover the stems of the tree right over with black earth. I very strongly approve of the plan of getting trees in the fall, heeling in, and then planting out in the spring.

The PRESIDENT.—What age trees would you transplant ?

Mr. GIBB.—I don't think it much matters so long as you can throw them into a vigorous growth the following year. I always plant potatoes among my apple orchard the first year, and that makes a good growth the first year, without any trouble the second year.

APPRECIATION OF MR. GIBB'S SERVICES.

Mr. CASTON, of Craighurst, here introduced a resolution embodying the sentiments of appreciation of Mr. Chas. Gibb's services in the interests of Canadian fruit culture, which were felt by the members of the Fruit Growers Association of Ontario, the original copy of which has been mislaid.

Mr. WRIGHT.—I am very glad to be able to second that resolution. If any man in Canada or on this continent has done anything worthy of praise for the introduction of hardy fruits, it certainly is Mr. Gibb ; and if any people ought to be thankful for the work he has done it is the people who live in the northern sections. I don't know what we would do if we had not some one like Mr. Gibb. He bestows his time and his money, and he gives all the energies and everything that he has apparently up to nothing else but this fruit subject ; and I don't know where you would find a man with the capabilities that he has who would do this kind of thing. He has had peculiar advantages, and we are reaping the benefit of it, and what is better, it does not cost us a cent ; and we certainly would be ungrateful people if we did not thank him for the labors that he has given us.

The PRESIDENT.—I think it is hardly necessary for me to add anything to the resolution itself and the remarks so well made. I spent a couple of days with my friend Mr. Gibb lately, and I saw there in his grounds the result of his past labors of many years ; and to appreciate his labors thoroughly you must see the place itself ; you must see there what he has done besides what we have read ; you must see for yourselves to appreciate most thoroughly. It really is something wonderful, the work done there, not only in fruits but in forest trees, in plants and shrubs. There was only one flower missing that he should have there—one of the leading flowers of any country—in his already fine collection ; I refer to a good wife. (Laughter).

The resolution was put and carried unanimously by a rising vote.

Mr. GIBB.—I hardly know what to say, for I did not expect a resolution of this kind, and it is really very kind of you ; but, as is apt to be the case in things of this kind, I am afraid my services are overrated considerably. As to the expense of procuring these things, Prof. Budd has sent me a very large number of them. Then another collection came from Rochester, and another from Tuttle of Bariboo, and others from Ellwanger & Barry. The most of these came from the importation of 1870. That importation fell into bad odor for some time owing to the serious mistakes that were in it, but by and by in Wisconsin and Minnesota, Russian fruits came to the surface, and a number of these fruits that we have the greatest hopes of were introduced in that importation ; so that we began with the United States Government, and then those who tested these things from that importation, and then the importation brought out by the Iowa college. I have

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to look these things up, and I am testing these things now; but really, that resolution, I don't like it, because it overrates my work in connection with this matter to a very serious extent. It is meant to be as truthful as it can be, but I still don't agree with it. It is just one of these little works that has been done step by step by a large number of people, and unfortunately you are crediting me with the work done by those who preceded me. However, we are working out in Quebec things that will be valuable to you in this Province.

ORCHARDS FOR PROFIT.

The next question was, in view of the ravages of insect enemies, the rigors of our winters, and the present prospects of a future market, would it be advisable to plant a large orchard? Would it be likely to prove a profitable investment? Answers expected from Mr. Dempsey and the President.

Mr. DEMPSEY.—With respect to the insect pest, I am satisfied that we can quite easily overcome all the attacks of insects by taking the matter in time. The great cause of failure is that we don't commence soon enough. I think it is impossible to overdo orcharding from the fact that the demand for fruit increases at a great deal more rapid rate than it is possible for us to increase our orchards. My mind runs back some years when I first began to take an interest in apple culture. Then we thought a dollar a barrel for apples was an enormous, an extravagant price. We thought we were doing well if we got fifty cents a barrel. We thought there was nothing we could grow on the farm that would pay so well as apples at half a dollar a barrel. Now we are not satisfied with two dollars a barrel. If there has been any increase I don't see that we should be afraid of the future. As to the orchard, I say plant as many trees as you can take care of, and then stop.

The PRESIDENT.—I quite agree with all Mr. Dempsey says. I believe there is not the slightest danger of overstocking the markets we now have, if the orchardist is careful to plant only the best varieties for the particular section in which he lives—those varieties, I mean, that bring the best results as to growth of tree, cropping qualities, and market value. We find that our markets are increasing continually. We cannot keep up with the markets. This last spring, besides the British and European markets, the Western States have opened up to us. We have had our own Northwest, which has been a fine market for two or three years, and now the Western States opening up and offering a very keen competition for our best apples—offering keen competition with the British markets—offering even better prices. Many of our shippers found they made more money by shipping to Chicago, St. Louis, Nebraska, Omaha, and through Michigan we find that the Americans in the west there were shipping their own apples to us and to other sections and buying our apples, as they considered them superior to theirs—buying ours for their own home use at much higher prices than they could realize on their own apples. So that, considering that question altogether, I would not hesitate at all in advising a person to plant largely—and when I say largely I mean that which each individual can take proper care of. It is a hard thing to lay down a list of varieties that would suit all sections; it is impossible. When I am asked for a list of varieties for any particular section, I always give a list of those varieties I consider upon the whole to have the largest value in them. Then let that individual enquire of his own neighbor, and he can judge far better in that way than I can judge for him, and find out amongst the varieties that I give him the ones that succeed best. He can always come to a better judgment than anyone else can for him.

Mayor PORTE, of Picton, after greeting the delegates, said: Were I to give you my experience in fruit growing it would not be very profitable to you. I had two plum trees, and waited about twenty years, and off one of them I got two good crops of plums; off the other I got two good plums; but the fruit was so good that I was every year hoping

for a crop and did not like to cut them down, until Providence saved me the trouble and the trees blew down. With roses in this county I have been eminently unsuccessful; still I have managed to have a few. I must say I have gained a great deal of information here this evening, and I think that I will profit by it. I would bid you all welcome to Picton, and say in the words of my native land, "Cead mille failthe."

The PRESIDENT replied to the Mayor's greeting, stating that the delegates had been much pleased and profited by their visit.

The meeting adjourned at 10 o'clock till Thursday at 10 a.m., and upon reassembling at that hour, Mr. Mitchell, of Innerkip, read a paper on the following subject:

CONSERVATORIES, THEIR MANAGEMENT, SELECTION OF PLANTS, ETC.

Mr. F. MITCHELL, of Innerkip, said: I have always made this part of horticulture a hobby; I have been nothing but a flower man. I think we could do more if we would each take some special line. There is a greater interest being taken now-a-days in floriculture. At the exhibitions you will always notice a crowd around the stand where the flowers are exhibited. It is not a matter of profit perhaps, but I don't know anything which any of us whose tastes lie in that direction can derive more pleasure from than we can from the culture of flowers. At the farmers' institutes last winter I brought up this matter of flower culture, and I found that they took great interest in the matter. Sometimes they would discuss it for a whole evening to the exclusion of other matters.

I wish to be understood as taking up this subject altogether from the amateur's standpoint, and as considering the limited conservatory of ordinary use, and one in which it is desirous to accommodate as many different general species and varieties of plants as can be grown successfully. The size must, of course, be regulated by the pocket and enthusiasm of the builder, but the smaller the more difficult to preserve an even temperature. The material of construction for the outer walls or sides is not very essential if it but be frost-proof, or nearly so, although I favor double boarding with tarred paper between. As to the style or form, and with it the situation or aspect, it should always be, for a general collection of plants, of some form of the ridge and gable plan, with the sashes sloping east and west. This gives the fullest sunshine in the morning and evening, while at mid-day the rafters and sash bars exclude a large portion of the sunlight; consequently an even temperature is more easily maintained. I may mention, while on this head, that when attending these meetings in different parts of the province, or when travelling with any other object in view, gardens and flower-houses are always among the foremost objects of attraction to me, and that which presents itself first to my notice, with regard to the conservatory, is the matter of location and form. I find many, very many, constructed as a lean-to and situated on the south side of the dwelling. It would be impossible for a professor of the art to produce good results in such a house as this, and I believe such houses as these have completely discouraged many beginners. If I was to select an aspect for a lean-to house I would choose the north before any other, for though not suitable for all kinds of plants or for all seasons, yet many of our finest summer-flowering plants will attain a greater degree of perfection in this than in perhaps any other location or style of house. If, however, the south side of a dwelling is the only available location I would advise constructing the flower-house on the ridge and gable plan which I have already mentioned; in this manner this location can be utilized as well perhaps as any other. My own conservatory or greenhouse has no lights in the south gable, by this I have a bench at the south end shaded from the south or mid-day sun while it receives the morning and evening sun, and at all times in the day it receives light from above; for a large portion of the year this is the most valuable space in the house. It is very desirable, or imperative rather, in the sort of conservatory we are considering, one in which a number of different plants can be grown, to have a shaded portion as well as other sunnier positions. But I will probably make further mention of this when I take up a few of the desirable

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plants for the conservatory. If practicable the house should be wide enough to admit of a raised or filled bed in the centre. Sod and new or loamy earth, with a little manure, is the best material to fill this bed with. It is not necessary to wet the sod before using as it will soon rot in the ordinary temperature of a greenhouse. Hot water is, I think, all things considered, the best mode of heating. The first cost is more than that of smoke flues, but where winter bloom is desired the result is more satisfactory; the after or running expense is, I think, not much different in the two systems, if there is any difference the hot water system is the cheapest. The first cost of the old smoke flue system is the cheapest of all, but in the winter, when but little ventilation can be given, the gas, no matter how well conducted the flues may be, more or less of which will escape, affects the blooming of some kinds of plants. The ordinary geranium is perhaps more easily affected than any other plant. I have never seen really good bloom on geraniums in winter in a house heated by smoke flues. Many other plants, however, and many of which are apparently more tender than the geranium produce the best results at any season of the year in houses heated on this plan. I am not very well posted on the steam system of heating, but cases have come to my notice where closer attention was required in firing than in either of the other systems mentioned. I know of cases where attendance is required throughout the night when the temperature is very low. Being forced to rise and replenish the fires on a cold winter night greatly detracts from the pleasure otherwise enjoyed in the possession of a conservatory. I have, however, been informed by reliable persons that the steam system can be so constructed as to retain heat for as great a length of time as by any other system. I will not pretend to make a complete selection of desirable plants for the conservatory, but will confine my remarks to only such plants as I am familiar with. For winter blooming the cineraria is particularly valuable. When intended for winter blooming I sow the seed in the spring or early summer, and after potting keep the plants as much as possible in the open air throughout the summer. A cool place with a northern aspect is the best, the north side of some building where the sun's rays can only reach in morning or evening. Care must be taken that the pots do not get water-soaked for any length of time as excess of moisture is very injurious. I notice that even many practical florists never over-water the cineraria. If persisted in the plant will first wilt and soon altogether perish. On the approach of cool weather the plant should be placed in a cool, airy position in the conservatory. The cineraria will make a finer and a far more prolonged display at this season than when brought into bloom, as it usually is, in the early spring. The Chinese primrose is another valuable winter-blooming plant. The seed should be sown in May or June, and I prefer to grow it also in a shaded place in the open air throughout the summer and removed to the conservatory on the approach of cold weather. The carnation is another particularly fine winter-flowering plant. It is not only a useful decorative plant for the conservatory but is of even more value for the lasting and beautiful cut flowers which it furnishes throughout the winter. For the best plants cutting should be struck the previous winter or spring and be planted in the open ground throughout the summer. The plants should not be allowed to bloom while in the open ground. They should be taken up and potted and removed to the conservatory in October or November. Ordinary fall frosts will not harm them. Many varieties of tender roses bloom profusely throughout the winter. Varieties of climbing habit will generally give the most bloom and are easily managed. They should be planted in the bed in the centre. I recommend the following: In whites the old Lamarque is the best for the beginner at least. It is not a rose of very high finish but is a rampant grower, is almost mildew proof and requires but little care, except such as it may require from the pruning knife occasionally. Gloire de Dijon, peach or fawn color, is a first-rate rose for the amateur's conservatory. A sweet-scented, good-sized well-formed, constant-blooming rose, and is nearly, though not quite, as easily cared for as Lamarque. In reds, Reine Marie Henriette and James Sprunt are perhaps the best among the older varieties and are easily managed. I know that amateurs are generally advised, by those who profess to be posted on this matter, not to attempt to grow that magnificent yellow rose Marechal Neil, but if thrifty young plants are selected and planted in the ground in the part of the house in which the temperature is the most even and least subject to strong draughts it will generally succeed well. I have more perfect success

with it than with any other yellow rose which I have tried. Nearly all hybrid perpetuals and hybrid teas will bloom freely in the latter part of winter. These should be grown in pots. By far the largest portion of flowering plants bloom in the spring. I will not enumerate any of these, but will make mention of a few valuable summer-blooming plants. For an early summer-flowering plant the Agapanthus is well adapted to the amateur's conservatory. Insects rarely prey upon it, and though a strong-growing, stately plant the flowers possess a delicacy and purity which exact universal admiration. For bouquets in which delicate tints are required rather than striking colors the Agapanthus is unsurpassed. Anyone can grow it to perfection. A sunny position is the best. Most of the new, large-flowered fuchsias are worthy of a trial, although I notice they are very rarely produced in anything like perfection in ordinary small conservatories. A partially shaded position, a cool, even temperature, and frequent and copious syringing is necessary to success. The comparatively new, large-flowered, tuberous Begonias are useful, handsome plants. The Chinese hibiscus is worthy of being grown far more than it is. Some of the double varieties produce blooms six inches across. The colors in many varieties are gorgeous and striking. The hottest and sunniest position suits it best. A plant which is a greater favorite of mine for the conservatory than perhaps any other is the Gloxinia. A bunch of well-grown Gloxinias in full bloom is a grand sight. Those who have seen only indifferently cared for specimens cannot form an idea of the wonderful beauty of this flower when at its best. Compare the most beautiful, daintily dressed child with the most neglected little street arab and you have not so wide a difference as there is in the extremes of this flower. I mention this matter of ill-grown Gloxinias because I see so many of them. A few natural requirements of the plant need to be borne in mind, and if so it is very easily managed. In the first place it cannot bear the direct rays of the sun. In the style of conservatory I have advised it must be grown on the shaded bench at the south end. The foliage should never be syringed or allowed to become wet in any way. The plant should not be exposed to strong draughts. If these things are attended to and a rather high temperature kept up in the early periods of their growth they are easily grown. The Gesneria is another plant beautiful both in foliage and flower. It requires exactly the same treatment as the Gloxinia. There are many other beautiful summer-blooming plants which I would like to make mention of, but it would prolong this to too great an extent. Perhaps on some future occasion, if not here, elsewhere, I will take this up where I now leave off, and then I will perhaps be able to discuss a few of the many spring and autumn-blooming plants suitable for the conservatory. In concluding this, at the present time, I may say that the most complete formula of rules for guidance, or the most approved structure or appliances will not avail much, if the possessor, or person in charge, is not a true and devoted worshipper at the shrine of Flora.

