

# REPORT

OF THE

## Fruit Growers' Association

OF THE

## PROVINCE OF ONTARIO.

FOR THE YEAR 1871.

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Printed by Order of the Legislative Assembly.

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1872.

Annual Meeting, Re  
President's Address  
WINTER MEETING :-  
SUMMER MEETING :-  
AUTUMN MEETING :-  
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Fruit in Nova Scotia.  
Fruit in the vicinity of  
Fruit in South Riding  
Fruit in St. John, N  
Mammoth Cluster Ra  
Gooseberry, mildew..  
Grapes on the shore of  
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The Beurre D'Anjou  
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Canadian Manual of E  
The Garden and the F  
Vegetable Tissue and I  
Importance of Shelter  
Thinning out Fruit.....  
Experiments in the Cu  
Report on Curculio-Ca  
Fruit in County of Ren  
Growing Grapes under  
Report on Fruit Capabi  
Report on the Lake Sho  
Report on the Tree, Pla  
Fruits and Fruit Cultur  
Report for 1871, on the  
Synopsis of the Address

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# FRUIT

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*To the Honourable the*

SIR,—In submission for the year 1871, as evinced by the attention has been well sustained, increased share of public plants of such fruits, to the fruits of the Province, marked means of calling to the cultivation and production of seedling from numerous samples have examining such fruits to be very valuable addresses, meetings held in February with the proceedings of address, and such other. Our membership is no

St. Catharines, N.

The annual meeting  
September 25th, 1871.

REPORT  
OF THE  
FRUIT GROWERS' ASSOCIATION  
OF ONTARIO,  
FOR THE YEAR 1871.

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*To the Honourable the Commissioner of Agriculture.*

SIR,—In submitting for your consideration the Report of the Fruit Growers' Association for the year 1871, I may state that the interest manifested in its meetings for discussion, as evinced by the attendance of members on those occasions, and their participation therein, has been well sustained during the past year, and that the Association has commanded an increased share of public attention. The work of supplying its members with trees and plants of such fruits of recent introduction as give promise of being desirable acquisitions to the fruits of the Province, has been continued during the past year, and has been a marked means of calling the attention of the public to the operations of this Society, and to the cultivation and testing of fruits. The prizes that have been offered for the introduction of seedling fruits of Canadian origin have been productive already of some benefit, numerous samples having been sent in to the committee charged with the labour of examining such fruits and of ascertaining their merits, some of which are likely to prove to be very valuable acquisitions. The usual reports of the discussions had at the several meetings held in February, July and September, are embodied in this Report, together with the proceedings of the annual meeting, the President's most excellent and instructive address, and such other papers and information as the Association has been able to obtain. Our membership is now about eight hundred, and is continually increasing.

I have the honour to remain,  
Your obedient servant,

D. W. BEADLE,  
*Secretary of the Fruit Growers' Association.*

St. Catharines, Nov. 13th, 1871.

ANNUAL MEETING.

The annual meeting was held in the City Hall, Kingston, on Tuesday evening, September 25th, 1871.

The President being absent, the Vice-President, J. C. Rykert, M.P.P., took the chair. The minutes of last meeting were read and approved.

The Treasurer read his annual report, shewing the receipts and disbursements for the past year.

The President's annual address was read by the Secretary. It was listened to with much interest, and on motion of Mr. Saunders, the thanks of the meeting were voted to the President therefor, and the manuscript referred to the Committee on Printing for publication.

The election of officers for the ensuing year was then held, which resulted as follows, namely:—

*President*—Rev. R. Burnet, Hamilton.

*Vice-President*—J. C. Rykert, M.P.P., St. Catharines.

*Secretary-Treasurer*—D. W. Beadle, Esq., St. Catharines.

*Directors*—Messrs. John Gray and Geo. Leslie, Jr., Toronto; J. A. Allen, Kingston; W. Holton and W. H. Mills, Hamilton; A. B. Bennett, Brantford; W. Saunders, London; D. Caldwell, Galt; C. Arnold, Paris.

*Auditors*—W. L. Copeland and W. J. McCalla, St. Catharines.

#### DIRECTORS' REPORT.

The Directors feel much gratification in being able to report the continued growth and prosperity of the Association. Since their last report three meetings have been held for discussions and exhibition of fruit, at Hamilton, in February and July, and at Goderich in September. The meeting at Goderich was well attended, and the display of fruits of unusual excellence. It was very evident from the appearance of the fruit shown from Goderich and vicinity, that this part of the Province is very favourable to the production of fine fruits, and the members returned from this meeting more favourably impressed than ever with the fine fruit producing capabilities of our Province. The Directors trust that invitations will be received and accepted for the holding of one or more of the regular meetings the coming year, in other remote parts of the Province, fully believing that the holding of such meetings is of great benefit both in awakening a deeper interest in fruit culture among the residents of that particular neighbourhood, and in bringing the fruit growers in all parts of the Province into closer relations with each other.

The Association distributed among its members, during the past spring, a tree of the Beurré d'Anjou Pear, and a plant of the Early Wilson Blackberry, and of the Mammoth Cluster Raspberry, with the understanding that the recipients are to report to the Secretary the success or failure of the same in their several localities. By this means we shall soon ascertain the value of these fruits in the greater part of the Province, which knowledge will be of great importance to future planters. Already the Eumelan Grape, distributed in 1870 to the members of the Association, has in a few instances shown fruit, and very soon we will know whether it is a desirable grape for general cultivation in the Province. We have directed the Secretary to supply all the members whose trees and plants failed to reach them last spring, or who became members since their distribution, with the same next season; and to replace those that have died, so far as he may be able to ascertain their loss.

The Directors have not yet decided what they will distribute among the members in 1872, but the President has suggested, and strongly recommended that we distribute a work now in preparation by our Secretary, entitled the "Canadian Fruit, Flower and Kitchen Gardener," designed to be a guide to Canadian cultivators in all matters relating to the cultivation of fruits, flowers and vegetables. The question is laid over until a future meeting, when it is hoped we will be able to see a considerable portion, if not the whole, of the work, and decide upon the propriety of acting upon the President's recommendation.

During the past winter a barrel, containing forty varieties of apples, was sent by us to the Fruit Grower's Association of Nova Scotia, which was received by them in good order. The correspondence relating thereto, will be embodied in full, in the Annual Report to Government.

The request for scions made by our friends in Nova Scotia, has been most gladly complied with to the extent of our ability at the time, and we hope to be able to furnish them with anything they may want.

We have also directed the Secretary to send scions to persons residing in the colder sec-

tions of the country of the adaptation of the adap

We have taken in regard to the competent persons, hope of accomplishing charged with them, with instruction and its capabilities such culture, its therein as might were the court, Dougall and Beadle; the vice comprised within Leslie. The regular annual report.

We have au seedlings that a sum not exceed during the year, to pay the same.

for the prizes her the award of such (apples,) to disqualify fruit, such as peaches.

The Director

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*Second.* The apple.

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TWENTY DOLLARS

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*Third.* The specimen, including a column on the merits of

FIFTEEN DOLLARS

*Fourth.* The

Gooseberry and the development as seen

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tions of the country, who will agree to care for the same, and make a full report to the Secretary of the adaptation of the varieties that may be sent to them to the climate of that locality.

We have thought it would contribute towards the diffusion of much-needed information in regard to the culture of fruit in different sections, if an examination could be made by competent persons, and a report be prepared by them, setting forth what they had seen. In the hope of accomplishing something in this direction, we appointed four separate committees, charged with the duty of making a personal examination of the several districts assigned to them, with instructions to report in writing the nature of the country, the character of its soil, and its capabilities for the production of fruit, its peculiar advantages and disadvantages for such culture, its present fruit productions, and such other matters affecting fruit growing therein as might be suggested to them and thought worthy of attention. The districts selected were the country from Windsor to Amherstburgh and Morpeth, assigned to Messrs. Burnet, Dougall and Mills; the County of Elgin, assigned to Messrs. Saunders, Bennett and Beadle; the vicinity of Brantford, assigned to Messrs. Holton and Arnold; and the territory comprised within a radius of fifteen miles around Toronto, assigned to Messrs. Boulton and Leslie. The reports that may be received from these Committees will be printed in the annual report.

We have authorized the Committee on seedling fruits, if they shall deem any of the seedlings that may be submitted to them during the year to be worthy of a gratuity, to award a sum not exceeding ten dollars to the person exhibiting the best seedling fruit of its kind during the year, and that the certificate of the Committee shall be authority to the Treasurer to pay the same. This is a special award, and is not to exclude the recipient from competing for the prizes heretofore offered, or that may hereafter be offered, for seedling fruits; nor is the award of such gratuity for one kind of fruit (as, for instance, if awarded to seedling apples,) to disqualify the recipient from receiving a like award for another kind of seedling fruit, such as pears, plums, grapes, and the like.

The Directors offer the following prizes for the year 1872:

*First.* An HONORARY MEDAL to the originator of any new fruit which, having been thoroughly tested, is found to be worthy of being placed among the fruits of its class for cultivation in Ontario.

*Second.* The sum of FIFTY DOLLARS for the best new Canadian seedling late winter apple.

THIRTY DOLLARS for the best Canadian seedling harvest apple.

TWENTY DOLLARS for the best Canadian seedling autumn apple.

All these to be at least equal to the old popular varieties now in cultivation. Not less than two dozen specimens of the fruit must be sent, when in condition for examination, to the President of the Association, Rev. R. Burnet, Hamilton, accompanied by a letter setting forth what, in the opinion of the sender, are the excellencies of the fruit sent, whether for cooking, or for the dessert, &c., &c.; also stating the origin of the tree, if known, its vigour, hardiness, productiveness, and the like.

*Third.* The sum of TWENTY-FIVE DOLLARS for the best essay on the cultivation of the plum, including a short description of the varieties which the writer has grown, and his opinion on the merits of each.

FIFTEEN DOLLARS for the second best essay thereon.

*Fourth.* The sum of TWENTY-FIVE DOLLARS for the best essay on mildew of the Gooseberry and the Grape, with drawings of the appearances of the mildew in several stages of development as seen under the microscope by the writer.

FIFTEEN DOLLARS for the second best essay thereon. Each essay must be forwarded to the Secretary, D. W. Beadle, St. Catharines, on or before, the fifteenth day of September, 1872, and bear a motto, and be accompanied with a sealed note having the same motto indorsed on the outside, and containing within the name of the author of the essay.