Mr. DEMPSEY.—Farmers should know that it is very much easier to grow flowers, and that greenhouses are much easier built than most people think. I used to run a greenhouse to a considerable extent. The past eight years we let it go back, but I wanted a hot-bed last spring and I partitioned off about thirty feet by ten of the greenhouse and set in a stove. You would be surprised to see what little wood it required to keep that warm. I have seen some very successful greenhouses that were built convenient to the kitchen, and simply a pipe run through from the kitchen, which furnished a circulation of hot water and warmed the little greenhouse, and the plants were kept in a very nice state. There are some houses heated by hot air in Trenton, where they have a register connected with the greenhouse, and they can maintain whatever temperature they wish, and they grow very fine plants. Those greenhouses are almost invariably facing the south, but they are certainly successful in growing plants. It is requisite that they should partially shade the greenhouse occasionally. We can produce almost any plant at the present day true to name from seed if we like and almost invariably true to color. It is much better to pay a shilling for a paper of seed than it is to pay a shilling for a plant. You would get a hundred or two hundred plants from the paper of seeds, and invariably the seedlings produce more and better bloom than the plants grown

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The SECRETARY

Mr. MITCHELL don't advise the management of the crysanthemum but still they grow and then remove

Mr. DEMPSEY Dijon, grown in front of the rock, poked the bushes. They protected frost out of the

The PRESIDENT one there.

Mr. DEMPSEY

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The PRESIDENT ence of a large shippers to the this, after testing them and pleading advise all shippers any European or other remedy for Montreal to London they are shipped better in carrying any western port order than we do so much so that and we all feel, own country; we are forced to form New York will do a Suspension Bridge seaboard; and almost all the lines the vessel, and perfect order accompanies at Montreal all around any when I speak of include our exports fruits. They see

from the cuttings. A few shillings invested by farmers in this way would pay them if they have any taste at all for floriculture.

The SECRETARY.—Do you advise chrysanthemums for house culture?

Mr. MITCHELL.—I don't find people are as a rule very successful with them. I don't advise them as strongly as many plants which are considered more rare. The chrysanthemum is looked upon as a common plant; it is very uncertain without its management be from skilful hands. I see that a great many fail with the chrysanthemum, but still they grow it in the open air throughout the summer, or a portion of the summer, and then remove it to the house or conservatory.

Mr. DEMPSEY.—The most beautiful rose I ever looked on in my life was a Gloire de Dijon, grown in the open air, but it was planted just in front of the house, and just in front of the rose was a cellar window, and the party simply took it off the trellis and poked the bush through the window and let it remain in the cellar through the winter. They protected the roots from the frost; they threw over some evergreens to keep the frost out of the ground, so that the roots were not destroyed, and wintered it in that way.

The PRESIDENT.—You would require to take the furnace out of the cellar if you had one there.

Mr. DEMPSEY.—There are very few farmers with furnaces in the cellar.

ROUGH HANDLING OF FRUIT.

A question, which was deferred from yesterday, was then taken up—Have shippers generally the same cause of complaint as to rough handling of fruit by carriers as is mentioned on page 150 of the current volume of the *Horticulturist*?

The PRESIDENT.—My experience covers a number of years, and I know the experience of a large number of western shippers who have with myself been for years large shippers to the British and European markets; and the result of our experience has been this, after testing the matter, and after dealing with the railway companies, writing to them and pleading with them, and our steamship companies at Montreal, viz.: That we advise all shippers to act as we have done, namely, to ship all our fruit for Britain or any European country by New York, and cut adrift from Montreal entirely. We see no other remedy for it. Our past experience has been that everything we have shipped by Montreal to London direct was a matter of ruin to the shipper. We find that when they are shipped by New York not only will the line to New York handle the fruit better in carrying them, but better in transshipping it on to the vessel; and we can from any western point land fruit better in Norway or Sweden or Denmark in far better order than we can by Montreal. The balance has been largely in favor of New York; so much so that it is a clear matter as between profit and loss to the shipper. I feel, and we all feel, extremely sorry for this; we would rather do our business through our own country; we would much prefer dealing with our own lines at Montreal; but we are forced to forego that. We find that the railway companies from the line to New York will do almost anything we ask them. When our fruit arrives at Buffalo or Suspension Bridge, if it is only one car, they will run it through at express speed to the seaboard; and there it is handled promptly and carefully placed on the vessel; and almost all the lines running from New York will carefully place it in the coolest part of the vessel, and if necessary put a cold blast through the apartment, keeping that fruit in perfect order across the Atlantic. We have pleaded very hard with our steamship companies at Montreal to do the same, but they will not do it. They will scatter that fruit all around any place; where there is room for a barrel they will tumble it in. And when I speak of our railway and steamship companies in these strong terms I also include our express companies, which have acted most abominably in the handling of our fruits. They seem to take a particular pleasure in taking up a box or a basket and seeing

how far they can throw it. We put up some of our fruit in baskets with handles on so that we thought they would have to take it up by the handle carefully; but they pick it up and pitch it to the other end of the car to see what kind of a jelly they can make of it. I am very sorry to have to speak of matters of this sort, but I speak in plain Queen's English, and I only hope that the matter will be brought to the attention and minds of these people—or to their hearts, if they have any; and we do hope for something better in the future. In the meantime we can do nothing else than withdraw our fruits from that particular line of traffic and ship by New York entirely. We find that is the only remedy left for us.

Mr. BOULTER.—Can you get as cheap rate from New York, or do they ship it by the cubic feet?

The PRESIDENT.—There are secrets in all trades, and there are some points in connection with that. The Grand Trunk will charge us more if we ship by New York, we find that. We have nothing but Grand Trunk in our section. We hope soon to have the Canada Pacific there; whether that will make any difference I don't know. I thought the Canada Pacific was going to deal better with us in some ways, but we find it hard to deal with them in shipping to the North-west.

Mr. MORTON.—You will find it worse.

The PRESIDENT.—It may be worse, I don't know. From my station (Goderich) to Liverpool by Montreal the rate is 95 cents a barrel; by New York that would be \$1.10 or \$1.15. But we found ways and means of getting over that, and I suppose I may as well mention it; and the way we adopted was this: We did not take a bill of lading at all from the Grand Trunk; we did not take a bill of lading from the American railways; we took our bill of lading from the Steamship Company, and the rebate gave us, in the long run, a cheaper rate by New York than by Boston. I pleaded hard with the Grand Trunk on that very point, because it was safer to ship our apples by New York than by Boston in cold weather, very much safer, but they would not yield at all; however, we got the best of it in the long run, and we had our fruit carried better by New York. We have asked the Grand Trunk to adopt the system of placing buffers between the cars. We find there is an immense damage done to our fruit by this continual shunting at way stations. Well, they considered the expense of that too much. They do it on the other side, the American railways, or they will send our fruit by express and not allow any shunting at all. If necessary they will turn a car or two on to an express train and run it through, or if they have enough fruit at Buffalo or any place there they will put an engine on it and make a train of it. They give us dispatch in every way. If there is a shortage at New York to the steamship company we can settle with any American railway in a week or ten days. I have a matter just now with the Grand Trunk. It is running about five months and it is not settled yet, and it is a shortage of two barrels of apples by Boston. I don't know when it will be settled—you never can tell anything by Grand Trunk.

Mr. BOULTER.—As we have an express man here to-day, I hope he will take your remarks. I have no complaint. I can load up a car of apples here, or a car of canned goods, and I can know to a cent what it will cost me to British Columbia; but when you ship anything to the Old Country you don't know what it will pay you. They have wharfage and tonnage and dunnage. (Laughter.) I shipped last year to London, and when it got to London the fellow drew back on me for \$300. It cost thirty-five pounds to send that car from the door here to London, and it cost twenty-five pounds to take it out of the vessel and put it in the storehouse. Unless we can get some system jammed into their heads in the Old Country so that they can tell us what they are going to charge before we start, we must stop it. You don't know what you have got to pay till they draw back on you. We get a good rate now from here to Liverpool, London and Glasgow. I am sorry as a Canadian to see our stuff go by American roads. I have not got the sympathy, though, to lose money by our own roads if they won't do it as well as the others. It is a shame to see fruit handled the way it is when we pay the express company a good price for carriage. I shipped strawberries to Peterboro', and I didn't get enough to pay the cases. Unless the express companies handle goods at a fair, reasonable price, and handle them

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better than they do, it is not encouraging to ship them; and I do hope that due importance will be given to that by this Association, not only that we should have a good rate, but that they should handle with care. I hope our own Canadian routes will not be cast overboard for lack of a little common sense on the part of the managers.

Mr. A. H. PETTIT.—From my experience in shipping to the Old Country I quite agree with the President in regard to the routes, for I think I understand packing fruits for the Old Country, and when I take Ben Davis and other hardy varieties and ship them in cool weather, and they arrive in the Old Country wet and slack and wasted, it must be from carelessness in handling. In reference to the Express companies handling fruit, they do handle them very loosely, but I think fruit growers are a little to blame in this matter too. Is it possible for an express company—running, we will say, one car on a fast train—to take a couple of thousand baskets of fruit, and take them on from a couple of stations in about four minutes, and deliver them in good order? In our place the express companies have threatened to dismiss the fruit growers. As many as possible go into a car and others pass in the fruit, and we can put in six hundred baskets of fruit in four or five minutes—so you can imagine how expert we have got; and the express company, when we speak about our fruit not arriving in good condition, threaten to dismiss us from the service. If their men handled fruit the way we do they would dismiss them out of their service altogether; but we can't do anything else. Now we are going to adopt another plan. We called the fruit growers of three or four counties together to discuss the matter fully, and decided what we thought would be satisfactory to us provided it could be arranged with the Grand Trunk Road. That arrangement we made. They put on a special fruit train, fast freight, shelved cars, and every convenience for shipping, and they now run that train at a time of day that is suitable to arrive in the different markets where we want it, at the proper time. Last year the bulk of the fruit in our section of the country was shipped by freight. Well, we had just one difficulty to contend with, and that was the cars were too close; they were not sufficiently ventilated in the top and in the sides. We have gone again to the road this year, and they have improved our facilities, or are going to as soon as we have sufficient fruit to require them. The doors are to be grated, and they are to be properly shielded, and the freight train run. Now, I think if the fruit growers could unite and have markets in our towns and ship by fast freight, and if all the goods arrived in the morning, it would be a good deal better for the shipper and just as good for the consumer; while it is also better for the dealer, because when fruit comes in several times a day he can invest very little in the morning for fear of large consignments coming later in the day and he will get stuck, so that he has to buy very cautiously. I think an experiment will be made in Toronto this season, or early next season, for a fruit market where our fruit may arrive late in the evening. It will arrive in the city some time in the night, be shunted at once into the market, and there the cars will remain till so early in the morning as it is decided to open the market. Then fruit will be taken out just where it is to be sold, without all this handling and cartage and expense. If then the fruit growers look after their fruit, as we shall, and the commission men look after taking it out, it must be well and carefully handled, arrive in good order, providing the cars are properly ventilated and run in the night. I think the local shipping in this country, if the local growers would take hold of the matter, would be brought down to a system that would be very satisfactory to all. I believe that our plan is going to be satisfactory in our part of the country. Our arrangement there is to have an afternoon train for the Montreal market and other eastern points, and an evening train for Toronto; thus we have two fruit trains daily. In reference to the Old Country shipments, I really think there is something very, very wrong in the system of shipping at the present time. On one consignment you may be very much pleased with your sales, probably the most inferior stock; the next, of the very choicest and best, and long keepers, you will find wet, wasted, and in fact rotten and everything else. You never know what you are going to do; it is a mere matter of speculation, and a very risky one at that. It seems as though in the shipping part of the business they are either cooked in the hold or damaged to a great extent by hand.

Mr. DEMPSEY.—I would not ship by New York at all. Sometimes our Canadian shippers handle fruit too roughly; but sometimes we favor American institutions too

much. I was talking to a man that was selling peaches. He said, "I would pay twenty-five cents a basket for American peaches and take them with my eyes shut rather than take our Canadian packed peaches at any price with my eyes open." Do you feel suspicious that the fellow was favoring American institutions? Then let us not do that. I was cheated, badly defrauded, in shipping by New York.

The PRESIDENT.—In what way?

Mr. DEMPSEY.—My goods did not arrive as nice as they did by going by Montreal—so much so that we did not get the price of the barrel over and above the freight. We shipped some fruit to Toronto last year, and wanted to know if we had better ship by express. Why, no; ship by freight by all means; don't have anything to do with the express company; they will charge you more, and they handle it roughly. Well, we shipped those goods by freight, went to Toronto, found that the price there was not so high as it was somewhere else, and we brought it back again. Now, those goods returned to us just about as good as they started, by common freight, and the Grand Trunk treated us very well in the matter; and I am going to always praise the bridge that carries me safe.

Mr. WRIGHT.—I have been buying apples for five years from the same man in Prince Edward County. The man was trying to find and get as good a rate as he could, and he could not tell me what he would do. I said, "Go on and buy the apples and ship them just as cheap as you can, and I know it will be all right." I got the apples all right; they were right themselves every time I bought them from him, and the price was right. That was a Prince Edward County man, and they were Prince Edward County apples; and that is one of the reasons why I wanted so much to come to Prince Edward County to see these honest men that raise those apples.

Mr. DEMPSEY.—I may say to Mr. Pettit that the apples grown in the County of Prince Edward are far superior to any apples grown in the Niagara District; all he has to do is to bring his apples in the season and we will compare them.

Mr. PETTIT.—Send to our county fair an exhibit of your fruit and we will return the compliment.

Mr. DEMPSEY.—We will meet you on those terms on the first of December or late in November.

The PRESIDENT.—Speaking about the difference in the quality of our apples, there is no question at all that the Canadian apples are superior to any American or continental apples. (Applause.) The markets of Britain have proved that beyond the shadow of a doubt. You take the average of all the markets for all our varieties of apples, you will find that that average is probably about two shillings a barrel in favor of Canadian fruit—that is, that the apples of Canada will sell upon the general markets of Britain at an average, I think I am safe in saying, of fully two shillings per barrel over any others. Of course American apples from the northern States of the United States come the nearest in competition with us. Now as regards different sections of Canada there is no question of doubt but there are differences in various varieties. For instance, I don't believe there is a section of Canada that will grow the Fameuse apple equal to the Island of Montreal. Take the Fameuse and all that family of apples, and we cannot grow it in any other section that I have seen equal to the Island of Montreal; the St. Lawrence apple also. Take the Gravenstein, the King of Tompkins County, the Ribston Pippin, they are a perfect picture. Their Blue Pearmain is fine, but not equal to the Blue Pearmain grown in British Columbia, which exceeds it in size and color. In that way you will see that different sections have their peculiarities; and I find this, that if you want to get high quality, high flavor, in any of our fruits—in other fruits as well as the apple—the further north you can grow that special variety the finer and stronger the flavor will be; and that accounts for the fact that one may say in this section that they can grow an apple of a higher quality than they could in Niagara District. Take the American Golden Russet grown in the warmer sections of New York State and compare it with some russet from the middle part of Ontario, or the northern part, and you will find the apple is much higher in flavor, and the color of the apple is higher, and color and flavor go together.

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Mr. SMITH.—Does not the difference in price between the American and Canadian apples depend somewhat on the size of the barrel, too ; don't we use larger barrels than they do on the other side ?