*Fifth.* To any person sending to Wm. Saunders, Esq., London, transportation prepaid, five thousand of the Plum Curculio, (*Conotrachelus Nenuphar*) in the beetle state, the sum of TWENTY DOLLARS; or sending three thousand, the sum of TEN DOLLARS; or sending two thousand, the sum of FIVE DOLLARS. The Treasurer will pay these sums to any person furnishing him with a certificate from Mr. Saunders, stating that he is entitled thereto.

We have also decided to illustrate our Report for 1871, with an engraving of all the fruits that have been disseminated by the Association, in order that the members may have

these to compare with the fruits that their plants may produce. In addition to these we have ordered one thousand lithograph drawings of the Red Astracan Apple, neatly and truthfully coloured by hand, to be placed in as many copies of the Report, which will be distributed among the members of the Association. We have selected the Red Astracan for this purpose because of its many excellent qualities, and its adaptation to the climate of all parts of our Province. It seems desirable that this feature of the reports should be continued, and that a truthful coloured drawing of some particularly valuable fruit, should accompany each annual report, thus in the course of time placing in the hands of the members a collection of accurate coloured illustrations of our most valuable fruits.

All of which is respectfully submitted,

R. BURNET, *President.*

D. W. BEADLE, *Secretary.*

#### AUDITORS' REPORT.

Abstract of Treasurer's Account for years 1869 and 1870.

#### RECEIPTS.

To cash in treasury from last year.....	\$318 64
" Members' fees for the year.....	394 00
" Government Grant .....	350 00
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	1062 64

#### EXPENDITURE.

By Printing, as per vouchers.....	\$35 50
" Amount paid Charles Arnold, Expenses to Philadelphia...	51 00
" " D. Nichol, Essay on Small Fruit.....	15 00
" " Postages and Envelopes .....	35 11
" " Wm. Saunders, Prize Essay.....	30 00
" " " Postage, &c.....	75
" " Geo. Groves, as per account.....	12 50
" " F. Trowbridge, for Oil'd Paper.....	3 20
" " Beadle and Buchanan .....	18 00
" " For Emuelan Grape Vines.....	234 07
" " Duty on " " .....	49 99
" " Express Charges " .....	50
" " London Gas Bill .....	1 60
" " For Engrossing Petition to Parliament.....	50
" " Discount on Silver.....	30
" " Express Charges .....	35
" " Duty and Express Charges on Oil'd Paper...	1 00
" " For Tags for Grape Vines.....	1 20
" " Curculio Premiums as per vouchers.....	105 00
" " Secretary's Expenses attending Meetings....	15 80
" " W. H. Mills' account.....	4 60
" " Rev. R. Burnet's " .....	9 80
" " J. Dougall " .....	31 70
" " A. Morse " .....	5 06
" " R. N. Ball " .....	9 25
" " Wm. Saunders " .....	5 18
" " Geo. Lesslie " .....	8 25
" " Secretary-Treasurer's Salary.. .....	100 00
By Balance Cash in Treasurer's hands.....	277 23
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We, the undersigned, have examined the books and accounts of the Treasurer of the Fruit Growers' Association, and found everything correct. We certify that the foregoing is a correct statement, both receipts and disbursements having been compared with vouchers. In addition to the balance of \$227.23 in Treasurer's hands, there is still the special deposit of \$350 in N. D. Bank.

W. J. McCALLA, }  
W. L. COPELAND, } *Auditors.*

TREASURER'S REPORT.

1870, Oct. 4.—Balance in treasury.....	\$277 23
Members Fees since 4th October, 1870.....	760 00
Refunded by Collector of Customs.....	12 50
Government Grant, 5th September, 1871.....	500 00
	\$1549 73
1871, 23rd Sept.—Total expenditures to date .....	1007 07
	\$542 66

NOTE.—There are several items which have been ordered to be paid by the Directors, that have not yet been presented to the Treasurer, and which, when paid, will reduce the actual balance to the credit of the Association to about three hundred dollars.

PRESIDENT'S ADDRESS.

Another Horticultural year has terminated, and finds the members of the Fruit Growers' Association assembled in annual meeting. Provision has been made that your President should deliver the usual address, and present some subjects of interest that may have engaged attention during the past season. Allow me, at the outset to tender to the members, present and absent, my sincere and hearty thanks for having placed me in this chair, and for the uniform urbanity and kindness which have marked all their conduct towards me during my presidency, and to assure them of the feelings of gratitude and satisfaction with which I shall ever look back to the friendly and interesting intercourse which has existed during the whole period of our official connection. The past season has been one of great interest to the fruit grower in many ways. Exceptional in point of weather, it has been productive of many important lessons to the Horticulturist. The extreme drought has tested many of our choice varieties of fruits, and has been the means of affording criteria of rare value in regard to sorts of which we had not much information, and which it was needful to have tried by extremes in the weather. The advancement of our Association in membership, activity, and substantial progress has been all that could be desired. Indeed, the means employed for the good of the Association have been singularly beneficial in their results. The dissemination of the fruit reports, discussions and essays, have created an interest in the public mind which begins to render our contemplated objects second only to the agricultural interests of our Province.

The systematic and admirable report of the Entomological Society which was presented to the Bureau of Agriculture has made an impression on the general public, and on fruit growers in particular, which has given a mighty impulse to our special cultivation. I have only to utter the heartfelt wish, that the very intimate and close relationship at present subsisting between the members of that society and our own may be perpetual and that our only rivalry may be to advance our common interests to the best of our ability. The plan of making the whole Province an experimental garden for the test of old and new fruits has been followed by the most happy results. It has not only been the means of creating more than usual interest among the members, furnishing important data as to the capabilities of soil, and the variations of climate, but has nearly doubled the membership. Such beneficial results could scarcely have been anticipated, and they surely indicate a road to further advancement in the same direction. If we mistake not the true interests of our Association, and discern the best mode for their accomplishment we would say, let us continue in this path on which we have so auspiciously entered. We are vain enough to believe that we

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wisely suggested the use of another important lever to effect our purposes when proposing recently to our Directors that Secretary Beadle's work on Horticulture should be sown broadcast among our members by the Association during the coming year. It would crown the work already begun in the distribution of plants, give an impetus to fruit culture, and, on account of its Canadian origin and adaptation to our wants, supply at present a hiatus in fruit and vegetable growing which is patent to all lovers of our associated interests. The different local meetings throughout the year have been well attended, and have not lacked in interest—indeed the interest in fruit growing has been deeper and more felt than ever before. At Goderich, the display of fruit was something wonderful, and that district of country, at no distant day, is destined to take an important place among fruit growers. The plums, grapes, and apples grown in that locality startled members unacquainted with its capabilities. The benefits accruing to the Association from various local meetings throughout the Province ought not to be lost sight of. I could personally testify, were it needful,—and the members present could add their testimony to mine,—of the interest thereby created in many minds, and of plans formed for the cultivation of fruit: interest and plans which would never have had existence but for the presence of the Association. Among all the interests, however, which the members of our Association are banded together to further, there is none at present so important, and in the future will be so profitable to the fruit culturist, as grape growing. It needs not much discrimination to perceive that this culture is to prove of immense benefit to large tracts of our country. The soil, aspect, and climate of many portions of our large Province around our lakes are singularly adapted for grape-growing. When the late Mr. Underhill, of Albany, was recently among us, he pronounced the western shore of Lake Ontario as one of the best for this culture. He expressed his astonishment at its capabilities, and wondered that so little had been done in the way of developing our resources. What is true with regard to the western shore of Ontario is equally true, after trial, of the north-western, and more than true of the northern shore of Lake Erie and the north-eastern of Lake Huron. The most sceptical on this latter point must have had their scepticism removed at the late meeting of the Association at Goderich. The adaptability of soil and climate being taken for granted, nay, demonstrated by experiment, the half of the vine-grower's battle is more than fought, and there is only need of the helping hand of our Association, to develop the capabilities of soil, and the amenities of our climate, to make our available districts famous, like a land of old, for its vineyards. If the practical experience of your President is of any use in fastening the initial step of the ladder, it is heartily at your disposal. His experience is only to be taken for what it is worth, and those who know better and more, must just step forward to the front and give us their experience and light. I have fruited one and twenty varieties of grapes, and know more or less of ten varieties more. I am to speak therefore, only of what I know. The Isabella and Catawba were the first I fruited, and I was enamoured at my success with the former. During the fourteen years' cultivation of the Catawba, I succeeded in twice securing ripe fruit, and only twice. I question if we have yet a better wine grape than the Isabella. For hardiness and fruitfulness it can scarcely be excelled. With the exception of the Clinton and Concord it has as yet no equal as a wine-maker. The Catawba we have been compelled to discard. The Hartford Prolific, and Delaware, Concord, and Creveling, were our next addition. The Hartford Prolific has a place in all collections simply on account of its earliness. We esteem it but a poor grape. The Delaware is hard to beat. It is a favourite both for wine-making and dessert. We might with truth say that it is a universal favourite. Vineyardists and amateurs alike find it a profitable variety for cultivation. A grower near Hamilton last year sold his Delaware on the ground for six cents per lb. The wine from the Delaware has always seemed to me more agreeable than that from any other hardy grape which I have tasted. The Clinton and Concord are ranked together. There are no better grapes yet grown for profit. The Clinton is profuse in its bearing, and the Concord does not lack the same character. The Clinton with me does best on the arbour. I have tried in both ways. Indeed, it scarcely pays to cultivate it on the trellis alone. Immense success has attended its culture at Cooksville, Hamilton, St. Catharines, and on Lake Erie shore. It is thoroughly hardy, and while I have seen in my garden, during certain trying winters, the Delaware and Iona a little the worse of the severity, I have not yet seen the Clinton the least scorched. The Concord it what may justly be called a standard hardy grape. In point of bearing qualities, we venture to affirm that it has no equal. It is emphatically a heavy cropper, with fair, beautiful, large fruit, better for