The PRESIDENT.—No, I don't think it depends on that at all, for in the Old Country I saw through their markets there, and they didn't allow for that at all. It is so much a cask—they call them casks there instead of barrels ; and they make little difference as to the size of it. For instance, the Nova Scotian barrel is smaller than ours—it is our old apple barrel. Of course we have a standard barrel under the law of Canada now, the same size as a flour barrel, but the Nova Scotians have still retained their old barrel, which is two bushels and three pecks—it is the American barrel—still they get a much higher price than the Americans do ; so that the size of the barrel does not amount to much. Since we have adopted the new style of barrel our average price is higher, but there is more competition ; we have markets now that we did not have before. The prices of Canadian apples have been greatly increasing in the British as well as other foreign markets, and we expect that these prices are to go still higher. I, however, have trouble with those charges of landing waiter dues, and harbor dues, and carter dues, and cooorage, storage, and I don't know what all ; it is as long as a lawyer's bill of costs.

Mr. BOULTER.—I got a through bill of lading made out by the Grand Trunk.

The PRESIDENT.—Upon that bill of lading it should be stated the rate of delivery ; you get your rate marked on the bill of lading delivered to such a place. For instance, if am shipping to London, to be delivered at Covent Garden Market, the rate is to be "delivered at Covent Garden Market" ; but if you don't get that rate their vessel will not very likely come up to the dock at all ; the landing waiter will go up and take the goods off.

Mr. BOULTER.—What is the word "primage" used for ? There is some perquisite that goes to the captain of the boat.

The PRESIDENT.—One kind of primage we had experience in is this ; we noticed opening a great many barrels that were evidently half full, or very little in them ; probably that kind of primage is something that officers of the vessel take advantage of, and supply themselves with what fruit they require for their own consumption.

Mr. BOULTER.—It was prime fruit. (Laughter.)

The PRESIDENT.—Yes ; and probably that was the reason they called it primage. (Laughter.)

Mr. DEMPSEY spoke of a comparison of apples grown at Owen Sound with some grown at Montreal, and the Owen Sound ones were found superior.

Mr. CASTON.—I think the apples grown in our county (Simcoe) cannot be beaten in the county of Prince Edward or in the Niagara District.

Mr. CASTON offered to show at the winter meeting of the Association a few winter apples from his district in opposition to some from Prince Edward or any other county.

EVAPORATION OF FRUITS.

The next question was, What is the cost and what the profit of evaporating apples and other fruits ?

Mr. CASTON.—I sent in that question not with a view of Mr. Boulter giving away his profits, but with reference to farmers doing the work themselves.

Mr. BOULTER.—In the last few years quite a large number of small evaporators have been made and sold to farmers. There are lots of apples that cannot be profitably sent in to the factory. They should be sliced up and bleached, and they could realise a good fair profit on them, because they could do this at home, and save drawing those apples to market and to factories and to evaporators. How to dry them has yet got to be learned by farmers. They will pick them up and put them in the bag just as they fall from the ground, and draw them to a factory, and when they get there they are

pretty well up to pumice; whereas if they would peel these apples at home they would save them. Farmers could save a good deal of money by taking one of these small evaporators, taking pains, bleaching it out with brimstone. In answer to the question, would it be profitable for a man to evaporate apples, I say yes. I have two thousand apple trees. If I had not a factory, I would have a nice little evaporator and use up the apples that I could not sell, that fell with the wind. The help around there could peel up a good many dollars worth of apples that are now thrown away. If the farmers would do the work well they would get just as good a price as the Americans. I put them up in five, ten, twenty-five and fifty pound boxes. I ordered a great many paper boxes from Montreal. Instead of selling them by the pound, the merchants would say, "Here is five pounds." The cost of packing is pretty heavy in a public establishment of that kind. The farmers could do that if they would get the little paper boxes. Put them in five pound boxes, lay the first course nicely; learn to be tasty and neat about it, and you will get a real good price for your apples—much better than if you put them in twenty-five pound boxes; ten pound boxes, however, are very nice. Oftentimes merchants would get seventy-five cents for five pounds. I don't believe a farmer can grow berries and evaporate them and make money out of them at present, because there are so many dried berries in the back counties that are picked and dried because they can't be shipped here; and the market is generally down to about fifteen or twenty cents. Now, if you get four cents a pound for them fresh you better sell them than undertake even to evaporate at that, because it will take four pounds of berries under the most favorable circumstances to make one pound of evaporated berries, and nearer five pounds. In large cities it is done. In Rochester a man has two hundred acres and evaporates his blackberries and makes money out of them. We never could; we gave it up.

Mr. CASTON.—The equinoctial gales in September knock a great many apples off the trees; and they are some of the finest specimens and if you don't keep them you lose them, as apples are a drug in the market in the fall of the year; and I think when people are a long way from the canning factory, if they could evaporate they would save a great deal that goes to waste.

Mr. BOULTER.—Thousands of dollars could be saved to the country in that way. If a wind-fall apple is cut up right away, peeled, the core punched out, put in the bleacher, and then sliced up, the bruises will bleach right out—it won't show in an evaporated apple.

Mr. CASTON.—I noticed evaporated apples quoted at about twelve to fourteen cents. I think we might take twelve as the wholesale price.

Mr. WRIGHT.—We can buy lots at ten—all we want.

Mr. CASTON.—How would that correspond per bushel with green apples

Mr. BOULTER.—The Golden Russet apple will make about four pounds to the bushel; it will make more than any other apple. The Snow apple will make less.

Mr. DEMPSEY.—I would like to ask Mr. Boulter what is the effect of this bleaching? It is exposing the apples to the fumes of sulphurous acid. I would ask any one to evaporate some apples and not expose them to the action of this acid, but try them natural and see if they don't have the natural flavor; then take some apple that has been bleached and cook them and taste them; and he will find that this bleaching process has a tendency to toughen the apple, even though you make them into a pie, the toughness remains; but if they are not bleached the apple cooks and swells up again just as nice as it comes from the tree, and you can detect the flavor of varieties of those that are dried without the bleaching process. I admit that the trade requires white apples, and those men engaged in drying apples don't care whether the apple is a white-fleshed apple or a yellow-fleshed apple.

Mr. CASTON.—Is not this bleaching what keeps them in perfect condition when they are opened?

Mr. DEMPSEY.—They will keep if you dry them a little better. The saccharine matter is what preserves the apple, and there is a certain amount of that which must be destroyed by the action of the sulphurous acid; there is no question about it at all in my mind; still I may be wrong.

Mr. BOULTER.—The way with hops is not sell my hops driven off almost peeled. I believe it would work that is driven off of an apple," what he says is the apple they have

Mr. W. R.

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Some of the time required thoroughly, for feet ten inches corn has reached way. Hoe, be hoeing remove little earth around out roots near near the surface week until the barnyard manure if the crop has you one of the

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Mr. BOULTER.—I was under your impression when we first started. It is the same way with hops. When I was in the hop business I went to Toronto and found I could not sell my hops. I was told I would have to put brimstone in. The brimstone is driven off almost entirely by the heat. We bleach the apple now as quickly as it is peeled. I believe that the bleaching process makes the apple softer and better than it would without bleaching. You cannot taste a particle of the brimstone, and I believe that is driven off with the heat. If the trade says, "We have got to have that kind of an apple," you may talk till doomsday to tell a man you are selling better than what he says he wants and what his customers want. If they demand that kind of apple they have got to have it.

GROWING AND DRYING CORN.

Mr. W. R. Dempsey, of Rednersville, contributed the following paper:

One of the most encouraging crops in our country to-day is corn, and yet heretofore but little attention has been given to its cultivation. Formerly it was grown for feed exclusively, but the springing up of our buying and canning industries has created a demand for its cultivation, and it stands to-day one of the most remunerative crops grown upon the farm in this country, creating labor and providing food for man and beast.

Some of the best results in growing have been found by plowing in clover at the time required for planting, care being taken to pulverize the newly turned up earth thoroughly, for which the disk harrow seems to be particularly adapted. Mark three feet ten inches each way; the seed does not cost much, so use plenty, and as soon as the corn has reached the height of three inches or is fairly up, use a light cultivator each way. Hoe, being careful in weeding not to leave more than four plants in a hill; in hoeing remove everything that may hinder the young plant from standing erect; put very little earth around the plants, as too much of the soil against the plant will cause it to push out roots near the surface, which is followed every time with branches from the plant near the surface of the ground, spoken of by us as suckers. Cultivate each way every week until the corn begins to tassel out. Good results have been found by plowing in barnyard manure with clover. The corn feeds upon the vegetable mould turned in, and if the crop has been grown for drying, or canning, it will be harvested in time to give you one of the best seed beds you can get for fall wheat.

Drying corn has taken its place with the drying of fruit. Upon the introduction of the evaporator for drying fruit, corn soon became an article in trade with fruit. It had scarcely reached its place in trade when the manufacturer discovered that the riper the corn the more pounds it made, forgetting that he had a reputation to sustain for his goods, hence its neglect in trade. Some manufacturers have been more discreet, and their brands are looked for in the trade. When the grain has reached a size such as is desired for table use, it is then ready for drying, but as soon as it has passed from its milk to its pulp state it is unfit.

The idea has been entertained that no sweet corn grown in Canada could be relied upon for seed. This idea is being disputed. The corn at the dryer that is found to have passed from its milk to its pulp state is passed over to the seed drying room, where an even temperature is maintained until the grain and cob has become thoroughly dried. In this way seeds have been produced as reliable as any American seeds can be, by the selection of the earliest and best ears. Under this process of curing for seeds, I believe the corn will be improved in earliness and size of ear.

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THE FRUIT COMMITTEE'S REPORT.

The Fruit Committee reported as follows :

The Committee on Fruits exhibited at the summer meeting of the Fruit Growers' Association have the honor to report that the canned goods department was fully represented by Wellington Boulter, proprietor of Bay of Quinte canning factory. Pears, plums, quinces, strawberries, blueberries, corn, peas and pumpkins—all were found upon examination to be of superior quality, and presenting the same fresh appearance as when first put up.

J. A. Morton, Wingham, shows Crown Bob, Whitesmith and Ocean Wave in gooseberries, all English varieties of good size.

A. Morton, Brampton, one plate of Ringer gooseberries of fine appearance, and largest in size of any gooseberry shown.

P. E. Bucke, Ottawa, Conn and Downing gooseberries; the Conn as compared with Downing grown side by side appears to be double in size. He also shows Moore's Ruby, Cherry, London Red and Fay's Prolific currants, all good size.

Wallace Woodrow, Picton, shows Wilson, Crescent, Manchester, Sharpless and Jersey Queen strawberries, Downing gooseberry and White Grape currant, all showing evidence of high culture. Also samples of "Home" canned goods in Shaffer and Golden Queen in rasps, and White Grape currant, all presenting a fine appearance.

A. M. Smith, St. Catharines, Marlboro and Highland Hardy raspberries and Vergennes grape. This grape is of last season's crop, packed in hardwood sawdust and remarkably well kept, although the flavor is not quite equal to freshly gathered fruit. This is evidence of what can be done in keeping grapes through the winter in a fresh state.

G. W. Caston, Barrie, some very fine samples in maple syrup and sugar.

W. W. Hilborn, Ottawa, sample of Salem grape was shown that had been packed in fine, dry sand, and preserved their appearance to a remarkable degree, although the flavor was not quite equal to freshly-gathered fruit.

The Experimental Farm shows in raspberries Turner, Tyler, Souhegan, Chapman, Rancocas and a new seedling raspberry named Hubner, originated from wild berries grown in Northern Muskoka. It resembles Cuthbert in size and color, in quality equal if not better and a week earlier than that old standard variety, and should receive a more extended trial. A number of interesting seedlings of red and black rasps, originated by Professor Saunders. Among the number was one large red, about a week or ten days earlier than Cuthbert, fully as large, productive and promising; also a seedling of Davidson's Thornless, a cap variety two or three days earlier and fully as large as Tyler, equally as good in quality, free from thorns, as strong a grower and apparently as productive. A seedling black currant was also shown of large size, stem being long and well filled, ripening very evenly; well worthy of trial. An interesting collection of fifty-eight photographs of the leading varieties of new and old strawberries grown on Experimental Farm, showing their exact size and form, was shown by W. W. Hilborn. Owing to the general drouth, the samples of fresh fruit exhibited were scarcely up to the standard.

All of which is respectfully submitted.

J. P. WILLIAMS,
WALLACE WOODROW,
W. W. HILBORN.

A vote of thanks to the County of Prince Edward and to the inhabitants of Picton for their kindness to the Association, was moved by Mr. Wright, seconded by Mr. Gibb, and responded to by Mr. Boulter, Mr. Dempsey, and Mr. Storey, Reeve of the township, after which the convention adjourned at noon.

In the afternoon, upon invitation from Mr. Boulter, the delegates took a trip in a steam yacht to Glenora, a summer resort five miles east of Picton, noted for the "Lake on the Mountain," two hundred feet above the level of the waters of Lake Ontario and the Bay of Quinte. Lunch was served at the Glen House by Mrs. Comer, the proprietor, and after a few hours happily spent, the party returned in the evening to Picton, whence they dispersed. On the following day Mr. Boulter conducted a party to the famous sand-banks, some fourteen miles south-west of Picton, on the shores of Lake Ontario, and on returning the party took the train at Bloomfield station for their homes.

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APPENDIX.

1. SECRETARY'S PORTFOLIO.

HYBRID SIBERIAN APPLES.

BY CHAS. GIBB OF ABBOTSFORD.

The old names of "Crab Apple" and *pomme d'ornement*, are no longer suitable for these fruits. The little berry-like crabs of Siberia, and their descendants, have been pollenized and re-pollenized on this continent, retaining the hardness and fruitfulness of their female parent, the Siberian, yet bearing fruit in quality more like our best apples. In some cases, too, we have retained the thinness of skin, and the brisk sprightliness of flavor of the Siberian, while largely increasing its size and entirely getting rid of its astringency.

I have fruited 29 varieties, mostly from Minnesota and Wisconsin. The six best I will mention, in order of ripening.

Early Strawberry (of Minn.). I recommend this for home use, as it ripens with Red Astrachan, and is better in quality than any apple I have which ripens at that season. When for the first time sent to the St. Hyacinthe market, nobody wanted it. It was sampled out to every one, and now and then somebody would buy a peck. Next week everyone was asking for "la petite pomme rouge." Last year twelve barrels were sent to the St. Hyacinthe market and sold readily.

Whitney's No. 20 (of Ills.), is a beautiful red little apple, rather than a crab, and only shows its Siberian ancestry in the texture of its flesh as it becomes mellow. It is of first quality as a dessert apple, better than Early Strawberry.

Gibb. Raised by G. P. Pepper, of Pewaukee, Wis., from the Yellow Siberian Crab, fertilized by Fall Greenings. The skin is a bright deep yellow, sometimes bronzed in the sun. The flesh too is yellow. My friends are all fond of it and beg of me to send them some for canning. It cans like a plum.

Brier's Sweet (of Wis.). From Transcendent, pollenized by Bailey's Sweet. It is sweet and has not the Siberian character of flesh. The tree suffers when young from aphides.

Orange (of Minn.). A pale orange, thin skinned fruit of very fair quality, free from any astringency.

Lake Winter. A seedling, by Mr. J. C. Plumb, of Milton, Wis. Of fine quality, and keeps till November or later.

These six varieties are all hardy trees; all young bearers, except Early Strawberry; all heavy bearers; all good growers except Gibb; all entirely free from astringency except Gibb, in which it is very slight; all of good quality as dessert fruits. This is not merely my own opinion. When my friends are strolling through my orchard tasting everything they like the looks of, even though there may be Fameuse and St. Lawrence and lots of other good apples, I find that they taste and re-taste and say they like these so-called crab apples.

However, all these kinds except, perhaps Lake Winter, after becoming ripe deteriorate quickly. This is the nature of the Siberian character of flesh. They should be marketed quickly.

Of the other twenty-three varieties I have fruited my favorites would be Meeder's Winter, Minnesota and Beeches Sweet; and of the varieties I have seen but have not myself fruited, the Rose of Stanstead and Rottot. This latter is a St. Hilaire variety of deep color and good quality. For jelly we need acid crabs of fairly deep color, astringency does not matter. For canning slight astringency, as in the Montreal Waxen (known also as Queen's Choice), cannot be tasted, though strongly astringent varieties like Hyslop and Transcendent, people usually soon get tired of.

In the Western States the Siberian and its crosses have proved so subject to blight that their cultivation has been given up. Blight is rarely troublesome even in the warmer end of our province.

I would however, warn my fellow fruit-growers that a tiny crab can produce as good a codling worm as the largest apple, and the habit of growing a lot of poor crabs which are not worth picking, may be the means of spreading in a wholesale way the worst insect foe with which the apple grower has to contend.

In conclusion I would recommend for trial in the colder climates of our province these fruits of semi-Siberian origin, and if you think I have over-rated their qualities, then, next September, send a deputation to Abbotsford, and await their report.—*13th Report Montreal Horticultural Society.*

NEW VARIETIES OF GRAPES AND THEIR VALUE.

BY W. MEAD PATTISON, CLARENCEVILLE, P. Q.

As a general prelude I would say the summer of 1887 was unusually favorable not only for early ripening, but for exemption from any traces of mildew. An enemy has, however, appeared in the "English sparrow," yearly becoming more destructive to the grape, not only in its embryo state but to the ripe fruit, forcing us to resort to bagging the clusters before they begin to ripen. The season was notable from favorable results in a few new varieties, while some spoken of with favor in former years have shown deficiencies. Numbers of new varieties are yearly introduced and applauded by those pecuniarily interested, but an insignificant number survive the trial, yet I believe the acme of improvement in out-door grapes is by no means attained, though the name of Rogers may for some time stand foremost for the number and value of his hybrids.

The grape of the future must be of high flavor and purer quality! Consumers are not critical enough. They are inclined to judge from appearance and cheapness, not quality, but fruit dealers in the large cities of the United States say "people are beginning to discriminate, and yearly the better class of grapes are more in demand and the poorer at scarcely remunerative prices." When the criterion is quality, more propagators of new varieties will bend their efforts in that direction, and the poor trash on our markets, in the shape of cheap grapes will be displaced by good fruit; as yet this matter largely rests with the consumer. Few men have been more fully alive to the new era approaching than A. J. Caywood & Son, of New York State, who have introduced three new varieties recently. We will now only deal with their Ulster Prolific and Duchess. The former a red grape has fruited here for three years, in size nearly twice that of Delaware, compact, medium sized bunch, in quality much preferable to Concord, with which we draw the comparison only as regards fruitfulness and vigor, it ripens here some time before it, and the canes being short jointed the vine may prove to bear more fruit in the same space; if this conjecture is realized Ulster will be a very profitable market grape; as to keeping qualities it continues good through January. While in red varieties I will say that Jefferson, a very handsome and excellent grape, ripened with me last year, but later than Concord, from this fact it will be of very little value for general cultivation here. Mary continues to set its fruit imperfectly, consequently is of no value for market. Vergennes still very prolific and valued for winter use. Wyoming Red bears loose imperfect bunches, forbidding in appearance and foxy in flavor, but very early. Owasso is of excellent quality but bears imperfect clusters, ripening late. Challenge is of no value, so how can we judge by a name?

Of black varieties, "Jewel," originated by Mr. Burr, of Kansas, U. S., by his system of natural fertilization by grouping the vines, claims special notice. Principal parent supposed to be Delaware, which it closely resembles in flavor, a trifle larger.

Empire State and Niagara vines had a set-back in the winter of 1885-86, and have not fruited yet; both strong growers, requiring checking in season to properly ripen the wood. From what I have learned of Empire State it is highly esteemed for quality and earliness, but bears sparingly. Mr. Jack has for two years exhibited very fine specimens of Niagara which he must have had several years in cultivation.

Mason's Seedling, originated from Concord seed in Illinois, U. S. It has fruited for three years; berry size of Concord, bunch not as showy, flavor of fruit much preferable;

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if it improves in bearing will be a very valuable acquisition. The white varieties—Prentiss, Hayes, Rickett's Golden Gem, Lady Washington, Naomi, Undine, Faith, Grein's Golden, Rommell's July, Superior and Golden Drop, have proved here uncertain and of little value. Last year I discarded and dug up a larger number than heretofore. Classification of varieties popularly recognized as "Standards," given in order as to estimate of value here.

WHITE.—Lady, Belinda, Antoinette, Martha, Carlotta, Sweetwater, Purity, and Allen's Hybrid.

BLACK AND PURPLE.—Champion and Hartford (only for earliness and market), Worden, Barry, Herbert, Aminia, Essex, Moore's Early, Burnet, Eumelan, Concord, Belvidere, Rockland Favorite, Adirondack, Creveling, Whitdale, Senasqua, Peabody, Waverley, Cottage, Canada, Florence and Bacchus.

RED.—Delaware, Lindley, Massasoit, Rogers No. 8, Gaertner, Rogers No. 14, Vergennes, Agawam, Salem, Rogers No. 5, Brighton, Walter, Northern Muscadine, Rogers No. 30, and Underhill's Seedling.

It will be observed that some highly esteemed for quality are low down on the list, and others are given a prominence from the point of earliness. Defects, viz., lateness, unfruitfulness, imperfect setting, tendency to mildew, enfeebled roots and weak foliage, are taken into consideration.

RUSSIAN APPLES FOR THE COLDER PARTS OF THE PROVINCE OF QUEBEC.

BY MR. CHAS. GIBB, OF ABBOTSFORD, P. Q.

Did it ever occur to you how few "tree-fruits," that is, fruit bearing trees, we have, that are *natives* of this continent? We have no apple, except the sweet scented crab of the South and West. No pear. In plums we are better off; we have the wild plums of Canada and the North-Western States, the Chickasaws of the west and south, and the Beech Plum of the coast. Of cherries, we have the Choke Cherry, Bird Cherry and the Wild Black. We have mulberries, but no approach in quality to those of the old world. Persimmons, but not equal to the Kaki of Japan. We have a bitter orange, but no fig, pomegranate, peach, nectarine, quince or apricot. While the Chinese and Japanese and the Romans and other early people in the old world were slowly developing these fruits from their wild forms, we had an Indian population who lived by fishing and hunting. Had there been an aboriginal population like the Chinese or Japanese, horticultural in their tastes, then our wild grapes would have been fully equal to any in the world; our crab apple at least better than it is; our haws the size of small apples; our choke cherry free from astringency; butternuts with shells as thin as Spanish walnuts; wild black cherries equal to the Black Tartarian, and wild plums fully equal to the Washington and the Green Gage.

Where did our fruits come from? Where originally from, I will not enter into. Let us go back to the time when the peasants of Normandy and Brittany were gathering the seeds and perhaps the scions of the fruit they loved most in their native land before embarking on their long and perilous journey to New France. Later on the Englishman introduced his favorite fruits, the Scotchman his, and we soon had in New England and in Canada the fruits of the mild, moist portion of Western Europe. The uncertainty of these fruits of Western Europe in the colder parts of this continent, both in the Eastern States and on the Western prairies, directed attention to the colder districts of Eastern Europe. The U. S. Department of Agriculture at Washington imported from Dr. Regel, of St. Petersburg, in 1870, 252 varieties of apples. These were planted and fruited upon the department grounds, but the climate of Washington was such that the latest of them ripened and dropped from the tree by August 4th. They were, however, widely distributed for six years, and in one year 100,000 packets were sent out. Many varieties proved to be Duchess. There were evidently many mistakes, attributed in the west to the carelessness of the Department, which, however, was not so. The collection at that time rather fell into disfavor. I will allude to this again.

Professor Budd, of the Iowa State Agricultural College, in 1879, imported from Dr. Regel, St. Petersburg, 73 varieties, and from Dr. Schroeder, of the Agricultural Academy of Petrovskoe Rasumovskoe, near Moscow, about 154 varieties. Exact information about these apples we could not get. The only thing to be done was to go to Russia and get it. Some one had to go. Mr. Budd and I went. This was in 1882. We found the Russian fruits not looked up by the Russians as we had expected. We found St. Petersburg and Moscow not specially favorable to orcharding, but 430 miles to the east of Moscow, in latitude 54°, 600 miles nearer the North Pole than Quebec, we found apple-growing the great commercial industry of the people. We wandered from village to village along the Volga in a little sail boat, then in a tarantass, a basket on wheels without springs, with hay on the bottom, driven by three horses abreast; sometimes living on black bread and sleeping on a bundle of hay. Here the winter temperature for the three months is 9° above zero, which is the mean for the winter quarter for a period of no less than fifty-nine years.

Mean temperature for the winter and summer quarters for several stations in Quebec, with the average highest and lowest temperatures:

STATIONS.	MEAN TEMPERATURES.				EXTREMES. (Average.)	
	Winter.		Summer.		Highest in Summer.	Lowest in Winter.
	Temp.	A	Temp.	A'		
Quebec	15.9	62.5	89.7	-22.9
Chicoutimi	11.9	-0.6	60.8	-0.3	96.3	-32.2
Cape Rosier	14.5	+4.7	55.5	-1.9	74.0	-15.0
Anticosti, S. W. P.	17	-0.6	56.9	-0.3	71.0	-14.6
Father Point.....	15.5	-1.0	54.9	-0.4	80.3	-23.8
Cranbourne, Dorchester Co.	15.6	-0.6	59.2	-0.3	90.0	-27.8
Dalhousie, N. B	13.3	-0.6	55.6	-0.3	92.2	-20.5

The figures A and A' represent a correction, which should be applied to the given mean for the station to reduce it to the mean of a larger number of years, and is derived from the observations at Quebec.

That is nearly 7° colder than the city of Quebec. The temperature tables which were published in my report in 1882, were very kindly prepared for me by Robt. H. Scott, Secretary of the Meteorological Office in London. To Prof. Carpmael, of Toronto, I am indebted for temperatures as herewith given for Chicoutimi, Cape Rosier, Anticosti, Father Point, Cranbourne and Dalhousie, N. B. Of these the lowest reading for the winter quarter is at Chicoutimi, and yet it is milder than Kazan in Russia by three degrees.

Let me comfort you then with the fact, that in no part of the Province of Quebec where we are likely to grow apples is it colder than in the extensive orchard regions of Kazan. You have great diversity of site in this Province. Choose your hill-sides, not your bottom lands, unless near large bodies of water, thus avoiding late spring and early autumn frosts; and if possible plant where you have protection from prevailing winds. Too warm a southern exposure is often more risky than open exposure to the north. As you go north your difficulties will increase, yet you have no such difficulties to cope with as they have on the Western prairies. To test the hardiness of the Russian apple trees, at their worst, in bleak, open prairie exposure, at the Minnesota State Experimental Station at St. Anthony, near Minneapolis, 65 varieties were planted. The soil was rich,

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and under good culture they made a growth in 1886 up to 20 and even 26 inches, which, however, ripened well before winter. The winter of 1886-87 was unusually severe. Not one variety started from its terminal buds. Sixteen varieties lost one inch or less of growth. Duchess killed back sometimes to the old wood, but usually started buds from the base of the new wood. The verdict was 16 varieties hardier than Duchess! Minnesota experience is most valuable to us.

The value of these experiments, carried on with scientific accuracy, as in these experimental stations, is very great. Allow me to digress a little to glance at some earlier attempts at experimental horticulture. Over two centuries ago, when the Portuguese, Dutch and Spaniards were founding colonies in the East Indies, after order had been established, one of the first things to be done was to plant a garden for the testing of food plants. These experiments were enlarged as the colony increased, and were the forerunners of the beautiful botanic gardens of the present day. A little over a hundred years ago when the British, French and Spaniards were fighting like tigers for the possession of the West Indian Islands, a French vessel laden with plants from the Isle of Bourbon, near Mauritius, to found a botanic garden in the West Indies, was taken by the British and towed into Port Royal, Jamaica. This was the beginning of the experimental work in that island. The Mango, an East Indian fruit, is now the commonest forest tree in Jamaica; the banana, also an East Indian plant, a chief food plant of the West Indies. The East and West Indies have interchanged for over a hundred years. The enormous export fruit trade of the tropics is the result of this. That we have oranges and lemons, bananas and pineapples in our markets, at reasonable rates, is due to this. All the British colonies in the tropics and sub-tropics have (call them what you will) their testing grounds, botanic gardens, experimental stations. We have now at Ottawa a central experimental farm, begun over a year ago, and branch stations will be established, one for N. S. and N. B., at Nepean, 5½ miles east of Amherst, N. S., one each for Man., N. W. T. and B. C. Prof. Saunders is just the man for such important work. But that Canada should have remained so long without any experimental station, is a fact without parallel in British colonial history.

Fortunately for us we had good neighbors. The U. S. Department of Agriculture have long been experimenting. (See their reports, beginning with their first report in 1847.) Of late years State experimental stations, often under the State Agricultural Colleges, each taking a line of its own, are doing a grand, good work now, since the passage of the "Hatch Bill" by Congress, allowing \$15,000 per annum to each State Agricultural College for such special work, we may expect still more important results. I said that the East and West Indies had interchanged their products for over one hundred years, but it was not till 1870 that a collection of the apples was sent from our like climate in the old world, viz., Russia, and then imported, not by us, but by the U. S. Government. This importation by the Department at Washington was received by Dr. Regel from many different places in Russia. Between 1861 and 1870 Dr. Regel had been receiving scions and samples of fruit from 39 sources, though sometimes two or more in one place, and although not so thought at the time, this collection contained the greater part of the best apples of the colder parts of Russia. Prof. Budd, at the Iowa State Agricultural College, has been importing ever since, gathering in quantity, propagating and scattering in all directions. Thousands of growers are testing these Russian fruits, and it is a comfort to feel that one is not working alone, but that all are co-workers in a common cause. I have over 100 varieties of Russian and German apples on trial; 75 varieties I have already planted into orchard, each tree labelled and in my orchard book, a note as to place from which each tree was received, so that whatever should happen my link in the chain should still hold good.

The introduction of these Russian apples has been beset with drawbacks, nomenclature is uncertain in Russia, and varieties have been propagated by Russian names spelled in all sorts of queer ways, or by translation either unmusical or wholly wrong.