wine making than has perhaps, at present rank among the varieties if there be a more or less ordinary care, is one of the best stands among the grape, and we found on the bunch. The neighbours, but with Horticultural Show never seen such but While it is in general fair size of berries varieties come next is, to our taste, a little sprightly. The bunch of Rogers' hybrids, finely flavoured grape of all his hybrids is a white grape, preferred for Mr. Arnold's region in the same field where ear, and the taste, with culture of the grape, by his hybridization, speak emphatically of some beautiful hybrid Provincial Exhibition Ives' seedling, Roger the highest terms. Rogers' varieties will range from medium to of our wives and daughters no surprise at the position—rampant growers, find the Creveling, a sparse this drawback may make we fear, have been too From their mode of growth air. Their bunches No. 3, to our taste, is It is conspicuous for too, is a free grower, similar in character and 42. No. 19 is in Indeed, No. 4 cannot the berry itself is of in our neighbourhood. Nos. 53, 42 and 41, and it must give place to N which we are acquainted eties, like those former on a rich bottom, allowed ground. We can safely vineyard. Mr. John by branch stakes. He This low mode of culti

wine making than the table, yet not to be despised for dessert. The wine from this grape has perhaps, at present, the highest commercial value of any variety grown. It ought to rank among the varieties grown by the vineyardist who cultivates for profit. We question if there be a more profitable variety cultivated. It does well trained on the trellis, and needs only ordinary care, and good manuring for the production of a prolific crop. The Creveling is one of the best sorts for dessert. Few varieties excel it in flavour, and as a wine-grape it stands among the best, if not the very best. We have tasted wine two years' old from this grape, and we found it excellent. A drawback to its cultivation is that the berries are sparse on the bunch. This characteristic has appeared in my cultivation and among some of my neighbours, but with others the characteristic is altogether the other way. At the recent Horticultural Show at Hamilton, Mr. Buchanan, of St. Catharines, declared that he had never seen such bunches of Creveling as were grown within a stone's throw of my garden. While it is in general a sparse bearer, the superior flavour of the fruit, its beautiful bloom, and fair size of berry, will always render it a favourite variety of cultivation. Arnold's varieties come next for observation, viz.—Othello, Autuchon, Canada, and Cornucopia. Othello is, to our taste, a little too acid; Ellwanger & Barry, of Rochester, N. Y., say that it is sprightly. The bunches are handsome, the berries fair, but we esteem it inferior to several of Rogers' hybrids. The Canada and Cornucopia are good varieties. Canada is really a finely flavoured grape. Arnold's No. 8 and his Canada, are our favourites in point of flavour of all his hybrids. His Autuchon is not much, if anything, behind the former two; it is a white grape, pretty compact in the bunch, and of fair size in berry. It is unfortunate for Mr. Arnold's reputation, that his friend and collaborator in hybridization, Mr Rogers, is in the same field which he has been cultivating, and that Rogers varieties have got both the ear, and the taste, we presume, of the public. We must not overlook, in any remarks on the culture of the grape, the prominent share Mr. Arnold has had in giving a lift to grape growing by his hybridization, and grape culture in general. I know too little of Mr. Reeds' hybrids to speak emphatically of their character, and merely notice that for several years he has shown some beautiful hybrids, both at the Fruit Growers' Association meetings, and also at the Provincial Exhibition. We also cultivate the Adirondac, Eumelan, Israella, Iona Diana, Ives' seedling, Rogers' No. 1, 3, 4, 15, 19, 33, 41, 42, 53, and can speak of these varieties in the highest terms. We are deeply impressed with the thought that for various reasons Rogers' varieties will carry the palm over all other varieties. The berries of all his varieties range from medium to very large. And to those of us who know the marketing propensities of our wives and daughters, in always choosing large bunches and large berries, there can be no surprise at the popularity of Rogers' varieties. They all have very similar characteristics,—rampant growers, fair fruited, and excellent flavour. No. 15 has the repute of being like the Creveling, a sparse bearer. This is a mistake. When young, and in certain localities, this drawback may mark its growth, but it does not when properly cultivated. Grape-growers, we fear, have been too much in the habit of too closely cutting and pruning Rogers' varieties. From their mode of growth they require to be allowed to run, with plenty of room, light and air. Their bunches will then be astonishingly large, and this can be truly said of No. 15. No. 3, to our taste, is a superb grape, amber-coloured, or as Rogers terms it, red-coloured. It is conspicuous for the beauty of its berry, and is a fine addition to the dessert table. It, too, is a free grower, and must not be curbed in its tendencies. Nos. 1, 4, 19 and 33 are similar in character and flavour. The skin of 19 is thicker considerably than that of Nos. 41 and 42. No. 19 is in all respects a desirable grape; so is No. 4; it was long my favourite. Indeed, No. 4 cannot be too highly spoken of. The bunches have large compact berries, and the berry itself is of exquisite flavour. No. 4 is one of Rogers' best varieties and does well in our neighbourhood. All the above mentioned varieties, however, must yield the palm to Nos. 53, 42 and 41, and of these 41 is the best. The Salem, No. 53, is an old favourite, but it must give place to No. 41, which we believe stands highest of all Rogers' varieties with which we are acquainted. No. 42 follows at no inconsiderable distance. These latter varieties, like those formerly noticed, require to be allowed to run. Mr. Kilborn, of Beamsville, on a rich bottom, allows his Rogers' varieties to bear without stakes, just trailing on the ground. We can safely say we have seen no such fruit trained on the old fashion in any vineyard. Mr. John Freed, of Hamilton, raises them about two feet only from the ground, by branch stakes. He gets wonderful crops, and beautiful fruit both in quantity and quality. This low mode of cultivation is yet destined to take a prominent place in our country, and



not altogether prevented by good, generous cultivation: manure rich in potash, carbon, &c., &c., will go far to remedy the evil. Whenever the food of the vine is stinted its vigour wanes, and consequently opportunities are given for the development of all manner of parasitical and insect pests. The leaf roller is an insect pest which of late years has appeared with us; its ravages are not very deadly and may be easily prevented with a little care. The thrip, after all, is, at present, our greatest pest. When down on a visit to Ohio and Kentucky, a year ago, I found it a common practice there for grape-growers to destroy this pest by means of torches at night. One carries the torch, another disturbs the vines, and the enemy betakes himself to the flame. Mr. Saunders, of London two years ago, discovered a pest in the pip of the Clinton grape, but our experience fortunately has not made us further acquainted with its ravages. Grapes can be kept for a lengthened period by having them carefully strung and kept in a dry airy room. W. H. Boulton, Esq., the Grange, Toronto, keeps them for months in this manner. For the encouragement of grape-growers to prosecute this branch of horticulture, I refer them to the statistics of grape-growing on the last pages of "Husmann, on Grapes and Wine." Again renewing my grateful sense of your courtesy, gentlemen, and expressing my continued interest in fruit growing and its development throughout the Province I wish you in the heartiest and sincerest manner every success in your laudable and patriotic efforts for the advancement of horticulture.

ROBERT BURNET,  
*President.*

## FRUIT GROWERS' ASSOCIATION.

### WINTER MEETING.

The regular winter meeting of the Fruit Growers' Association was held on Tuesday, Feb., 7th, 1871, in the City of Hamilton. There was a good attendance, members being present from London, Goderich, Brantford, Toronto, Cayuga, Clifton, Niagara, St. Catharines, Winona, Milton, Oakville, Wellington Square, Thamesford, and other places.

The minutes of the last meeting were read and approved.

The following papers were then read, viz:—

By the President, on Thinning Fruit.

By A. B. Bennett, Esq., The Garden and Farm.

By G. Leslie, jr., Esq., Tree Planting for Shelter.

By W. H. Mills, Esq., Vegetable Tissues and Fire Blight.

By Rev. George Bell, Experiments in the Culture of Small Fruits.

Moved by Mr. Morse seconded by Mr. Saunders, that the gentlemen who have read papers be requested to hand their papers over to the custody of the Directors for disposal as they think fit. Carried.

Moved by Mr. Holton, seconded by Mr. Martin, that a cordial vote of thanks be tendered the gentlemen who have so kindly furnished the papers we have just heard read. Carried.

Resolved,—That the seedling and other apples be handed over to the Fruit Committee to examine and report.

Mr. Arnold brought a russet apple before the meeting, for the purpose of eliciting an opinion as to whether anyone had seen anything like it before. After various opinions had been given he stated that it was a Spitzenburg, a remarkable variation from the normal form.

Mr. Arnold also read an interesting letter from Mr. Thomas Meehan, of Philadelphia, in relation to a singular combination of the apple with the pear, which had been sent by Mr. Arnold to Mr. Meehan. It was a fruit shaped like an ordinary apple, and having the external appearance of an apple, but found growing on a pear tree. Mr. Meehan stated in his letters that he had carefully examined the fruit sent him, that he had found the pulp to be apple, and the stem, core and seeds to be pear, and was of the opinion that it was produced by the blossom of the pear tree having been fertilized by the pollen of an apple.

Here is a new field for investigation. Can the pear be fertilized by the apple, or the apple by the pear? If so, what new combinations are yet to be brought out by the crossing of these fruits, and what a field of experiment is open for the fruit raiser! It is to be hoped that Mr. Arnold, who is skilled in cross-fertilization, will make such numerous and careful

experiments next spring as will settle the question of cross-fertilization between the apple and the pear.

Moved by Mr. Martin, seconded by Mr. Morse, that any member sending to the Secretary the names of five new members, with their subscriptions, shall be entitled to a double supply of fruit trees at the next distribution. Carried.

The discussion of the appointed subjects was now taken up.

#### BEST TIME FOR TRANSPLANTING TREES.

Mr. Freed approves of digging the trees early in the spring, as early as possible; trim the roots and heel them in until ready to plant.

Mr. Watson, Summerville, has light land, and has found fall planting most successful with him. Does not prune, in case of fall planting, at the time they are planted, but in the spring following.

Mr. Grey, of Toronto—It depends on the soil; fall planting is to be recommended on light soil, spring planting when the soil is heavier. If planted in the fall, the trees should be banked up with earth, or mulched, to protect the roots.

Mr. Holton, of Hamilton, thinks, as a rule, spring planting is most successful; but when a fall planted tree survives the winter uninjured the growth during the following year is much better. Fall planting does as well, perhaps better; cover the roots well with earth, taking care to select a dry place for them.

Mr. Bell, of Clifton, has had excellent success with spring planting.

Mr. Arnold, of Paris, thinks there can be no general rule for either spring or fall planting. If the wood is well ripened, and the winters not too severe, thinks fall planting would succeed best, but, taking all things into account, would usually recommend spring planting.

Mr. Caldwell, of Galt, advocates spring planting, but would recommend the taking of trees up, and root pruning and heeling in in the fall, because the cut roots become calloused during the winter, and more readily send out their rootlets when planted out.