The last report of the American Pomological Society contains lists of these fruits imported from Russia and Germany written by me. This work was undertaken by the request of that Society and appears as a suggestion to our authoritative body. A similar report, but in the alphabetical order, has been made out by Hon. T. T. Lyon, President

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of the Michigan State Horticultural Society, for the report of the Division of Pomology of the U. S. Department of Agriculture. Thus my suggestions have become fixed and unchangeable; that is, owing to their appearance in the American Pomological Society's report and at the same time by Mr. Lyon in U. S. report, it will be found unadvisable to make any changes except for some glaring mistake. Thus another drawback is being removed.

I am, I find, specially asked for a short list best adapted to our colder climates. I give this with a good deal of hesitation, from unripe experience, but give it in part from their behavior in my own orchard, and in part from trees I have seen in fruiting in Wisconsin and elsewhere in the U. S. In order of ripening, (i) either Yellow Transparent, or Thaler (Charlottenthaler); (ii) Raspberry (Malinovka); (iii) Titovka; (iv) Golden White; (v) Longfield; (vi) Arabka (of Ellwanger and Barry.)—*13th Annual Report Montreal Horticultural Society.*

THE NATIVE PLUMS OF THE NORTH-WESTERN STATES.

BY MR. CHAS. GIBB, OF ABBOTSFORD, P. Q.

My first efforts to grow plums proved failures, I now succeed in having a crop every year.

I began in 1872 by planting those varieties of the European plum which had done the best (and that means only fairly well) in the sheltered city gardens of Montreal. Lombard bore one glorious crop; Bradshaw a few now and then; Washington bore a few and died. A large black, like Quackenboss, also bore a few specimens several years. So has another like Coe's Golden Drop. A large number of varieties died before fruiting, but as many I had were not true to name, these may not have been the kinds I bought them for. Rev. Canon Fulton, of Maratona, Huntingdon, sent me a variety of Damson, it bore a few and died. Later Mr. James Brown, of Montreal, sent me Corse's Nota Bene which has borne but one plum and will not live much longer. He also sent me Dictator and Corse's Sauvageon, but they did not seem to thrive. I have Moore's Arctic, but their unthrifty condition may be owing to the dried state of the trees when I received them. I have also the *Prunus Simonii*, of China, a fruit flat like a pomme grise. The tree is not hardy enough. Two years ago I imported from Europe a number of varieties, especially of the prune type of plum, for in some cases the prune is found to be hardier than the plum; for let me remark that in Europe men plant their gardens or roadsides with "prunes" or plums, just as in California they plant out their acres with "raisins" or grapes. I have several varieties of the Russian plums. The Abbotsford Fruit Growers' Association has twice imported from Moscow, but they are too young to report upon. But I must here draw your attention to the fact that we have not in this country the plums of the Volga, and of the other colder districts of Russia. Mr. Shroeder, of the Agricultural Academy at Petrovskoe Rasumovskoe, Moscow, received the plums he sent to Abbotsford and to Ames, Iowa, from Poltava, a comparatively mild region. Dr. Regel of St. Petersburg, has sent out three varieties to this country, from where obtained he was not able to say, and beyond this but one really Russian variety from Central Russia has yet reached us and that is the Moldavka of Vorouesh. It is much to be regretted that the plums of Volga are not obtainable here, and as many of them are to be found only in little out-of-the-way villages like Kluchichi and Tenki, in the Province of Kanzan, it will be many long years before we may hope to have them.

However, we have another race of plums which have proved a decided success at Abbotsford, viz., the improved varieties of the native plums of the Western and North-Western States. I have about ten Wisconsin plum trees which were the roots of root grafts planted in 1873. They bore five good crops in succession, took a year's rest and have borne almost each year since. They are nice for eating and pretty good for cooking, but when canned the astringency in the skin and stone becomes too pronounced and one

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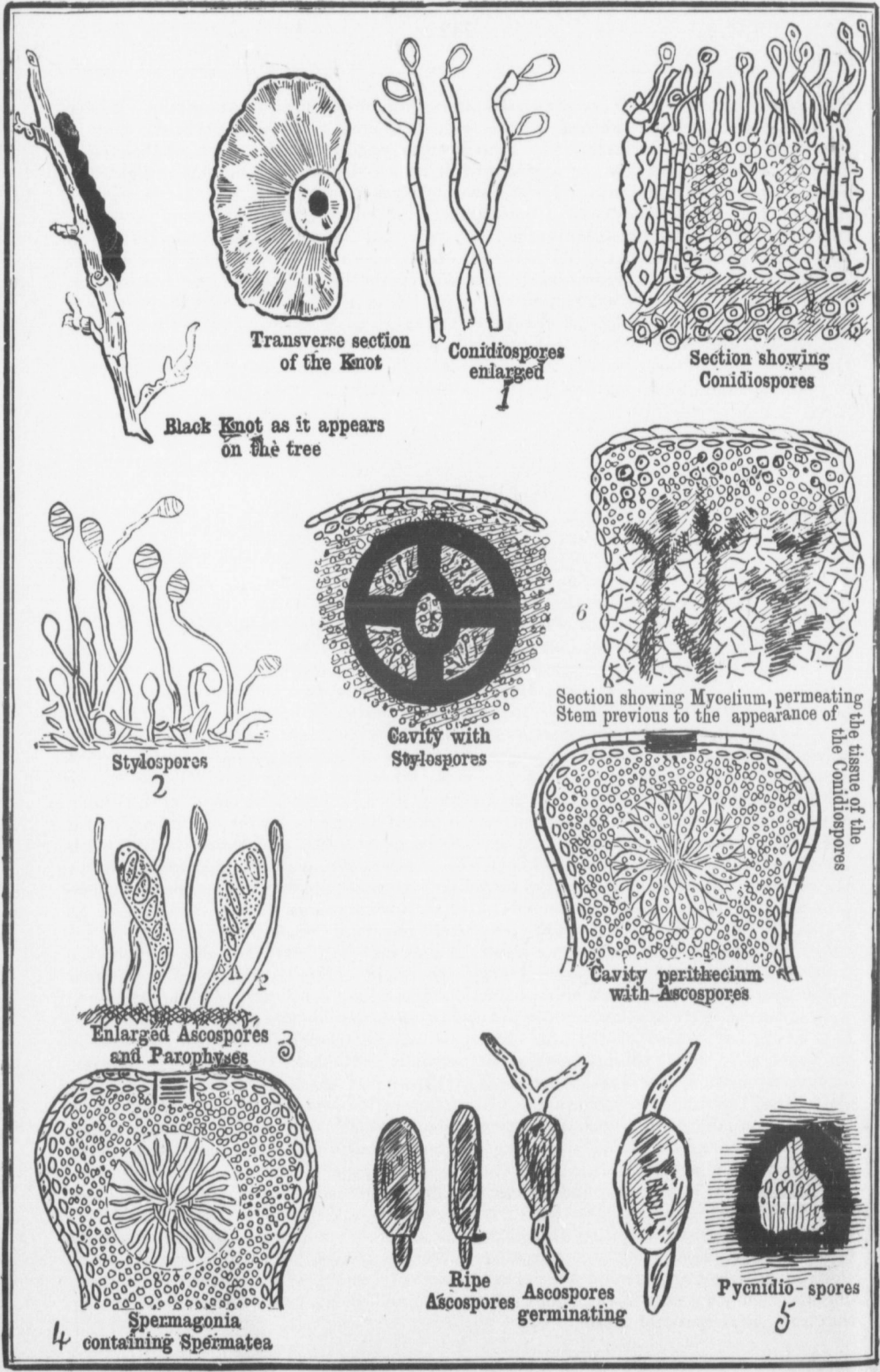
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Black Knot as it appears on the tree

Transverse section of the Knot

Conidiospores enlarged

Section showing Conidiospores

Stylospores

Cavity with Stylospores

Section showing Mycelium, permeating Stem previous to the appearance of

Cavity perithecium with Ascospores

Enlarged Ascospores and Paraphyses

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soon gets tired of them. They are the Western form of our *Prunus Americana*. I have also the DeSoto. Little trees of it bore their first crop last year. It is the best in quality of these *P. Americana*, and I heartily recommend it for trial. I have about eight trees of Miner, a Chickasaw, or a cross with it, which have borne moderate or light, but yearly crops without any failure for at least eight years. The fruit is rather large, dark dull red, and has a flavor like a muskmelon. It ripens October 1st and keeps till November 1st. I had about six bushels last year, and owing to its lateness it sells well at 80 cents per bushel, but I do not recommend anyone to grow it who lives further north than Abbotsford. Basset has fruited with me, but is small, astringent and inferior. Of varieties which I have not fruited but which I have seen and tasted on the grounds of the Iowa Agricultural College, I would specially mention Mooreman, a small red fruit of fine quality, and Wolf, a large, red moderately juicy freestone, with heavy rank foliage. Of others I find Weaver spoken of as doing well in Minnesota, and Maquoketa, Speer, Wyant and Rollingstone promise well on the College farm at Ames, Iowa.

THE BLACK KNOT.

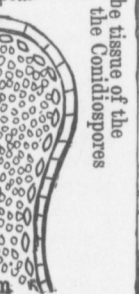
BY PROF. J. H. PANTON, M.A., GUELPH.

One of the most troublesome diseases of vegetable origin affecting the fruit trees of Ontario at the present time is the well known so-called black knot. Though it has been the subject of much study, and much has been learned regarding its life history, still fruit-growers, to a great extent, are helpless to withstand its attacks.

The duty devolving upon me in reading this paper before you, is to open up a discussion on this troublesome pest. Its attacks seem to be confined largely to the plum and cherry trees, few of which seem to escape its destructive influence.

An examination of the "knot" at an early stage of its development shows innumerable small transparent threads only seen by the aid of the microscope. These branch among the cells which compose the tissue of the inner bark of the tree and form the so-called *Mycelium*, or vegetable part of the fungus. (6) The threads become very intricately twisted together in bundles as development proceeds, beginning in the cambium layer of the bark and radiating outwards. As spring advances, the threads increase in size, reach a more matured condition, and the knot presents a somewhat velvety appearance later in the season. This is the result of the threadlike structures sending up innumerable short-jointed filaments (*Conidia*) on the ends of which are borne egg-shaped spores known as *Conidiospores* (see fig. 1). These are very small, requiring the aid of a microscope to see them. When ripe they are readily disturbed and may be blown long distances by the wind and thus reach new places become the origin of knots similar to those from which they came. This mode of reproduction in the knot continuing till the summer is well advanced, when another class of spores begins to develop and reach maturity about February. The surface of the knot during winter shows pores which can be seen by the naked eye; these open into cavities, on the walls of which are two kinds of structures, one consisting of slender filaments (*paraphyses*) the use of which are not known, the other club-shaped (*asci*); in the latter are developed, toward the close of winter, the *ascospores*, (see fig. 3), usually eight in each *ascus*, at the end of which is an opening through which the spores pass and become new starting points for the fungus when they reach proper conditions for development.

Other cavities also are found among those with the *asci*; these contain very minute oval spores divided by cross partitions into three parts, and borne on slender stalks (see fig. 2). These are the so-called *Stylospores*, the use of which is not known, but generally believed to be concerned in the perpetuation of the species. Still, other cavities exist containing exceedingly slender filaments (*spermatia*), (see fig. 4) also concerned in reproduction. They are seen in the knot during winter and spring, and are much less common than the *conidiospores* or *stylospores*.



Interspersed amongst the cavities already referred to, one finds from time to time spaces more flattened than these, and often instead of appearing oval, seem almost triangular. They are lined with short, delicate filaments, which end in a minute oval body. These bodies are produced in great numbers and are discharged in masses, being held together by a sort of jelly. This form is known as the *pycnidiospores*, and also seem to be connected with the process of reproduction (see fig. 5).

Thus, you perceive, we have no less than five different kinds of reproductive organs connected with the fungus which causes 'black knot, viz.: *conidiospores*, *ascospores*, *stylospores*, *spermatia*, and *pycnidiospores*, all more or less concerned in the perpetuation of this destructive disease.

For some time before the true nature of this disease was known it was generally believed that the cause of the "knot" was the presence of insects, but since the life history of this fungus has become a subject of study, and its various stages of growth made out as already described, the insect theory has been abandoned. The following reasons for believing that the knot is not caused by insects might be remembered:

1. The knots do not resemble the galls made by an insect.
2. Although insects or remains of insects are generally found in old knots, in most cases no insects at all are found in them when young.
3. The insects found are of several species, which are also found on trees which are never affected by the knot.
4. We never find black knot without the fungus *sphaeria morbosa*, and the mycelial threads of that fungus is found in slightly swollen stem long before anything like a knot has made its appearance, nor is this fungus known to occur anywhere except with the knots.

The morello cherry seems most susceptible, and it is supposed that the disease has originated from some of the wild cherries rather than the wild plum.

Notwithstanding the subject of black knot has received so much attention, little advance has been made in its extirpation, other than the cutting the knot off as soon as observed.

When the knot makes its appearance the branch should be cut off a short distance below the slight swelling of the stem, which is seen just below the knot. When cut away, burn the branches to prevent the spores from spreading the disease. These spores, it will be remembered, are microscopic and in great numbers; besides, if the branches are not destroyed the ascospores will ripen during the winter and perpetuate the trouble. The most favorable time to cut off the knots is late in autumn, before the ascospores are ripe, but as the conidiospores ripen in early summer, if knots are seen in spring they should be cut away at once.

Not only should deceased branches of cultivated cherries and plums be removed, but also the choke cherry, bird cherry, and wild plum in the vicinity of orchards be destroyed.

Some recommend the application of turpentine to the knot; this requires to be done carefully, or the neighboring parts of the branch will be injured, and it is questionable if the results would be favorable. If the knot is large enough to be treated in this way it is likely nothing short of removal would check the spread of the fungus.

Unfortunately little regard is paid to the law which requires affected trees to be destroyed; they are thus scattering millions of spores yearly which are spreading the disease to all parts of the province until the black knot has become almost universal, and in every locality these blighted trees stand as silent monuments of the indifference and ignorance of those who should co-operate in fighting against a common foe.

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THE MILDEWS ON THE GRAPE-VINE.

BY DR. C. V. RILEY.

There are very many fungi known to attack the grape-vine, as is evidenced by a glance at such works as "Fungi parassiti dei Vitigni," by Dr. Romueldo Pirota (Milan, 1877), or "Die Pilze des Weinstockes," by Felix von Thümen (Vienna, 1878). But the two principal fungi, both of them popularly called "mildews," which interest the grape grower, on account of the extensive injury they cause, are the *Uncinula spiralis* (Berkeley & Curtis), and the *Peronospora viticola* (Berkeley). Any popular statement in reference to grape-vine mildews, in order to be accurate, must take cognizance of these two species which occur ordinarily under opposite atmospheric conditions. Failure to do so has wrought much confusion in the fugitive literature on the subject. As popular distinguishing terms, it would be well to call the former the "Powdery Grape-vine Mildew," and the latter the "Downy Grape-vine Mildew."

It is my purpose here to deal chiefly with the latter, but it will be desirable first to briefly consider the characteristics of the former, that the differences between the two may the more readily appear.

THE POWDERY GRAPE-VINE MILDEW.

This is the *Uncinula spiralis* (Berkeley & Curtis), and the conidial form has long been known by the name of *Oidium Tuckeri* (Berkeley).

General Appearance.—This particular fungus produces a white, powdery appearance on the upper surface of the leaves, which at first looks not unlike dust, and which is much less conspicuous on the lower surface. Beginning in spots, these grow larger and larger until they cover the whole leaf, and include even the young stems and berries.