Mr. W. Brooking, of Dundas, believes in spring planting; if trees are properly mulched, thinks there is little danger of losing them from the heat.

Mr. Hopkins, of Stoney Creek, has found spring planting do well. Out of 400 trees planted in the spring has only lost 4. Believes that want of success in planting is often due to the length of time the trees have been out of the ground. Advocates purchasing trees as near home as possible, so as to lessen the risk in this way.

Mr. Graham, of Fort Erie, believes that there is more in the way in which the trees are planted than in the time of planting; advocates spring planting, mulching, and staking.

Mr. Bell, of Clifton—Parties planting should see that the land is well drained before planting; if this be done, thinks there is little danger, providing the planting is done well, whether it is done in spring or fall.

Mr. Mills, of Hamilton, advocates fall planting, because the roots heal over during the winter.

Mr. D. W. Beadle, of St. Catharines, thinks the healing process in the root will not take place unless the tree be deeply covered when heeled in, sufficiently to exclude the frost. Fall planting is theoretically the time for planting, and believes fall planted trees, if the work be well done, will succeed best. If heeled in it is all important that the trench be deep and the earth well banked up, so that the roots be out of the reach of the frost.

President Burnett has found fall planting most successful, and thinks he gains time by so doing. No fear of the want of success if the planting is carefully carried out, and the small rootlets properly spread and covered. Believes the fall planted trees keep their foliage better, make a more vigorous growth, and stand the dry weather of summer better.

Mr. Holton finds that there is a great deal of bad planting among those who plant trees. Has known them sometimes to be planted too shallow, with roots scarcely covered; sometimes in a cramped hole seven-by-nine inches, at others planted in a narrow post-hole arrangement eighteen inches deep, into which the tree is thrust half way up the stem. Advises planters to try to strike the happy medium in reference to depth of planting, and loosen the soil well all around the spot when the tree is set.

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## MANURES.

Mr. Lee, of Hamilton, has found the clipping from hides buried under the surface about vines, with bones broken small, to give a great impetus to the growth of grape vines.

Mr. Grey considers rotted turf the best manure; has found it much better than highly stimulating manures.

Mr. Arnold thinks that barnyard manure answers much the best for general purposes. Does not believe that animal manure buried around the roots of trees or vines is ever good for them, unless the material is well rotted. Believes in bone dust as a manure for vines; would prefer applying manure early in the fall. Thinks there are more trees and vines killed by over-feeding than by lack of manure.

One of the members having referred to the ravages of field-mice among his trees, a discussion took place on the subject.

Mr. W. Saunders advocated the use of stove-pipe iron; cut one sheet into three pieces, and bring each piece into circular form with a roller; enclose each tree in one of these and tie it with string. The cost of this on a large scale will be  $3\frac{1}{2}$  cents per tree.

Mr. D. W. Beadle recommended that the trees be painted with a mixture of lime, cow-dung, and soot, after a receipt given by Charles Downing, and published in the *Canada Farmer*.

Mr. Grey agreed with Mr. Beadle.

Mr. Brooking had found stove-pipe iron very useful as a protection, and very cheap.

Mr. Mills advocated the use of 4 inch tile, split up the middle, the two halves placed together and tied with a string.

The discussion of manures was resumed.

Mr. Caldwell thinks all manure should be composted. The fall would be the best time, and the application should be made on the surface in light soil; if the soil be heavy then it should be slightly covered.

Judge Logie uses ashes, and, for vines, broken bones mixed with manure from barn-yards. Fall manuring on the surface is preferable.

Mr. Barnes, of Hamilton, uses all he can get; puts in salt, a pailful to a load of barnyard manure, uses plaster also; for grape, does not like high manuring.

Mr. Lewis, of Clifton, uses common stable manure on the surface for grapes. If you wish a crop manure moderately; thinks high manuring produces much wood and but little grapes.

Mr. Graham, of Fort Erie, said: All kinds of manure are good; put on all you can get well prepared, and for grapes cut back well. Prepare thoroughly for new orchards before you plant; for old orchards put on strawy manure from cow yards. Sprinkling with plaster is also very beneficial; bone dust may be applied anywhere. I think salt not good. For new orchards I used well rotted manure and worked it in; for peaches I find ashes the life of the tree, and also keep the grass away. Ashes are good for any kind of tree. I seed my old orchard in pasture.

Mr. Bell: To determine the exact manure would require an analysis of the soil. Manure should be composted and applied near the surface. Bone dust and ashes are always good. Fresh manure, if applied to the surface in the fall, will not harm; if in the spring it should be well composted. Ashes are particularly good for grapes.

Mr. Bennett: At first I trenched and manured largely, now I manure lightly and have less wood, but more fruit. I manure with plaster, ashes, &c., in the fall. Salt is not good for all trees. The plum, being a marine tree, is greatly benefitted by the use of salt in moderate quantity. A friend used the flesh of some cattle for manure; it caused fungus on his vines, which destroyed them.

Mr. Ross, of Goderich—For grapes I use a compost of muck and manure. My soil is gravelly. I apply to the surface in the fall.

There was a fine display of choice apples and a few pears placed upon the table.

The fruit committee presented their report, which is given below.

It was resolved that the summer meeting be held in Hamilton, and the autumn meeting in Goderich. The time for holding each meeting to be fixed by the directors.

## REPORT OF FRUIT COMMITTEE.

An apple, said to be a seedling, exhibited by Mr. Demick, of West Flamboro', through Mr.

Brooking, of good size, fair appearance, smooth skin, yellow splashed with red; form, flattish oblong; quality at present second-rate, but evidently past its prime. The apple somewhat resembles the Colvert, but no improvement thereon. We would recommend the exhibitor to send specimens next year, when the apple is at its best, for the opinion of the fruit committee, to the President of this Society.

#### SUMMER MEETING.

The regular summer meeting was convened at Hamilton, on Tuesday, July 4th. There was only a moderate attendance at the morning session, in consequence of the rain, but fresh accessions were made to the number during the day, so that there was on the whole a very creditable attendance and a fine display of fruit.

It is very much to be regretted that there is not to be found in the City of Hamilton a suitable and convenient room for the holding of such a meeting. This is now the third time that the meeting of the Association has been disturbed by the necessity of adjourning from the room in which it was convened to some other place. These things are not only disagreeable, but they are a serious interruption and a waste of much valuable time. In truth, there should be two rooms at the disposal of the society for the day, one in which the meeting for discussion is held, and the other in which the fruit is placed. By this arrangement the committees appointed to examine and report upon the fruits, can make their examinations without disturbing the deliberations of the meeting.

The meeting was called to order by the Vice-President, J. C. Rykert, Esq., M.P.P., and, after the transaction of some routine business, the discussion of the subjects for the day was commenced.

#### STRAWBERRIES.

The best six varieties of strawberries for the table was first considered. Mr. Rykert could not find six varieties that he would care to cultivate, after having tried several scores of sorts, but would name in the order in which they stood in his estimation: Triomphe de Gand, Charles Downing, Russell, and Early Scarlet. He had found the Charles Downing to withstand the drought remarkably well, and the Russell to be of large size and very productive. The Agriculturist had proved with him to be a shy bearer, and not highly flavoured. He had tried the President Wilder, but it had wholly failed in productiveness, and he had been compelled to cast it out as quite unsuitable to his grounds. He had also tried the Marguerite, which was shown at the meeting in Galt, and astonished every one by its enormous size; but he had been wholly unable to raise anything more than berries of medium size. Mr. Rykert's soil is a porous gravelly loam, and he cultivates all his strawberries in hills, keeping the runners pulled off. He thinks this the best and most convenient system of cultivation, yielding the largest returns, and obviating the necessity of planting new beds every two or three years.

Rev. Mr. Bell had succeeded only with the Wilson, which was hardy and very productive.

Mr. A. B. Bennett placed Lennig's White at the head of the list, as being the finest in flavour of them all, and with him it had been quite productive. After this he would name Cushing, Wilson, Green Prolific, Monroe Scarlett and Fillmore. Mr. Bennett's soil was wholly a made soil; it had originally been low and wet, but had been filled up, and was very deep and rich. Dr. L. Cross named the Triomphe de Gand, Trollope's Victoria, Early Scarlet, Hooker, Hovey, and Jucunda. His soil is a clayey loam. He cultivates the Triomphe and Jucunda in hills. The Wilson yields by far the largest crop. After taking two crops, he renews by planting new beds and destroying the old ones.

Mr. W. H. Mills could name only the Triomphe de Gand and Wilson.

Mr. Saunders named only three: Jucunda, Green Prolific and Downing.

Mr. Laing, of St. Thomas, named the Wilson and the Hooker. Had given Bishop's Canada a careful trial, but it was not productive, and he had dropped the cultivation of that sort altogether.

Mr. Linus Woolverton cultivated the Jucunda for the table, which he esteemed as the best.

Mr. Arnold thought that this question should be considered as one of quality, that the six varieties having the finest flavour and most desirable to be placed on a gentleman's table should be named, irrespective of the cost of production. Taking this view, he would name the

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Bishop's Canada as the most delicious strawberry he had ever grown, and place it first on the list of the six best table sorts. It was, indeed, a very unproductive variety, but when they could be had they were of the very highest quality. Next to this he would place the Hooker, as a very highly flavoured berry, then the (American) President Wilder, Charles Downing, Jucunda, and Trollope's Victoria.

Mr. Holton could not view the subject quite in the same light as Mr. Arnold. He thought cost of production should enter into the estimate of the qualities of a variety even for amateur culture. He named Early Scarlet, Wilson, Triomphe de Gand, Macavoy's Superior, Jucunda, and Hovey.

Mr. Lewis named only the Wilson.

President Burnet was not able to give the names of six varieties that he would advise amateurs to plant for the table, for with him, and he thought with most planters, the productiveness of a variety had much to do with its desirableness. When he had a good berry he liked to have plenty of it; and as many amateurs, probably the most, had only small gardens, it was an object with them to get as much as possible from a small piece of ground. He therefore named the following as in his view the best: Wilson (the most productive of all), Triomphe de Gand, Jucunda, and Nicanor. The last named sort had endured the drought remarkably well.

The question of the six varieties of strawberries best suited for market purposes was then discussed.

Mr. Rykert named only one variety that he considered at all profitable as a market variety. This was the Wilson. He practised and strongly recommended the cultivation of the strawberry in hills and keeping the runners cut off, and believed it to be the most profitable method. His soil is a light, dry, gravelly loam.

Rev. Mr. Bell knew of no variety so suitable as the Wilson.

Mr. Bennett spoke of carrot tops as a most excellent winter covering for the strawberry plants, and which, being suffered to decay on the ground, enriched the soil and brought no seeds of grain or weeds. He could name no variety at all comparable to the Wilson for market.

Dr. Cross was fully of the opinion that in the present state of our markets, when berries sold at a rate not averaging higher than ten cents per quart, there was no profit in growing any other variety than the Wilson.

Mr. L. Woolverton has tried many kinds, but none of them can equal the Wilson.

Mr. Arnold thought it was desirable to take as much advantage as possible of the higher prices which ruled in the opening of the strawberry season, and therefore would plant a few of Metcalf's Early and a few of Nicanor, because these are earlier than the Wilson. Also the Nicanor stands dry weather very well, and in such seasons has on this account some advantages; but for the bulk of his crop he should rely on the Wilson. He plants in rows four feet apart, and the plants one foot apart in the row; keeps clean with cultivator and hoe, and after taking two crops turns under with the plough.

The President has found a liberal dressing of leached ashes to be a very beneficial application.

At the opening of the afternoon session the President read a very interesting paper, which had been sent in by Mr. James Dougall, of Windsor, on the subject of cheap glass structures for growing Exotic grapes, and their management. The paper was received with thanks, and referred to the Printing Committee.

#### RASPBERRIES.

Which are the best six varieties of raspberries for the table? was then announced as the subject for discussion.

Mr. Morse had tried the Red Antwerp and Franconia with but poor success, and much preferred some of the Black-caps.

Dr. Cross estimated Brinkle's Orange very highly, and gave that the preference. He also thought favourably of the Philadelphia.

Mr. Woolverton named in connection with Brinkle's Orange the Red Antwerp.

Mr. Rykert could not recommend six sorts, but would plant in addition to Brinkle's Orange, Lum's Ever-bearing, which is an autumn bearing variety of the black-cap, and exceedingly productive; Golden Thornless, which is a handsome yellow fruit, the cane without

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spines, and exceedingly productive, though the flavour was not high; and the Belle de Fontenay. Perhaps, to make out the six, some would add the Franconia and Davison's Thornless.

Mr. Bell was much pleased with the Red Antwerp as a fruit, but the canes were very liable to be injured by the winter.

In discussing the subject of the best six varieties for market,

Mr. Woolverton named the Mammoth Cluster and Doolittle, both of them black-caps and both hardy and productive.

Mr. Rykert thought that the black caps would bear transportation so much better than the other sorts, that they would be found on that account the most valuable for market. He cultivates his raspberry plants in single stools, six feet apart each way.

Mr. Lister had recently planted Brinkle's Orange, Franconia, Philadelphia, Davison's Thornless, Doolittle, Mammoth Cluster and Golden Thornless, but could not yet speak of their respective merits.

Rev. Mr. Bell admired the black-cap varieties.

#### CURRENTS.

Which are the best six varieties of currants?

Mr. Hyslop had cultivated with success the Red and White Dutch and White Grape. They were prolific, and he had been able to keep down the worms by the use of hellebore.

Mr. Brooking preferred the old Red and White Dutch, especially for market. He had also grown the White Grape and the Cherry, and Black Naples. He had found the use of white hellebore of great benefit, and had succeeded in completely routing the currant worms.

Mr. Morse grew the Red and White Dutch, the Cherry Currant and the Black Naples. He thought the Red and White Dutch the best for market, being hardy, productive, and meeting with a ready sale. For flavour he prefers the White Grape. The insect enemies he is able to keep in entire subjection by the use of white hellebore.

Mr. Bell prefers the White Grape for flavour, but for culinary purposes finds the Red Dutch to be the best. Had found the Black Naples prolific and good.

Mr. Saunders is much pleased with the Cherry and White Grape sorts, to which he would add the Prince Albert, on account of its ripening later, and so prolonging the currant season.

Mr. Woolverton named the Cherry, White Grape and White Dutch.

Mr. Laing prefers the old Red and White Dutch; the Cherry variety, though larger, was not as good.

Mr. Rykert preferred the White Grape and the Cherry, though he did not esteem the fruit as one of any great value. He doubted whether the cultivation of this fruit for market would ever be profitable.

Mr. W. H. Mills thought very highly of the currant; grew the White Grape, the Cherry, Red and White Dutch. He could not get too much of this fruit for market. The Cherry currants brought 20 cents a quart, the Red Dutch only 10 cents; and he therefore thought that the Cherry currant was the best sort to grow for market, and that it was also profitable. He thought the fruit was conducive to health. In point of flavour he gave the preference to the White Grape.

Mr. Laing said that currant jellies were largely imported from Scotland, and that we might just as well supply this demand with a home product, if the proper attention were given to the matter.

The President spoke very approvingly of fresh currants on the tea-table, with sugar and cream, as being both delicious and wholesome.

Mr. Bennett would as soon do without his strawberries, and had observed that buyers from Buffalo came to Brantford, and paid good prices for them. In some places, according to President Wilder, as much as thirteen hundred dollars had been taken from an acre of currants.

Mr. Morse had people come to his place for them, and give good prices. Mr. Brooking had not been able to supply the demand for them at Dundas, and Mr. Saunders remarked that at London they have always a ready sale; and Mr. Rowe, of Paris, had sold his crop

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while they were in blossom. He had found the Cherry variety to be very prolific. White hellebore was a perfect cure for the saw-fly or currant worm.

Rev. Geo. Bell had not found the Cherry as prolific as the Red Dutch; were it only as good a bearer, he would prefer the Cherry. He regarded the Black Naples as a very valuable sort, although very little was said about it. It made a most excellent jam, which was useful in many ways, and made very wholesome and refreshing drinks.

Mr. Arnold had grown a number of so-called varieties of Black Currants, such as the Black English, Black Grape, Black Bang-up, but could not see enough of difference to make a distinction. The Red Dutch had been badly injured by the currant-borer of late, and was inferior when compared with others. The Cherry was tart, but the White Grape was of fine flavour, first-class.

Mr. Freed remarked that the Black English and Black Naples differed in time of ripening. The Black Missouri is a very poor affair. The White Grape is the finest flavoured, but the Red Cherry is the best for jelly. The Champagne made a very handsome jelly.

The President exhibited some samples of the Champagne variety, which were of a beautiful bright pink colour, and intimated that any member of the Association could have cuttings from his plants, as he had several of them.

Mr. Holton considered the Cherry as the best for market, and for jellies the Red Dutch, when well grown. Cultivation makes a great difference in both flavour and size of the Red Dutch, being very much improved in both by liberal supplies of manure, clean cultivation, and judicious pruning. The currant worm is easily destroyed by timely and persistent use of hellebore, in the proportion of one ounce to a pail of water. The moths of the currant (stem) borer can be destroyed by the use of dishes of sweetened water or poisoned cloths. The enemies of the black currants are not so numerous or so serious as those of the other sorts.

Mr. MacCallum had found the several sorts of currants to be quite prolific. He grew the Champagne, Cherry, and Red and White Dutch.

The President called the attention of Mr. Saunders, who is the Entomologist of the Association, to the existence of a small insect found feeding on the black aphid, and in this way rendering a valuable service. He thought it might be the same as the insect known in Scotland as the "Grave-Digger."

Mr. Saunders stated that it was not the "Grave-Digger," but was the larva of one of the Lady-birds, and very much resembled the "Grave-Digger." He exhibited several of them, which he had with him in a small box. They were about three-sixteenths of an inch in length, dark purplish colour, with yellow dots. He also stated that there was a gauze-winged fly, which was doing its share in the destruction of these aphid, with which it was desirable all fruit-growers should be familiar, and recognize it as a friend. Its expanded wings measured about three-quarters of an inch; it had bright fiery eyes, and, when handled, emitted a disagreeable smell.

#### GOOSEBERRIES.

The next question discussed related to gooseberries—which are the best six varieties?

Mr. Hyslop had been successful in growing the gooseberry. The Houghton succeeded the best; but he had also raised fine fruit of the Whitesmith, Ironmonger, &c. He had succeeded in preventing the mildew by mulching.

Mr. Brooking had been troubled some with the mildew on a clay loam soil. The Whitesmith always mildewed, and so did the Warrington. He had raised a couple of seedlings, the one dark green, the other a dark variety. The caterpillar did not feed on the foliage of the dark green one. Had found the Houghton's Seedling to be one of the best for market.

Mr. John Freed remarked that the Whitesmith does not mildew on the Hamilton clay. Has planted Downing's Seedling, a good light green variety.

Mr. Morse grows for his own use the Houghton's Seedling. This is free from mildew, but Downing's Seedling mildews.

Mr. Osborne had been much pleased with Warrington, Jolly Angler, and Hardy's Red. He trims close, plants six feet apart, on a light gravel soil. There is a berry in Mr. Kerr's garden at Beamsville, which never mildews; it has a tuft upon it.

Mr. Saunders said that all the foreign sorts mildewed badly about London. The Downing mildews and bears poorly when the plants become old. Houghton does not mildew.

Mr. Woolverton named only the Houghton.

Mr. W. H. Mills is of opinion that by growing the gooseberry well up from the ground, and by mulching with cut grass, and giving the mulch an occasional sprinkling with water in which a little salt has been dissolved, the mildew may be prevented. The Houghton is a good variety, being much inclined to over-bear.

Mr. Arnold remarked that if confined to one variety, he should choose the Downing's Seedling. Mr. Downing raised two seedlings; only one of these has he thought worthy of a place in his great work on the Fruits and Fruit-Trees of America. This is the one there described under the name of Downing, and is a light green fruit. The other, known as his number two, is a red one, and that one he (Mr. Arnold) would choose as the second. Mr. Hart, of Paris, has some promising seedlings.

Mr. Cranfield raises gooseberries; his do not mildew.

Mr. Rowe, of Paris, said he came to the meeting on purpose to speak a friendly word for gooseberries. He has cultivated them very successfully for seven or eight years. Has grown Ploughboy, Roaring Lion, and Conquering Hero, and kept them from the mildew. He applied water, salt, and ashes, and this preserved them from the mildew. He uses unleached ashes, sprinkling them on the bushes. His soil is kept in a high state of cultivation.