Structural Characteristics.—The powdery spots consist of mycelial threads attached to the epidermis of the leaf by suckers. These filaments have a diameter of .004 mm. Portions of this mycelium rise up from the surface of the leaf and become constricted or intersected, thus forming cells. As these cells, which are the conidial spores, multiply, the terminal ones enlarge, ripen, and drop off, so that a succession of conidial spores is formed. The spores germinate at once by pushing out a germinating tube, generally at one end.

Late in the summer and autumn, the perithecia and asci are formed, ripening about the first of October. These are the resting or winter spores, and are small, black bodies occurring on both surfaces of the leaf and on the stems. They consist of an opaque sac with a cellular wall, from which a number of appendages radiate, to from three to five times the length of the diameter of the perithecium, and some of them either uncinulate or spiral at tip. The perithecium measures from .07 to .12 mm. in diameter, and the number of appendages varies from 15 to 32. Inside the perithecia are the asci or sacs, which contain the spores. The asci vary from four to eight in number, nominally six, the spores also vary in number, the average being six. The *Uncinula spiralis*, therefore, appears in two phases—first, as a white, flocculent mold; secondly, as perithecia, with more or less uncinulate, or spiral appendages.

Variation in Habit.—One of the most interesting facts in connection with this fungus is that only the conidial form, known as *Oidium Tuckeri*, occurs, or is so far known in Europe. There is some question as to the actual specific identity of *Oidium Tuckeri*, as found in Europe, and the conidial stage of *Uncinula spiralis*, as found in this country. The bulk of opinion is, I think, that they are identical, for while Von Thümen, in his *Fungi Pomicola*, and in his *Pilze des Weinstockes*, follows Fukel in giving *Sphaerotheca castagnei* Lev. as a synonym of *Oidium Tuckeri*, thus implying that this last is the conidial form of the former. Fukel merely makes the conjecture without positive proof, and there is great improbability in the conjecture being correct. We have, in fact, in this case, so far as the evidence goes, one somewhat parallel to that of the Grape-vine *Phylloxera*. The gill-making form of this insect upon the leaf is of very common occurrence, and the form most easily observed in America; whereas in Europe the species very

rarely produces the gall. Yet the historic evidence is conclusive as to the introduction from America of *Phylloxera vastatrix*, and almost as conclusive as to the similar introduction of this *Oidium*; and, to my mind, they both furnish admirable illustrations of a change of habit in an organism sufficiently marked that, without the historic evidence, the question of the exact specific identity of the parent, and its transcontinental issue, might well be raised. The interesting question, philosophically considered, is why, if the winter spore is necessary to the perpetuation of the *Uncinula* in America, the species can propagate for an indefinite period without it in Europe?

Effect on the Vine.—The fungus is less injurious to our hardier native grape-vines than to the European *Vitis vinifera* and hybrids of it. Hence it is more to be dreaded in California and in Europe than in the Eastern United States. It also prevails most in a dry atmosphere.

REMEDIES.

Sulphur is well known to be one of the most satisfactory remedies against this fungus, and is in universal application where the disease prevails. It is generally applied dry, by means of bellows, though, it seems to me, the wet method would have advantages with the use of the cyclone nozzle. Mr. A. Vitch, of New Haven, Conn., has found that in green-houses the sulphur may be advantageously applied by mixing it with linseed-oil to the consistency of paint, and brushing it on the flues or hot-water pipes. Mr. Wm. Saunders, the Horticulturist of the Department of Agriculture, has for many years used with great satisfaction, a weak solution of lime and sulphur, obtained by pouring water on one-half bushel of lump lime and ten pounds of sulphur, and then diluting for use.

THE DOWNY GRAPE-VINE MILDEW.

General Appearance.—The other mildew, namely, the *Peronospora*, shows itself on the underside of the leaves in the form of a small patch of whitish down, and sends its mycelium into the adjacent tissues, destroying the parts, which scorch and turn brown, as if sunburnt. It has been known by various popular names, as "blister of the leaf," "blight," and so on. It generally escapes attention in its earlier stages, and experience shows that it is most destructive where the dews are heavy, or in continued damp, rainy weather. This particular mildew is the *Peronospora viticola* (Berkeley & Curtis), DeBarry having first referred to it as *Botrytis viticola*.

Structural Characteristics.—The mycelial threads or hyphæ, are about .01 mm. in diameter, somewhat larger in the stems and petioles than in the leaves. They are found everywhere except in the wood proper, but particularly in the tissues of the leaves. Their contents are granular and somewhat oily, and cross partitions so characteristic of the *Uncinula*, are rare. Just beneath the stomata of the leaves, the hyphæ are particularly abundant. Those which are to bear the conidia pass through the stomata and grow more rapidly than the rest, ramifying and reaching from .3 to .6 mm. in height, and bearing the conidia on the tips of the branchlets. The conidia are oval and obtuse, varying in size from .012 to .03 mm. in diameter. Germination takes place with great rapidity whenever there is sufficient moisture. Conidia placed in water become swollen and somewhat segmented in an hour. The segments become oval bodies, collect at the distal end of the conidia, rupture the wall in a short time and escape, swimming off as zoospores, each with two cilia. Each conidium produces, on an average, five or six zoospores, though the number is quite variable. They vary also in shape, and from .008 to .01 mm. in length. They move about from 15 to 20 minutes; then come to rest, when the cilia drops off, and a new mycelium develops from the side.

The winter spores, or oöspores, are found in September and October, in discolored and shriveled parts of the leaves. They are spherical, .03 mm. in diameter, with a thick, smooth, yellow cell-wall. They fall to the ground with the leaves and lie dormant till spring.

So far as I can find, the actual steps by which the winter spores are produced, have not been observed in this species, or for that matter, in the *Uncinula*, but as the process

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is known in the order Perisporiaceæ, we may confidently assume that they result, later in the season, from the union of the contents of two cells, or hyphæ, *i. e.*, they are of sexual origin.

We thus have, as in the *Uncinula*, both summer and winter spores. The summer spores develop outside the leaf, and germinate rapidly as soon as moistened by rain or dew. Consequently, during a wet summer, the spread of the fungus is extraordinarily rapid, so that within a few days a large vineyard becomes infested. The winter spores are found in the interior of the dry leaves, and hibernate within those on the ground. In summer they again get on to the young leaves by the agency of animals, wind, and rain.

Sulphur, as a means of checking or remedying this particular mildew, has proved a failure, and, indeed, no satisfactory remedy has, until recently, been found, though prophylactic means, such as those recommended by Mr. Wm. Saunders, namely, the sheltering of the vines by a board covering over the trellis, have been more or less successful.

The fact that no satisfactory remedy existed until lately, was well illustrated by the discussion which followed the reading of a paper by Mr. F. S. Earle, at the meeting of the American Horticultural Society, at New Orleans, last February, on "Fungoid Diseases of the Strawberry."* The concensus of opinion was that we have no remedy for most of the fungus diseases of plants. That this was, unfortunately, a true state of the case, practical cultivators will admit; for though intelligent treatment will check the growth of the black knot, and the proper use of lime and sulphur will check *Erysiphe* and *Uncinula*, these are about the only fungus diseases which we can control with satisfaction and certainty. Prof. G. C. Caldwell is reported to have stated about a year ago, at a meeting of the New York Horticultural Society, that mildew could be prevented by soaking the stakes in the vineyard in a solution of blue vitrol; but as that report does not specify which mildew was intended, I know not how authoritative it is.

During my visit to South France, in the summer of 1884, I was struck with the prevalence of this Downy Mildew in most of the vineyards, and the French grape growers around Montpellier felt far more anxiety as to the consequence of this *Peronospora* than they did as to the work of the Grape-vine *Phylloxera*. They feel now, that with the aid of our American stocks, they can control and defy this underground pest; but the *Peronospora*, which was a few years ago unknown to them, but which has been introduced with the American vines, has so far entirely baffled them, as, I believe, it has baffled our own grape growers.

In an address which I had the honor to deliver before the Central Society of Agriculture of the Department of Hérault, in June, 1884, and which treated principally of insecticides and insecticide appliances, I took occasion, in view of the interest then felt in this mildew, to recommend the use of the following as a promising fungicide: The ordinary milk-kerosene emulsion, prepared after the formula given in my late official reports as United States Entomologist, with from two to five per cent. of carbolic acid, and the same percentage of glycerine, and then diluted in 20 to 50 parts of water to one of the emulsion, and sprayed on to the under surface of the leaves by means of a cyclone nozzle of small aperture, so as to render the spray as fine as possible. The suggestion of the carbolic acid was due to the results obtained by Prof. Gustav Föex, Director of the Ecole Nationale d'Agriculture, at that place.

It was very gratifying to find this recommendation at once acted upon, and up to the time when I left Montpellier, with satisfactory results. Reports of further trials showed also, that this mixture so sprayed at once arrests the spread of the mildew. I was well aware of the difficulty of dealing satisfactorily with a fungus which may, in a single night, without any warning, manifest itself all over a vineyard; but it is a great point gained to know how to check it, even if the knowledge may at times be of little practical avail in large vineyards. But much good, nevertheless, resulted, and "*Le Procédé Riley*" was much written about in *La Vigne Américaine*, and other viticultural journals a year ago. However, the experience of the past year in France has furnished a remedy which, from all accounts, is in every way satisfactory, because it not only destroys direct, but acts as a prophylactic.

* Many writers on mycological subjects misuse this term "fungoid" (which means something not a fungus, but fungus-like), in speaking of true fungi or of a fungus disease.

My attention was drawn some months ago, to two articles by C. B. Cerletti, published the 15th and 30th of August, in the *Rivista di viticoltura ed Enologia Italiana*, announcing the success of hydrate, or slacked lime. My friends, M. J. Lichtenstein and P. Viala, of Montpellier, the latter having charge of the *Laboratoire de viticulture* at the *Ecole Nationale d'Agriculture de Montpellier*, soon thereafter communicated to me the discoveries made. M. Velicogna, in a report in the *Actes et Memoirs de la Societe imperiale et royale d'Agriculture de Gortiz*, for September and October, 1885, has also discussed the effect of hydrate of lime at length, his formula being $2\frac{1}{2}$ kilogrammes of the lime (chaux éteinte) in 100 litres of water.

The general tone of the experience with this hydrate of lime is satisfactory, but a mixture of hydrate of lime and sulphate of copper is still more conclusive, and numerous communications to viticultural journals and to the French Academy, attest the complete efficacy of the remedy. It has been the custom in some of the wine-growing parts of France to sprinkle lime and verdigris upon those vines which border on the roadside, as a means of warding off depredators. It was found that vines so spattered were not infested by Peronospora, while the rest of the vineyard might be attacked. This discovery led to further experiments.

Various formulæ have been given, but the most important articles are those by M. A. Perrey, in the *Comptes Rendus de l'Ac. d. Sc.*, Oct. 5, 1885, and by M. A. Millardet in the same publication, and reproduced in the *Messenger Agricole du Midi* for Nov. 10, 1885. From this latter article I condense the following: Dissolve eight kilogrammes (18 pounds) of ordinary sulphate of copper, in 100 litres (about 22 gallons) of any kind of water (well, rain, or river), in a separate vessel. Mix 30 litres (about $6\frac{3}{4}$ gallons) of water, and 15 kilogrammes (about 34 pounds) of coarse lime, so as to make a milk of lime. Then mix with this the solution of sulphate of copper. These will form a bluish paste. Pour a portion of the mixture in a bucket or other vessel, thoroughly shaking it, and brushing the leaves with a small broom, taking care not to touch the grapes. There is no fear of any accident, not even to the most tender portion of the vines.

The treatment was made from the 10th to the 20th of July. At some points the operation was repeated a second time at the end of August, but without much advantage. It was, therefore, demonstrated that one application was sufficient.

The mixture, when dry, sticks very fast to the leaves. After the vines were treated there were several showers the beginning and end of August, also the frequent September rains, notwithstanding which, the evidence of the efficacy of the treatment, where no more than half the leaves were touched by the mixture, could easily be detected. That this remedy will prove effectual for the many other similar white mildews on other plants, caused by other Peronosporæ, there can be little doubt.

The same fear of danger as to the effect of this fungicide on the vine and on the wine, has been experienced in Europe as we experienced in this country in the early use of Paris green as an insecticide, and experience alone will settle the amount of danger there may be in the use of this new remedy.

BIBLIOGRAPHY.

I know of no one who has more fully recognized the practical bearings on the best method of dealing with these two fungi than Mr. Wm. Saunders. In the report of the Commissioner of Agriculture for the year 1861, p. 495, ff., he has an article: "Remarks on Grape Culture with reference to Mildew, both on the native and foreign varieties," and in a number of subsequent reports, as those of 1864, '65, '66, '67, '69, '81-2, and '83, he has dealt either at length or incidentally on the essential facts that the Uncinula is encouraged by a dry atmosphere, and the Peronospora by a moist atmosphere. His experience shows that the nature of the soil or mode of cultivation has but little influence on the fungus, and that protection from above, as by covered trellis, is about the best prevention of the Peronospora; also that grape-vines with downy foliage are more susceptible to the Peronospora than those with smooth foliage. His experience is very well summed up in a statement of it furnished for publication in my 5th report on the Insects of Missouri, p. 70 (foot note).

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Of the writers on the structure and development of these mildews, Dr. Thomas Taylor was one of the earliest in this country, and found the perithecium of the *Uncinula* on the European vine. His chief articles are contained in the reports of the Department of Agriculture for 1871 and 1874, but are marred by confusion in both text and plates. For accurate details the student should more particularly consult the following:

W. G. Farlow (whom I have mostly followed) "Notes on Some Common Diseases Caused by Fungi," (Bull. Bussey Inst. Vol. II., part II., 1877, pp. 106-114); also, "On the American Grape-vine Mildew" (Ibid. for 1876, pp. 415-425); Maxime Cornu, "Le Peronospora des Vignes," Paris, 1882; B. D. Halsted, "The White Mildews" (Proc. 19th Session Am. Pom. Soc., for 1883, p. 87); and Wm. Trelease, "The Grape Rot" (Trans. Wis. Hort. Soc., 1885, pp. 196-199).

SUMMARY.

We thus have, indigenous to this country, two mildews that are more particularly destructive to the grape-vine:

1. The *Uncinula spiralis*, or the Powdery Grape-vine Mildew, flourishing most in a dry atmosphere, not particularly destructive to our hardier native grapes, and easily controlled by use of sulphur. It develops chiefly on the upper side of the leaf, and produces simple ovoid summer spores, and more complex and ciliate winter spores, which are found upon both the leaf and the cane. Introduced into Europe many years ago, according to trustworthy evidence, it is only known there in the conidial form as *Odium Tuckeri*, and works more injury than it does with us.

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

ARBOR DAY.

Believing that the following from Bulletin No. 33, of the Agricultural College of Michigan may be of service to our high and public schools in making the exercises of Arbor Day more interesting, the secretary includes it in this appendix, with the remark that a similar exercise was performed with much success on last Arbor Day at the Grimsby High School, Mr. C. W. Mulloy, B.A., head master.

The exercise presented below was first given by the pupils of the Grand Rapids schools on the evening of January the 26th, 1888, in connection with the Forestry Convention in that city. Though no trees were planted, the presentation of a literary programme designed to be suitable for adoption by the schools of the State was very creditable.