Mr. Rykert had been informed that abundant mulching with grass would prevent the mildew. He had tried several of the English varieties, but was obliged to fall back on Houghton.

Mr. Barnes had tried the plan of letting the plants take care of themselves, and they always mildewed.

Mr. Lister has failed with the best gooseberries.

Rev. Mr. Bell thinks something besides mulching is needed, and that is a more uniform temperature. Has found good gooseberries at Guelph, on the Speed, raised but little above its level.

Mr. Lowry inquired what was the cause of mildew.

Mr. Mills said he thought it was a parasitic plant, which grew upon weak or sickly gooseberry trees, but could not thrive upon those that are in perfect health.

Mr. Arnold thought that mildew was a parasitic plant.

The President thought we were trying to grow the gooseberry in an unfavourable climate, and hence our great want of success.

Mr. Saunders stated that sulphur is a remedy for the mildew.

Mr. McCallum thought that our sudden and extreme changes of temperature brought about those conditions which were favourable to the growth of these parasitic fungi.

Professor Buckland thought that the climatic conditions of the west and north of England, Cheshire and Lancashire, and parts of Scotland, and most of Ireland, were favourable to the growth of the gooseberry. Wherever the vine flourished the gooseberry failed. He spoke of the recent examinations into the subject of mildew, by the Rev. Mr. Buckley, of England, who ascertained that the spores of these fungi exist in the atmosphere, and when they found a suitable place for development with favouring conditions, there they grew, and produced the appearances we term mildew. Our climate does not favour the growth of the gooseberry, and Canadian cultivators of this fruit will always find themselves beset with difficulties arising from the varying conditions of the atmosphere, and especially its very variable and extreme hygrometric conditions.

#### CHERRIES.

The best ten varieties of cherries to give a succession.

Mr. Freed said that the earliest useful cherry was the Mayduke, then came the Governor Wood, Belle d'Orleans, Knight's Early Black, Black Tartarian, American Heart, Bigarreau or Yellow Spanish, Napoleon Bigarreau, Tradescant's Black Heart or Elkhorn, Monstreuse de Mezel, Reine Hortense, and Late Duke. These were all good sorts, and would keep up a good succession. He had noticed that the Governor Wood Cherry, when grown on the Canada Wild Plum as a stock, ripened its fruit five or six days earlier than when grown on the Common Mazzard Cherry stock.

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Mr. Lowry remarked that he had been in the habit of working the finer varieties of cherry on the common Kentish cherry.

Mr. Morse had never tried the Reine Hortense, and would therefore substitute for that variety in Mr. Freed's list the Coc's Transparent. It is a fine cherry, better flavoured on high lands, and ripens earlier than when grown on low lands.

Mr. L. Woolverton named the following as keeping up a good succession, viz—Governor Wood, Rockport Bigarreau, Knight's Early Black, Elton, Black Tartarian, Belle de Choisy, Napoleon Bigarreau, Black Eagle, and Elkhorn.

Mr. Barnes stated that he had a variety which ripens three weeks after any other cherry; is tart, and excellent for canning.

Mr. Saunders and Mr. Mills thought that the lists proposed were excellent, and made no suggestions.

Mr. Rykert thought the following four old varieties were the best, namely, American Heart, Elkhorn, Mayduke, and Black Tartarian.

Mr. Lowry thought there were not enough acid cherries mentioned in the lists given. He esteemed the Mayduke among the first of cherries, and thought the Kentish for canning and all cooking purposes was one of the best that is grown.

The discussion having terminated, the Report of the Committee on Seedling Fruits was read and accepted. It is as follows:—

Cherries—No. 1, a seedling from Mr. Jas. Dougall, Windsor, medium size, jet black, flesh tender, luscious, very good.

Seedling No. 2, from Mr. James Dougall, large, dark, clouded red, firm flesh, not high flavoured.

A seedling cherry from Mr. Hatt, large, lively red, fine flavour, closely resembles the Mayduke in its best state.

Seedling cherry, from Mr. Freed, glossy black, large, juicy, good flavour, promising sort, called "Steven's Black Heart."

Seedling cherry from Mr. Freed, medium or less, pale red, semi-transparent, slightly bitter, pleasant flavour.

Seedling gooseberry from Mr. Hart, Paris, large, oblong, smooth, yellow, said to be free from mildew, promising sort.

The Association adjourned, to meet again at Goderich at the call of the President.

#### AUTUMN MEETING—DISPLAY OF FRUIT.

The Fruit Growers' Association of Ontario, held their autumn meeting at Goderich, on Friday, the 15th September. There was an extensive display of fruit, which was exhibited in the Drill Shed, where the Goderich Horticultural Society were holding their Fall Show. The combined collections of fruit were very fine. Most of the day was taken up in the examination of the fruit on exhibition, and it was not until four o'clock in the afternoon that the Association met in the Court House for the discussion of matters of interest to themselves.

The prizes offered by the Association were keenly contested. In the twenty varieties of apples, the prize was taken by Mr. John Freed, of Hamilton, who also carried off the premier prize for the best twenty varieties of pears, and for the best dozen quinces. In apples, Mr. J. Stewart, of Goderich, was second, and Mr. James Torrance, of Porter Hill, was third. These were all very fine samples of fruit. In the twenty varieties of pears, Mr. Geo. Leslie, Jr., of Toronto, was second, and Mr. M. D. Baldwin, of Brantford, was third. The collection of pears to which the premier prize was given, was one of the finest samples ever exhibited in this Province.

The collections of grapes were exceedingly fine, and some of the samples laid upon the table for exhibition merely, were such as to call forth expressions of astonishment from every one. Three bunches of the Wilder grape (Rogers' No. 4), were of surpassing size and beauty. They weighed respectively sixteen, eighteen, and twenty ounces, and were the growth of Mr. Matthew Bell, of Hamilton. It was stated by gentlemen at the meeting, who had seen the grapes growing on the vines, that no ringing of the vines had been practiced. The highest prize for the best collection of ten varieties of grapes, was given to Mr. W. Has-

kins, of Hamilton; the second to Mr. John Freed, of the same place; and the third to Mr. A. M. Ross, of Goderich.

The display of plums was very fine, though the greater number of fine varieties had been ripe for some time, and were mostly gone. Goderich and vicinity has been famed for fine crops of plums of the highest quality, and it was to be expected that the prizes in this fruit, would be carried off by gentlemen resident there. The highest prize was won by Mr. A. Watson, of Goderich, and the second by Mr. J. Stewart, of the same place. We did not learn who gained the third.

There were but two collections of crab apples, of fine varieties, and these were both from Hamilton. They were very beautiful specimens of this very pretty fruit. Mr. W. Holton received the first, and Mr. W. H. Mills, the second prize.

The prize for the best Canadian seedling apple, was given to Mr. George Smith, of Brantford. The apple to which this prize was awarded, was of very fine texture and pleasant flavour, though, not being in season, it is quite impossible to tell of how fine a quality it would have been when perfectly ripe. It was of a dark red colour, smooth and free from blemishes.

There were no seedling pears exhibited that were thought by the judges to be worthy of a prize. The only samples we saw were inferior both in size and quality.

There were some very fine seedling peaches exhibited, especially prominent was a considerable collection from Mr. Cowherd, of Newport, near Brantford. Several of these were cling-stones, and though of good flavour in that class, the fact that they were cling-stones rendered them less desirable. But the variety to which the judges awarded the prize was certainly a very fine peach, of good size, handsome appearance, and excellent flavour. It was a yellow-fleshed fruit, with dark crimson cheek, and was marked No. 1. It is a very highly commendable feature in the action of the Directors of this Society, that so much effort is made by them to induce amateurs to undertake the production of new varieties of these and other fruits, and we confidently expect that we shall yet have produced among us a class of peaches, &c., of excellent quality, and better adapted to our climate than many of the sorts now in general cultivation.

In seedling plums, we noticed only one plate, which was placed on the table by W. H. Mills, Esq., of Hamilton. It was of medium size, ripening rather late, we fear, for general usefulness in this climate, and hardly of sufficient excellence of flavour to rank higher than a cooking plum.

There were several varieties of Canadian seedling grapes exhibited. One was shown by Mr. J. Dougall, of Windsor, grown from seed of the Clinton, sweeter than that variety as grown in this climate, and evidently ripening earlier, though in size of berry and form of bunch much resembling the Clinton. Mr. Arnold's seedling varieties were also on the tables, and though the berries are not large, yet the character of the pulp is a great advance on such grapes as the Concord and Isabella. From what we saw of these grapes at this time, and from tasting them on our own grounds and elsewhere, we are disposed, on the whole, to give the preference to the variety which Mr. Arnold calls "Canada." It is fully ripe now, September 18th, sweet, fine flavoured, free from pulp, and only lacks size to make it a very popular grape. Another seedling grape was shown by the Rev. Mr. MacLeod, of Chippewa. It was a chance seedling, raised by the late Albert Oxley, of Font Hill, but fruited by Mr. MacLeod. It was a white grape of very fine appearance, of good size, both in berry and bunch, and of good flavour and free from pulpiness, though hardly quite ripe. Judging from the appearance of the fruit, it belongs to the Chasselas grapes, and is probably a seedling of one of them. Some experiments in the raising of seedling grapes from European varieties, which have been made in the State of New York, lead to the hope that varieties have even now been obtained which endure our climate well, do not suffer from mildew, and yet retain the excellent qualities of this class of grapes.

There was but one plate of Canadian hybrid grapes not before exhibited, and this was shown by Mr. W. H. Mills, of Hamilton. We fear it ripens too late to be of general usefulness, though it is too soon to be positive on any point concerning it.

There were also a number of seedling crab apples shown by Mr. George Smith, of Brantford, some of them very handsome, which received the commendation of the judges.

The meeting of and after the reading and printing of the *Essays* of Mr. A. M. Ross to cause such of them to be published from

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## MEETING.

The meeting of the Association was called to order by the Rev. R. Burnet, President; and after the reading of the minutes of last meeting, some discussion was had concerning the printing of the Essays which are read from time to time before the Association. On motion of Mr. A. M. Ross seconded by Mr. Mills, it was resolved that the Directors be requested to cause such of the Essays that are presented to this Association, as they may deem best, to be published from time to time in the *Canada Farmer*.

The President introduced to the meeting Mr. Van Wagener, the inventor of an instrument for dusting vines and plants with sulphur or hellebore, or other powder, and requested him to exhibit his instrument and explain its construction and use.

Mr. Van Wagener came forward, and exhibited to the meeting a very neat, convenient, and efficient instrument for dusting plants with any powdered substance. It is more convenient than the well-known De La Vergne Bellows, distributing the powder much more perfectly and rapidly. The wind which effects this is created, not by the action of a bellows, but of a rotary fan, which keeps up a constant current of air, throwing the sulphur or other powder in a continuous stream, and not in interrupted jets. A committee was appointed to draw up a report expressing the views of the meeting with regard to this most useful instrument.

## ESSAYS AND PRIZE.

The Secretary presented an Essay on Fruits and Fruit Culture, by Mr. W. Saunders, of London. It being lengthy, and the time of the meeting already largely taken up, it was ordered to be received with thanks to the writer, and referred to the committee on publication.

The Secretary further reported that the committee appointed to read the essays received in competition for prizes, had awarded the second prize to the one bearing the motto "I moisten the roots of all that grow," and that, on opening the envelope bearing this motto, he found the name of P. E. Bucke, Esq., of Ottawa.

Some discussion was had upon the subject of offering prizes by the Association for fruits already in general cultivation; and after eliciting the opinions of the members present, it was, on motion of Mr. Arnold, seconded by Mr. Holton, unanimously resolved that in future this Association shall restrict their Fruit Prize List to new and seedling fruits.

## DISCUSSION.

*The management of vineyards* was proposed as a topic for discussion, and Mr. Farrell, of Cayuga, inquired whether any person could give any information of the effect it would have upon an established vineyard if it were laid down in grass.

Mr. Laing, of St. Thomas, replied that he had recently been in Cleveland, Ohio, and had there seen a vineyard that was a complete lawn, with the exception of a narrow strip about one foot in width on each side of the row of vines, and that it seemed to be in a very flourishing condition.

Mr. Shoff, of McGillivray, said he had seen a small vineyard in South Huron which was growing in sod, and seemed to be doing well.

Mr. Arnold, of Paris, said that his neighbour, Mr. Hamilton, had tried sod, and afterwards removed it. He thought that in a dry season the effect would be very injurious.

Mr. Dougall, of Windsor, thought thorough cultivation would be best. He had seen buckwheat sown among the vines, and both turned out bad.

Dr. Cross, of St. Catharines, described the vineyards of Cooksville, where alternate spaces between the rows of vines are laid down to grass.

## THE EFFECT OF ASHES UPON BARN-YARD MANURE.

Dr. Cross stated that the chemist knew that alkalies would not combine with each other; that the ammonia in manure, and potash in ashes, were both alkalies, and that when the potash came in contact with the manure the ammonia was set free, and went off into the atmosphere.

Mr. Shoff had used leached ashes, 160 to 200 bushels to the acre, with very beneficial results.

Mr. Arnold had thrown it broadcast upon grain, but without any perceptible benefit.



experience that the fruit blew off badly, and that oftentimes he lost a large part of the crop by their being blown off long before they were fit to gather.

Mr. Shantz, of Waterloo, said the Flemish Beauty bears well, and thrives well in that section. He had kept the Flemish Beauty quite late in the winter by packing the fruit in maple sawdust.

President Burnet desired to call the attention of the members to some varieties of pear not generally known. He had found the Fondante de Malines to be superior to the Belle Lucrative. The Graslin was a variety that does not spot; is large and profitable. Ananas d'Été is hardy, and better than the Bartlett. Duchesse d'Orleans is a very handsome and desirable fruit. Madame Eliza is also very handsome. Willermoze is very hard to ripen well. Viscount de Spaeberg is a very fine winter sort, ripening about Christmas. Of the older varieties, he remarked that the Winter Nelis requires to be well fed, and it is then one of the very best of winter sorts. The Vicar of Winkfield should be placed in barrels in the cellar until the time of ripening, then should be placed in paper bags, and kept in a warm room for about a fortnight, when they will be found to be good. The Lawrence is a very fine pear, always fair. The Sheldon bears great crops about Hamilton, and is much sought for in the market. The Louise Bonne grows well, bears abundantly, and sells well. The Flemish Beauty is one of our most hardy varieties thriving well even in the vicinity of Ottawa.

Mr. Mills, of Hamilton, keeps the Vicar of Winkfield in the cellar the same as apples, but ripens them by wrapping a few at a time in flannel, and placing them in a drawer in a warm room.

Mr. Leslie keeps only the best specimens of this pear; places them in a warm and dark garret, and they ripen up very fine. The tree is very healthy and hardy.

Mr. Watson, of Goderich, finds the Oswego Beurre, a fine bearer, very hardy and profitable. The Louis Bonne is a good grower, and very productive, especially if supplied with a good dressing of ashes.

Dr. Cross stated that he had lost half of his trees of the Vicar of Winkfield with the pear blight, and thought the variety quite subject to this disease.

Mr. Ross had grown it for eight years, and found it healthy, and Mr. Arnold said he had grown it for twenty years, and the tree is yet healthy.

Mr. Dougall said they were not troubled with the pear blight in the vicinity of Windsor and along the Detroit River. He had found the Howell a tender tree, and the fruit not of first quality.

Mr. Leslie had met with the same experience.

Mr. Ross said the tree grew well about Goderich, and was a great bearer, and the fruit was of fine appearance, but only of second quality. He had found the Beurre d'Amalis to be a great bearer and of good quality.

Mr. Dougall said the Oswego Beurre did not sell well at Windsor.

Mr. Mills had found the Beurre d'Anjou a good market pear; the tree is not a very abundant bearer, never overloads, and hence the pears are always of fine size, and command a high price; from twenty to thirty dollars per barrel in the Boston market.

The President had noticed that the Swan's Orange or Onondaga was too acid to be acceptable to many, and that every five out of six objected to it on account of its acidity.

The discussions having been protracted until a late hour of the evening, and many of the members being obliged to leave on the morning train, the meeting was adjourned to the call of the President.

#### VAN WAGENER—HELLEBORE AND SULPHUR DUSTER.

We, in pursuance of the resolution appointing us a committee to report on the above instrument or machine for discharging powdered hellebore, sulphur, ashes, snuff, or any other powdered substance, for the destruction of all kinds of insects injurious to fruit growing, and of all kinds of fungus growth, beg to report as follows—namely: The inventor, Mr. Van Wagener, having come in person before us and exhibited the merits of the above machine by using it, we were thus in a position to witness its merits, and we have no hesitation in recommending this machine to the general public, as a most efficient instrument,

which should be in the hands of every gardener and fruit grower—believing it to be the most effectual machine we ever saw for the purposes required of it.

W. H. MILLS,  
AGNEW P. FARRELL,  
JAMES DOUGALL,  
W. HOLTON,  
D. SHOFF,  
GEO. LESLIE, JR.

Read and received.

#### THE RED ASTRACAN APPLE.

This apple was first brought to England from Sweden, in 1816, and from thence it has been scattered abroad, in course of time crossing the Atlantic, until it has become an established variety throughout the apple regions of America. Yet, true to the instincts of its northern home, it refuses to give forth its excellences beneath the unclouded skies of southern latitudes too coy to yield to the wooing of their balmy breezes. But in our sterner climate, it finds itself at home; its ruddy cheeks glow with the brightest blushes when kissed by the rough winds of the north; under our clouded skies, and to our chilly air it yields its fine aroma and richest juices.

The fruit is exceedingly handsome, the colour being a rich, deep crimson, beautifully heightened by a light, white bloom spread over the surface. In size, it is above medium; in our climate, very smooth and fair, and the flesh white, crisp and juicy, with a fine rich, acid flavour. It ripens during the month of August, not all at once, but in gradual succession, and may be used as a culinary fruit, but its true place is at the dessert, where it pleases the eye by its beauty, and the palate with its refreshing flavours. It sells readily in our markets, taking precedence of every other apple of its season, and could doubtless be sent with profit from Canada to the markets of New York or Chicago.

The tree has proved itself to be exceedingly hardy, a vigorous and erect grower; bearing while yet quite young and very abundantly. It flourishes in nearly all parts of Canada, and even here, the fruit is, if anything, of better flavour in the colder than in the warmer districts of the country, being more juicy and not so liable to become mealy as soon as it is a little over ripe. It can be safely recommended to every planter, as a variety that is well worthy of a trial, even in the most unfavourable localities, and one that will very rarely fail to give entire satisfaction.

#### ON GOOSEBERRIES.

There are few places in Canada where the English varieties of this delicious fruit can be grown with success. In many gardens, however, a stunted, gnarly, almost leafless specimen may be seen in a state of bare existence, almost totally devoid of fruit. Upon these bushes probably more care and labour have been bestowed than it would take to cultivate fifty times the number of bushes of any other variety of fruit, and yet the proprietor has as yet barely had his first gooseberry tart. Now, I say to such an one take comfort for as there is "corn in Egypt," so also may there be "gooseberries in Canada," and I will give my experience: A friend of mine, in the spring of 1869, gave me nine American seedling gooseberry suckers, with the smallest amount of roots on them. These he took from a hedge sixty feet long, and five feet wide, a dense tangled mass, so thick that no one could get his hand into it, chiefly, however, on account of the prickles. I saw at once that this was not the true method for their culture, but more of this presently. Absence from home on the part of my friend during that summer proved almost fatal to his bushes. The currant worm took every leaf off, and the next year there was no fruit. These little animals may be easily checked in their depredations by two ounces of hellebore in a pailful of water, applied either with a syringe or a watering pot. My nine slips did well the first year, and made an excellent growth that season. In 1870 the wood grown in 1869 was literally covered with fruit, and a great lot of suckers were thrown up. These I laid down in July and August, in little trenches, and covered with soil. This variety of gooseberry takes root wherever it touches the ground. By the autumn I had two hundred and fifty-five rooted layers. These I separated from the parent plant, and planted in rows as soon as the leaves fell off, and they might many of them now be layered again if more bushes were required. I kept the suckers off the original plants



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EARLY WILSON BLACKBERRY

this spring, and they have kept the family in gooseberry tarts and stewed gooseberries, and there are still a great many left to ripen. My method of training them is to drive a stout stake firmly into the ground, leaving it six feet high, and tying a leading shoot to it, keeping down all suckers unless required for propagation. As the main stem increases in length, side branches are thrown out and the bush may be trained in any desired direction; but when grown in the pyramid form, the side branches should be pinched so as to induce the main stem to lengthen. The branches are very thin at first, and almost vine-like in their growth. The berry is small when compared with those grown in England; but I am convinced that propagation from seed in well enriched soil would increase the size of the fruit, as this gooseberry is derived from a very superior wild kind to that which is found in the British Isles, and from which the English gooseberry originated.