The exercises assumed the nature of a convention of trees. The meeting was called to order by Norway Pine, who moved the election of a chairman and secretary. After the election followed general speech-making, interspersed with music and songs. Each tree set forth in a few brief sentences his characteristics, properties, uses and various values. The exercises lasted nearly an hour, enlisting much applause, and all agreeing with one accord, at the finish, that they were only "too short."

A CONVENTION OF FOREST TREES.

Norway Pine (Louie).—Fellow trees of Michigan, to organize this meeting I move the election of White Oak as chairman. (Seconded.) All who favor this motion please say aye. (Unanimous vote.) Those who are opposed will say no. The ayes have it and White Oak will take the chair.

White Oak (Julius).—Fellow trees, the object of our meeting is to consider whatever may be to our best interests in the forests of Michigan. It is a subject of great importance to the State and to all of us, and we hope to gain much valuable information from each other and to hear from every one present.

We have gathered from all parts of the State for this conference. As we should keep a permanent record of our proceedings, and as the newspapers will probably wish to publish our papers and discussions, I think a secretary will be needed to take the minutes of this meeting.

Beech (Harry).—I nominate Chestnut (Lillie) to act as secretary. (Seconded.)

White Oak.—All who favor the nomination last made will say aye. Those who are opposed will say no. The ayes have it and Chestnut is elected secretary. (She takes her place.)

White Oak.—Our musician, Pine (Bessie), has kindly arranged the music for us. She sings only when the spirits move her. We may know when that is by the peculiar swaying of her head. At the swaying let us suspend business and listen. She moves—we will hear "The Echoes from the Forest."

White Oak.—We are now ready for discussion. (Several trees rising at once.)

White Oak.—Tulip tree has the floor.

Tulip Tree (Herman).—Fellow trees, I am glad to have this opportunity to plead my qualifications as an ornamental tree. I grow to a great size and height, and have shining, queer-shaped leaves, and large tulip-shaped blossoms which remind you of the sunny South, where my sisters, the Magnolias, live.

Burr Oak (Joseph).—I should like to ask Tulip tree of what use he is? Michigan people have a right to demand of us both usefulness and beauty.

Tulip Tree.—I am not only valuable as an ornamental shade tree, but I also furnish excellent timber for carriage bodies, furniture and finishing houses. Years ago my forefathers were numerous south of the Grand River Valley, and supplied wood for laths, shingles and lumber in the place of the white pine. Our family is a small one, represented in Michigan by a single species.

White Oak.—We shall be glad to hear from any members of the Oak family who live in Michigan. (Sixteen members rise.)

White Oak.—This is certainly a large family. I recognize Chestnut as entitled to the floor. What claims have you to rank in the Oak family?

Chestnut.—All botanists of the present day agree that the Beech, the Ironwood, the blue Beech, and the Hazels and Chestnuts are first cousins to the Oaks. I live in four counties in the south-east part of the State and am well known for valuable timber and a good crop of edible nuts.

Beech.—Upon my smooth, gray bark many a heart history has been carved. The poet Campbell tells it so beautifully:

"Thrice twenty summers have I stood,
Since youthful lovers in my shade
Their vows of truth and rapture paid,
And, on my trunk's surviving frame,
Carved many a long forgotten name."

And here is another beautiful thing from Whittier:

"I have always admired the taste of the Indians around Sebago Lake, who, when their chief died, dug round the beech tree, swaying it down, and placed his body in the rent, and then let the noble tree fall back into its original place, a green and beautiful monument for a son of the forest."

I am one of the commonest and well-known trees in Michigan.

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Burr Oak.—Ten of us Oaks, out of about 300, live in this State. Brother White Oak is by far the most common and well-known. He is the senior member of our family and has attained a very great age. He never thrives in perfection except in a good soil and in a temperate climate. The Michigan people are proud that so many of our family live with them.

Tulip Tree.—White Oak is certainly loyal to his family, but I should like to hear the uses of his tree.

Burr Oak.—Every particle of him is useful, even to his ashes. His bark is used for tanning leather; his wood is hard, compact, heavy, tough and durable, good for heavy waggons, plows, railroad ties, fence posts, ship timber, furniture, and finishing the interior of houses.

Swamp White Oak (Leona).—As much of my timber is so nearly like that of White Oak, and often passes for it, I will say, as a tree, "I am beautiful in every stage of my growth; at first, light, slender, delicate and waving; at last, broad, massive and grand, but always graceful."

Chestnut Oak (James).—Emerson says of White Oak: "As an ornament to the landscape, or as a single object, no other tree is to be compared with it, in every period of its growth, for picturesqueness, majesty, and inexhaustible variety of beauty. When standing alone it throws out its mighty arms with an air of force and grandeur which have made it everywhere to be considered the fittest emblem of strength and power of resistance. Commonly the oak braves the storm to the last, without yielding, better than any other tree. The limbs go out at a great angle and stretch horizontally to a vast distance."

Laurel Oak (John).—The famous A. J. Downing said: "There are no grander or more superb trees than our American oaks. We are fully disposed to concede it the first rank among the denizens of the forest. As an ornamental object we consider the oak the most varied in expression, the most beautiful, grand, majestic and picturesque of all deciduous trees."

Black Jack Oak (Herbert).—Poetry, history, mythology and romance abound in references to the oak. I should like to hear from our fellow trees some common quotations in reference to the oak.

White Ash (Myrtie).—"The unwedgeable and gnarled oak."

Black Ash (Ella).—"The old oaken bucket."

Sugar Maple (Louise).—"Jove's own tree that holds the woods in awful sovereignty."

Red Maple (Anna).—"A goodly oak, whose boughs were mass'd with age."

Scarlet Oak (Ben).—"King of the woods."

Blue Ash (Amy).—"Thy guardian oaks, my country, are thy boast."

Silver Maple (Kate).—"The monarch oak, the patriarch of trees."

Butternut (Burke).—"The oak for grandeur, strength and noble size, excels all trees that in the forest grow."

Black Walnut (Frank).—"Tall oaks from little acorns grow."

Buttonwood (Harrison).—

"Woodman, forbear thy stroke!
Cut not its earth-bound ties;
Oh, spare that aged oak,
Now towering to the Skies!"

Sassafras (Henry).—

"Behold yon oak,
How stern he frowns."

Pepperidge (Walter).—"The glory of the woods."

Buckeye (Samuel).—

"Proud monarch of the forest!
That once, a sapling bough,
Didst quail far more at evening's breath
Than at the tempest now.
Strange scenes have passed, long ages roll'd
Since first upon thy stem,
Then weak as osier twig, spring set
Her leafy diadem."

Red Oak (Lulu).—I begin to feel my pride rising and hope White Oak will give me a chance to quote a poem written in honor of one of our family.

White Oak.—(Bows.)

Red Oak.—

“A glorious tree is the old gray oak ;
He has stood for a thousand years—
Has stood and frowned,
On the trees around
Like a king among his peers ;
As round their king they stand, so now,
When the flowers their pale leaves fold,
The tall trees around him stand, arrayed
In their robes of purple and gold.

“He has stood like a tower,
And dared the winds to battle.
He has heard the hail,
And from plates of mail
From his own limbs, shaken, rattle ;
He has tossed them about, and shorn the tops,
When the storm has roused his might,
Of the forest trees, as a strong man doth
The heads of his foes in fight.”

Scarlet Oak (Otto).—That poem which Red Oak quoted reminded me of an old saying of Dr. Holmes. He says: “I wonder if you ever thought of a single mark of supremacy which distinguishes this tree from those around it? The others shirk the work of resisting gravity, the Oak defies it. It chooses the horizontal direction for its limbs so that their whole weight may tell, and then stretches them out 50 or 60 feet so that the strain may be mighty enough to be worth resisting. You will find that in passing from the extreme downward droop of the branches of the Weeping Willow to the extreme upward inclination of those of the Poplar, they sweep nearly half a circle. At 90 degrees the Oak stops short, to slant upward another degree would mark infirmity of purpose, to bend downward weakness of organization.”

Black Oak (Ruby).—What the Oak said sounds scientific. I want to tell you something that begins with “once upon a time.” Once upon a time the devil agreed with a man that he should have the latter’s soul at the time when the oak leaves fell ; but when he came to look at the oak in the autumn he found it still in leaf, nor did it part with its old leaves till the new ones began to sprout. In his rage and disappointment he scratched the leaves so vehemently that they have been in consequence jagged ever since.

White Oak.—These are certainly good words for the Oak family. We will next listen to some music from the little birds—our very dear friends.

White Oak.—We shall next hear from the Maples, of which there are six in our State. They are cousins to the Buckeye, Bladdernut, and Box-elder, all of which belong to the Maple family.

Sugar Maple (Louise).—I am a favorite ornamental tree. Poets of all ages have sung about the oak. I am no Sweet Singer of Michigan, but I am possessed of sweetness. I claim to have made more boys and girls happy than any other tree. I have many changes in dress—wearing in spring the softest shade of every color ; in the summer the purest emerald, and in the autumn the most brilliant yellow. My wood is used for furniture, floors, and for furnishing the interior of houses, and after the houses are finished few can warm them better than I.

Red Maple (Mary).—I am often called Soft Maple, a name also applied to one of my sisters. I beautify the country in spring with early red blossoms, and in autumn my leaves are streaked with scarlet.

Silver Maple (Jennie).—My sister Red Maple and myself are both called Soft Maple. I make a very rapid growth and am found by the side of streams. I am often planted as a shade tree, and in the far West many are planted for shelter belts and for timber.

Bass Wood (Maud).—I am a fine shade tree, my home a moist rich soil. My fragrant flowers furnish a great amount of excellent honey for the bees at a time when most other flowers have disappeared. My timber is soft, light and tough, and not apt to split, good for cabinet work, boxes, broom handles, etc.

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Black Cherry (Ethel).—With our beautiful blossoms we need not be envious of the orange groves of California. I am one large snowball of blossoms in the spring. My fruit is much liked by the birds, and my wood is fine, light, durable and looks much like mahogany. My cousins are the wild plum, crab-apple, mountain ash, hawthorn, June-berry, spiræa, the apple, pear, quince, and the peach, and we all belong to the Rose family.

Black Walnut (Frank).—I am not ornamental, nor am I a good neighbor, for I sometimes poison other trees that live near me. In spite of my bad qualities I am liked because I can be converted into cash at any moment. Some of my brothers have sold as high as \$2,000. Those who care for us care for a fortune. My relative, the Butternut, is much loved by boys and girls. It was round my brother at Haverstraw, on the Hudson, that Gen. Wayne mustered his forces at midnight, preparatory to his attack on Stony Point.

Hickory (Ray).—There are four brothers of us in Michigan, but I am the least worthy of them all, and am the only one present at this convention. We are cousins of the Walnut and Butternut and all belong to the Walnut family. If you want a wood that is good for buggies, axe handles, barrel hoops, a wood like iron, call upon my brother, the Shag-bark. You will have all the nuts you want thrown into the bargain. Once upon a time there was a president of the country who had so many of my qualities that they called him Old Hickory.

White Oak.—We will sing about the "echo which in the forest dwells."

White Oak.—We will next hear a few words from the Ashes. (Three rise and stand till all are through.)

White Ash (Myrtie).—I am a tall tree and have often been complimented for my usefulness. I have been told that I have a graceful top and beautiful pinnate leaves. My wood is heavy, hard, strong, coarse-grained, compact, and of a brown color, and is much used for cabinet ware, farm implements, and house finishing. I thrive on rich, moist soil.

Blue Ash (Amy).—I am not often found in Michigan. I grow slowly and attain a good size. My wood is valuable for lumber, posts and sills. I may be distinguished from all other Ashes by the square branches of a year's growth.

Black Ash (Ella).—I thrive in swamps and along streams, and become a large, useful tree. My wood is used for furniture, barrel hoops and baskets. When well cared for I become one of the finest ornamental trees. For this purpose I have never been fully appreciated. The Ashes belong to the Olive family. We have been called musical, as in this quotation :

"Ye Ashes wild resounding o'er the steep,
Delicious is your music to the soul."

White Oak.—Who will speak next? (A number rise.) Birch has the floor.

Birch (William).—I am a useful factor in the cause of education, though not now so commonly found in the school room as in former years. There are five sisters of us Birches in Michigan. The Alders are our cousins. Probably you are best acquainted with the Canoe Birch, whose white wood you see in spools and shoe pegs. It gives up its beautiful white dress without any injury to itself. Longfellow has made us a celebrated family in Hiawatha. He says of us :

"Give me your bark, O, Birch tree!
Of your yellow bark, O, Birch tree!
Growing by the rushing river,
Tall and stately in the valley!
I a light canoe will build me,
That shall float upon the river,
Like a yellow leaf in autumn,
Like a yellow water lily!
Lay aside your cloak, O, Birch tree!
Lay aside your white skin wrapper,
For the summer time is coming,
And the sun is warm in heaven,
And you need no white skin wrapper."

White Oak.—Let us hear from the Elms.

American Elm (Lida).—I have been called the Queen of the Forest, and stand without a rival at the head of the list of ornamental deciduous leaved trees. I claim this rank on account of hardiness, rapid growth, and the graceful and majestic beauty of my drooping branches. We are very proud of our Massachusetts relative under whose venerable shade Washington first took command of the Continental army, July 3, 1775. How the affection of every lover of his country clings around that tree! What care has been taken of it, what marks of esteem have been shown it by the citizens of Cambridge, may be judged by those who have seen it standing, as it does, in the centre of a great public thoroughfare, its trunk protected by an iron fence from injury by passing vehicles, which for more than a century have turned out in deference to this monarch of the Revolution.

Red Elm (Claude).—I am well known for my durable red wood and mucilaginous bark and am often called "Slippery Elm." My sister, Rock Elm, is a fine tree with corky branches, and the wood is valuable for farm implements.

Hackberry (Otis).—I am one of the poor cousins of the Elms, and am little known. I am sometimes called the Nettle tree, and I am afraid Michigan people are not on speaking terms with me. Allow me to tell you about my German relative, the Luther Elm, near Worms. It is said to have been planted as follows: A bigoted old Catholic lady, thrusting a stick in the ground, declared her resolution not to accept the new faith till that dry stick became green. The fact that it did so proved the interest taken by trees in the preservation of orthodoxy.

Red Mulberry (Robert).—I am another obscure cousin of the Elms and not often seen in Michigan. The birds are fond of my berries and the wood is as valuable as cedar for posts. Let me praise the Elm.

"Hail to the Elm! the brave old Elm!
Our last lone forest tree,
Whose limbs outstand the lightning's brand,
For a brave old Elm is he!
For fifteen score of full-told years,
He has borne his leafy prime,
Yet he holds them well, and lives to tell
His tale of the olden time!"

White Oak.—Let us all repeat the lines of N. S. Dodge in praise of the Queen of the Forest.

"Then hail to the elm! the green-topp'd elm!
And long may his branches wave,
For a relic is he, the gnarl'd old tree,
Of the times of the good and brave."

White Oak.—We will have another song about the birds (or any other subject).

White Oak.—We have heard nothing from the Willows.

Willow (Marion).—I live near the water and my wood is made into the strangest things, artificial limbs, tooth-picks, ball clubs and gunpowder. Some of us are called "Pussy Willows."

Elizabeth Allen has written this lovely poem to my sister, the Weeping Willow of Europe, who has been for years mourning something to us unknown.

"O, Willow, why forever weep,
As one who mourns an endless wrong!
What hidden woe can lie so deep?
What utter grief can last so long?
Mourn on forever, unconsol'd,
And keep your secret, faithful tree!
No heart in all the world can hold
A sweeter grace than constancy."

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The Poplar (Cara).—There are five sisters of us Poplars who live in Michigan. One is called Cotton Wood, and two are called Aspens. We are cousins of the Willows and all belong to the Willow family. I will read some lines of the poets :

“ Why tremble so, broad Aspen-tree?
Why shake thy leaves ne'er ceasing?
At rest thou never seem'st to be,
For when the air is still and clear,
Or when the nipping gale, increasing,
Shakes from thy boughs soft twilight's tear,
Thou tremblest still, broad Aspen-tree,
And never tranquil seem'st to be.”

White Oak.—We ought to hear from Red Bud and Sassafras and Pepperidge and Buttonwood or Sycamore, who live in our forests, but they do not appear to be present at this convention. Our exercises would not be complete without hearing from the members of the Pine family or cone bearing trees.

White Pine (Sylvia).—I am one of the tallest and largest, most common, well known and valuable trees of the State. In Europe, where some of my number have been introduced, they often call me Weymouth Pine. My leaves are long, light green and in clusters of five. As a long-lived and beautiful tree for ornamenting rural grounds and parks, I take a high rank, while an immense amount of valuable lumber is cut from my wood.

White Oak.—Let us hear from another Pine of Michigan.

Red Pine (Naoma).—I am often called Norway Pine, though I do not know why. I never lived in Norway, but am only found in North America. I am a tall, straight tree, with long evergreen leaves in clusters of two. I grow slowly, making valuable timber, which is much harder than that of White Pine. For ornamental purposes I much resemble Austrian Pine, though much superior to that tree, if we rely on the opinions of noted horticulturists.

White Oak.—The White Pine and Red Pine have a sister Pine in Michigan. We shall now give her an opportunity to speak.

Grey Pine (Rose).—I am a tree of small size, found on poor land in Northern Michigan. When young my growth is rapid; my leaves grow in pairs and are quite short. My wood abounds in pitch. I am known by a variety of names, as Scrub Pine, Jack Pine, Buckwheat Pine, Black Pine, Crocodile Pine, but the name I like the best is *Pinus Banksiana*.

I want to tell you what Ruskin says: “The tremendous unity of the pine absorbs and molds the life of a race. The pine shadows rest upon a nation. The Northern people, century after century, lived under one or other of the two great powers of the pine and the sea, both infinite. They dwelt amidst the forests or they wandered on the waves, and saw no end or any other horizon. Still the dark green trees, or the dark green waters jagged the dawn with their fringe of their foam, and whatever elements of imagination or of warrior strength or of domestic justice were brought down by the Norwegian or the Goth against the dissoluteness or degradation of the south of Europe, were taught them under the green roofs and wild penetralia of the pine.”

White Oak.—We have another cone-bearing tree in attendance. I call on

Hemlock Spruce (Agnes).—I have been called by students in art and botany and horticulture “the most beautiful coniferous hardy tree yet known.” I grow to a good height and require a large size. My evergreen leaves have delicate tints, my young branches droop gracefully. As a timber tree I do not claim the highest honor. My bark is valuable for tanning leather.

White Oak.—There are two other sister evergreens called “Spruces” I see in the audience.

Black Spruce (Rhoda).—I abound in swamps in Northern Michigan. I am often used for Christmas trees on festive occasions, and boys and girls search me over for a supply of first-class gum. I am not responsible, though, for all the gum that goes by my name. Within a few years my wood has been largely used to make white paper.

White Oak.—I recognize another evergreen. I call on

Red Cedar (Clara).—In summer my leaves are beautiful, but in winter they become brown. I am found only sparingly in any part of the world, though I am the most widely distributed of any tree in the United States. I grow slowly and produce a beautiful red, fragrant wood, which is soft and very durable. My wood is now mainly limited to the making of lead pencils.

White Oak.—Let us next hear from

Balsam Fir (Alice).—I am a rather small, slender evergreen found in swamps, though often cultivated as an ornament about dwellings. I arrive at my prime when about fourteen years old.

White Oak.—I shall now call on

Arbor Vitæ (Maud).—I thrive in the swamps of the North and afford shelter to wild animals. I am often called white cedar and I furnish most of the telegraph poles, some fence posts, railway ties and blocks for paving streets. I take a high place as an ornamental tree.

White Oak.—We have now heard from all of the cone-bearing evergreen trees who are present. There is another tree of the State, not here present, which is cone-bearing, and belongs to the Pine family. I refer to the tamarack.

There are some other matters appropriate to Arbor Day which should demand our attention at this time. How do the trees of Michigan compare in beauty and variety with those of Great Britain of which we read so much?

Susie.—The farther north we go the fewer kinds of trees we find; the farther south, the greater the variety. Great Britain and Ireland contain more than twice the area of Michigan. They have one basswood, not so good as ours; one very small maple, one cherry, one small ash, two elms, two poplars, one beech, one small birch, one pine, one oak much like our white oak. Great Britain has about ten species of trees native to her soil, while Michigan, with half the territory, has about ninety species, or nine times as great a variety.

White Oak.—For some interesting points in reference to nuts and seeds I call on

Red Maple.—Last autumn the hazels, beeches, chestnuts, oaks, hickories, walnuts and buckeyes, matured their fruit, and with this maturing the burs, or cups, or husks, opened or the stems snapped in two at a joint which began to form months before. If a bur or nut held fast too tenaciously, the frost made it willing to drop, and down it went with hundreds of others, among the leaves.

The leaves, with the help of the shifting winds, gently covered the fruit—or some portions of it. The leaves make the best kind of protection from dry air and severe cold, and they come just at the right time. All the seeds are not covered, but Dame Nature is generous. She produces an abundance; enough for seed and enough to feed the birds, squirrels, and other animals.

White Oak.—We want to hear a word about Nature's tree-planters, the squirrels, birds and other animals.

Basswood.—The squirrels eat many nuts, but carry a portion to some distance in every direction, where they plant one or two in a place. It may be the thought of the squirrel to return at some future time of need, but his bump of locality is not well developed or he has laid up more than he needed. At all events some of the nuts are allowed to remain where he planted them. In this way he is a benefit to the trees, and pays for the nuts which he eats. He has not lived in vain, for he is a tree-planter and believes in arboriculture. His arbor days come in autumn, and he needs no gubernatorial message to stimulate him to work.

White Oak.—This subject will be continued by

White Spruce (Adeline).—Many of our trees and shrubs produce a fleshy fruit or berry. Among them are the mountain ash, service berry, wild crab apple, hawthorn, cherry, holly, viburnum, pepperidge, hackberry, mulberry, sassafras, wild plum, persimmon, paw paw, cedars and junipers. Many of these when ripe are rendered conspicuous by brilliant colors. The fruits are eagerly sought by grouse, turkeys, deer, bear, or other

animals. are not dig favorable fo

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animals. In most cases the seeds of such fruits are protected by a very firm covering and are not digestible. They are sown broadcast by wild animals under circumstances most favorable for germination. The birds, too, belong to the society of tree-planters.

White Oak.—We will next listen to some accounts of the wind as a sower of seeds.

Sassafras (Iona).—Some trees produce dry seeds or seed-pods, and usually drop only a portion in autumn. They hold on to some seeds with considerable tenacity. Among these are the buttonwood, basswood, ironwood, blue beech, box-elder, hop tree, tulip tree, the ashes, catalpa, locust, Judas tree, birches, alders, larches, pines, spruces. The fruit or the seed is thin, or provided with wings, which distribute them as they fall, or after they have fallen. In winter it needs but a slight packing of the snow to bear up the seeds. At such times, some of the seeds are torn from the trees by the wind, and may be seen sliding along like miniature ice boats, often half a mile or more from the nearest tree. The wind also aids in transporting the seeds of our elms, maples, willows and poplars.

White Oak.—Next listen to something more about seeds.

Red Bud (Cynthia).—A seed is a young plant and is packed ready for transportation. It has a tiny stem, some seed leaves and a terminal bud. The mother tree, before casting off her progeny into the world, did not fail to give it a little outfit in the form of starch for food stored up in or surrounding the thick seed leaves. As the young chicks while in the shell are nourished by the yolk of the egg, so the young oak or maple subsists on the starch stored up before ripening.

White Oak.—When do our trees make their growth and how do they get ready for the next year?

Box Elder (Nina).—Most of our trees put forth their new growth during a few weeks in spring or early summer. Do you wonder what they are doing during the rest of the warm weather? They are by no means idle. They may be perfecting flowers and seeds, but all of them are getting ready for the next winter and spring. Through the influence of light and heat, the green leaves are forming starch which is transported and stored in the pith, young wood and bark. The young leaves and stems are started and arranged, packed in cotton, covered by scales and in some cases the scales are protected by pitch or varnish.

White Oak.—Next in order will be a few words in regard to the tree as a community.

Buckeye (Douglass).—A tree is a composite being, a kind of community by itself. The leaves and limbs are all the time striving with each other to see which shall have the most room and the most sunshine. Each strives for all it can get. While some perish in the attempt, or meet with only very indifferent success, the strongest of the strongest buds survive. Each leaf helps to sustain the limb which carries it, and each limb furnishes some nourishment to the common trunk for the common welfare. The tax is always adjusted according to the ability of each to contribute. As the limbs of a tree are striving for the mastery, so each bush and tree in grove or forest is striving with others for the mastery. The weakest succumb to the strongest; some perish early, some lead a feeble existence for many years, while even the strongest are more or less injured. With plenty of room, the trunk will be short, the branches many and widespread; where crowded, the lower limbs perish for want of light. Dead limbs fall to the ground to protect and enrich it for nourishing the surviving limbs and the trunk. The scars heal over, more limbs perish as new ones creep upward, and thus we find tall, clean trunks in a dense forest.

White Oak.—To be successful, it is very important to know how to gather and care for seeds and nuts.

Yellow Wood (Robert).—Gather the seeds or nuts of trees when ripe and, if convenient, plant them where the trees are expected to remain. In this list we include especially the trees which have long tap roots, and do not easily transplant, such as the tulip tree, the hickories, the oaks, the walnuts, and chestnuts. The seeds of elms and maples are not easily kept over winter. Seeds of evergreens, the larch, and the locusts may be dried and kept as grain is kept. Many seeds and nuts may be mixed with an equal bulk of sand as it is dug from a knoll, and buried a few inches or a foot below the

surface. In spring they may be carried to the garden and planted. Soak seeds of locust and honey locust in hot water till the outer covering softens, and then plant. Soak seeds of evergreens three or four days in water, changed daily, and then plant very shallow in rows a few inches apart in rich loam, well screened by lath, brush or muslin. See that weeds do not rob the young plants of light, room and nourishment. Evergreens in small quantity, when small and two or three years old, can be purchased of experts more cheaply than they can be raised at home. These can be set in rows and cultivated for a few years like Indian corn. For further details you are advised to read copies of our State horticultural reports, take lessons of a nurseryman, or go to the Agricultural College.

White Oak.—It is of little use to plant seeds or buy trees, unless we know how to handle them while moving.

Kentucky Coffee Tree (Hiram).—In taking up a tree, whether large or small, do not twist it about so as to break or bend the roots abruptly. Get all the roots you can afford to, remembering that a tree will not grow without roots.

When out of the ground keep the roots constantly covered with soil, moss, damp straw or something else. The roots are far more sensitive to dry air than are the parts above ground. No one need wonder that trees carted into town with short roots exposed to dry air often fail to grow or lead a precarious life for years. Study the structure and the physiology of a tree and treat it as one who always makes everything thrive which he cares for.

White Oak.—How shall we care for the trees after planting?

Apple Tree (Hannah).—To set a tree so as to ensure its thrifty growth, place it but little deeper than it was while growing. Have the soil well pulverized and pack it closely about the tree.

After all this trouble, do not court disappointment in the slow growth or in the death of a favorite tree, but dig or rake the ground every week or two all summer for three to five years for a distance of four feet or more each way from the tree. If this is impracticable, place a mulch of something covering the space above mentioned.

White Oak.—After planting, trees sometimes become too thick. What shall we do?

Pear Tree (Andrew).—A tree, like a child, is a living, organized being and keeps changing as long as life lasts. It is not best merely to set as many trees as we expect to remain for a life time, but plant them more thickly with a view to removal. Here is where 99 out of 100 fail. They do not keep an eye on the growth and trim or remove trees until they have crowded and damaged each other beyond recovery. In most instances, a few large, well developed trees should grow where many small ones were planted years before. It needs courage and judgment to remove some favorite trees that others may continue to spread and make a symmetrical growth.

White Oak.—Next will follow something in reference to the flowers of trees.

Bitternut (Silas).—With rare exceptions, our trees bear flowers which are inconspicuous. The elms and the maples produce flowers in spring before the leaves appear. Most have the staminate and pistillate flowers on different parts of the tree or on different trees. The wind or gravity carries the pollen to the pistil, so there is no need of sweet odors or a gay display of flowers to attract bees and butterflies and moths to carry the pollen. Compensation is well displayed in nature. If the tree has not gorgeous or fragrant flowers, it has a large size and often a beautiful form.

White Oak.—We should learn to love trees and to associate them with the generous hand who planted and cared for them.

Wild Plum (Ezra).—I will tell you something which was written by Washington Irving: "There is something noble, simple and pure in a taste for trees. It argues, I think, a sweet and generous nature to have this strong relish for the beauties of vegetation, and this friendship for the hardy and glorious sons of the forest. There is a grandeur of thought connected with this part of rural economy. It is worthy of liberal, and free-born, and aspiring men. He who plants an oak looks forward to future ages, and plants for posterity. Nothing can be less selfish than this. He cannot expect to sit in its shade nor enjoy its shelter; but he exults in the idea that the acorn which he has buried in the earth shall grow up into a lofty pile, and shall keep on flourishing and increasing and benefiting mankind long after he shall have ceased to tread his paternal fields."

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White Oak.—We will hear what O. W. Holmes says on this subject.

Tamarack (Elias).—Dr. O. W. Holmes says: "I have written many verses, but the best poems I have produced are the trees I planted on the hillside which overlooks the broad meadows, scalloped and rounded at their edges by loops of the sinuous Housatonic. Nature finds rhymes for them in the recurring measures of the seasons. Winter strips them of their ornaments and gives them, as it were, in prose translation, and summer reclothes them in all the splendid phrases of their leafy language.

"What are these maples and beeches and birches but odes and idyls and madrigals? What are these pines and firs and spruces but holy rhymes, too solemn for the many-hued raiment of their gay deciduous neighbors?"

"As you drop the seed, as you plant the sapling, your left hand hardly knows what your right hand is doing. But Nature knows, and in due time the power that sees and works in secret will reward you openly."

White Oak.—This concludes what we had on the programme for this convention.

Hemlock.—I move we have some more music and then adjourn.

White Oak.—If there be no objections we shall have the music.

White Oak.—This convention stands adjourned until again convened by the proper authorities.

II.—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.

III.—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.

IV.—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 any 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.

V.—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.