There are two kinds of gooseberries in Canada—the prickly one, found in high ground in almost all our woods and clearings, and the smooth kind, which grows in most of the low alluvial deposits along creeks and in marshy places. The American gooseberry is derived from this swamp or smooth variety, and it partakes greatly after its parent, both in the appearance of its berry and the trailing nature of its branches. The bush now grown might in a few years be still further advanced by high cultivation of plants raised from seed. The main thing to guard against will be making it too tender for our climate, which I believe is the cause of disease in the English high bred sorts.

The time for layering is from the beginning of July until the end of August, but the earlier the better, as they make stronger roots, and consequently stronger plants. The way to proceed is to have the ground round the bush thoroughly loosened and pulverized, and if not rich, mix with it some well rotted manure, leaf mold from the woods, or swamp muck. Make little trenches three inches deep in this soil; into these stake down with little skewers or split shingle, shoots of this year's growth (four or five may be put into trenches); bend up the top end of the layers so that it will stand as nearly upright as possible, and fix it in that position with a little loose earth pressed firmly against it. There is no difficulty, as I have before stated; they root with perfect ease.

Allow me to give another piece of advice gratis. Let all who are partial to this fruit, and who have the old country sorts in the state first described, root them out and order the "American Seedling" or the "Houghton" from the nearest nursery-man. A dozen bushes will do to start with, as they are easily increased.

Ottawa, July, 1871.

P. E. BUCKE.

#### WILSON'S EARLY BLACKBERRY.

For the information of members to whom plants of this blackberry have been sent by the Association, an engraving is given on the preceding page which will give them a very good idea of the appearance of this fruit.

It is called *early*, not because no other variety of blackberry ripens any of its fruit so early, but because the crop is all ripened up at once and wholly gathered before the bulk of the fruit of other varieties is ready to be harvested.

Whether it will prove sufficiently hardy to endure our climate can only be ascertained by actual trial, but, as it has some reputation for hardihood among our friends across the border, it has been thought it might be well in this manner to give it a trial, and ascertain its value in our own land.

The quality of the fruit has been much praised, and the appearance is certainly promising. It is said to retain its colour better than most varieties after being gathered, which is a very important item in the matter of marketing the fruit. The plant has the reputation of being a vigorous grower and enormously productive.

When the cane has attained a height of three feet it should be pinched back. This will cause the lateral branches to grow strong, and if these are pinched back, so as to give the plant the form of a pyramid, it will have a very pleasing appearance, both when covered with blossoms and with ripening fruit, besides producing the best results in quantity and quality of fruit.

#### FRUIT IN NOVA SCOTIA.

The Secretary has received from an able and enthusiastic fruit grower, R. W. Starr,

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Esq., residing in King's county, Nova Scotia, a most valuable and interesting letter. He says:—

"The portions of Nova Scotia best adapted to the growth of fruit, are the valley of King's and Annapolis and the western part of Hants County, on the shores of the Basin of Minas. This is owing not only to soil, but to the protection afforded by the 'North Mountain,' a range extending from Cape Blomidon to Digby Gut, shutting out the cold winds and sea fogs of the Bay of Fundy. Some good fruit is also grown in the interior of Lunenburg, Queen's and Yarmouth Counties, in situations sheltered from the sea, in some parts of Colchester and in the Island of Cape Breton, on the shores of Bras d'Or Lake."

#### APPLES.

"These seem to be at home in this valley (the valley of King's and Annapolis, above described,) and I know of none that have been discarded as 'tender.' Some kinds are condemned as not being suited to this climate, simply because they do not bring their full perfection of colouring and flavour—as for example, the Fall Pippin makes a fine, large, healthy tree yielding large, good-looking fruit, but it is lacking in colour and flavour, five years out of six. Our list of apples is large, and constantly increasing by the importation of foreign trees. The leading kinds are Baldwin, Blenheim Pippin, Bishopsbourne, Broadwell, Calkin's Pippin, Chenango Strawberry, Colvert, Canada Reinette, Chebucto Beauty, Dutch Codlin, Emperor Alexander, Esopus Spitzenberg, Early Bough, Flushing Spitzenberg, Gravenstein, Golden Russett, Golden Pippin, Hubbardston Nonsuch, King of Tompkins County, King of the Pippins, Pomme Grise, Porter, Ribston Pippin, Rhode Island Greening, Snow Apple, Twenty Ounce, Talman Sweet.

"Diseases of apple trees are almost unknown. There is now and then a case of frozen sap blight, and an occasional cancerous appearance about the forks of the branches of some unhealthy or neglected tree, together with winter killing of nursery stock, which latter is occasioned by injudicious cultivation.

"We have a full share of insects. The most widely diffused and most destructive is the caterpillar *Clisiocampa Americana*, but it is easily kept under by the careful orchardist. The Canker Worm, *Anisopteryx pometaria*, has been occasionally very destructive, but it seems to have some natural enemies which cut them off, as they do not continue for more than two or three years, but about that time disappear altogether. The Bark Louse, *Aspidiotus conchiformis*, is very troublesome in some localities, especially when neglected and allowed to make head. Strong alkaline washes applied in the month of June, have proved to be the best remedies. The Two-stripped Borer, *Saperda bivittata*, has done some injury in many places, but is being better understood and looked after. The Codlin Worm, *Carpocapsa pomonella*, is very common, but not very injurious, except in orchards that have been mown for some time. The Fall Web Worm, *Hyphantria textor*, has been increasing for some years; it has not done much harm yet, but must be looked after.

#### PEARS.

"We have not been as successful with these as with apples, but the cultivation of them is increasing, and many new kinds are being introduced. As yet the Bartlett stands at the head of the list of autumn sorts. Paradise d'Automne, Beurre Bose, Golden Beurre of Bilboa, Seckel, Frederick of Wurtemberg, Onondaga, Marie Louise, Flemish Beauty, Vicar of Winkfield, Winter Nelis, Duchess d'Angouleme, Louis-Bonne de Jersey, Rostiezer, and Bloodgood, with many other kinds, have been fruited and approved. We have the following native varieties, which rank as high with us as either of the others.

"MARIA.—This fruit was first brought into notice by the late Hon. C. R. Prescott, and named by him in honour of his wife. It originated in the garden of the late—Curran, Esq., of Windsor. Tree is hardy, small; young wood feeble, light coloured. Fruit is medium in size, round, yellow, fine grained, buttery, rich; ripens ten to fourteen days earlier than the Bartlett; quality very good.

"BURBRIDGE.—One of the oldest native pears we have. The original tree is still standing on the farm of the late Col. Burbridge, near Port Williams, and though nearly a century old is still vigorous. Tree large, upright, young wood stout and dark. Fruit small to medium, Bergamot shaped, skin greenish yellow, bronzed in the sun, sweet, gritty,

but rich and high flavoured; ripens a few days earlier than the Bartlett; tree is hardy and prolific.

“LORD CORNWALLIS.—This was grown and named by the late Benj. Woodworth, Esq., of Cornwallis. Tree medium sized, rather spreading, young wood greyish. Fruit large and handsome, pyriform, as brilliantly coloured as Frederick of Wurtemberg, but, like it, rather variable; quality good; season, October.

“SUTTON'S GREAT BRITAIN.—A seedling from the Bartlett, by William Sutton, of Cornwallis. The tree is vigorous and hardy, young wood very stout, short jointed, and dark. Fruit large to very large, pyriform, slightly bronzed or russeted in patches, and sometimes with a blush in the sun. Flesh is coarse grained; juicy, good. A good market fruit, ripening ten days after the Bartlett. The tree is a great bearer.

“With regard to diseases of the pear, I may say that what is usually known here as frozen sap blight, has sometimes been prevalent. The winter of 1868, was very fatal to young trees; it was estimated that three fifths of all the young non bearing pear trees in the Province were lost by it. The leaf blight frequently attacks the young trees in the nursery.

“Of insects, the Slug, *Selandria cerasi*, has been troublesome the past few years. Last summer I saw many trees, both pear and cherry, completely denuded of foliage by them. Wasps sometimes injure the fruit by eating holes in the finest specimens, to the great disgust of the careful amateur cultivator.”

#### PLUMS.

“These are successfully grown in almost all parts of the Province. We have several kinds of coarse, hardy plums, which are propagated by sprouts and suckers, and on some of the old farms they may be found growing in thickets, without any cultivation, bearing heavy crops for a few years, and bidding defiance to the Curculio, but finally succumbing to the Black Knot, when they are cut down, to be succeeded by a new growth, and the process repeated. Many of these are worthy of better treatment, and will, I think, compare favourably with the vaunted Wild Goose and Miner Plum. As to the better sorts, all that have been tried seem to succeed very well. Even Coe's Golden Drop, which Downing says cannot be ripened north of 41°, has been successfully ripened in this neighbourhood, and Reine Claude de Bayay is considered one of the most profitable market sorts. I would recommend in addition to these the Nectarine, Green Gage, Bleeker's Gage, Yellow Gage, Flushing Gage, Red Gage, Lombard, Prince of Wales, Orleans, Smith's Orleans, Sharp's Emperor, Jefferson, Blue Imperatrice, White Magnum Bonum (Yellow Egg.)

The only disease is the Black Knot, which in some seasons is very troublesome, and the only remedy is to cut it off as soon as it has grown, and before it ripens, and burn it.

The only insect is the Curculio, *Conotrachelus nenuphar*, and this “little Turk,” is a host in himself. The remedy is, determined and persevering war, year after year, and day after day, with sheet and mallet.

#### CHERRIES.

“These are hardy, and usually fruit well in all sections of the Province. The old Kentish is grown in many places almost without cultivation. On the shores of Annapolis Basin, there are many quite large cherry orchards, mostly a variety of the Black Heart. They are hardy, prolific, and of good quality, and said to reproduce the same kind from seed. The kinds I would recommend are Early Purple Guigne, Mayduke, Black Heart, Waterloo, White Spanish, Black Tartarian, Downer's Late, and Starr's Prolific; the latter a native.

Starr's Prolific originated on my father's farm, Starr Point, from seed of the Waterloo. The tree is now about twenty-five years old, large, spreading, and healthy, a constant and most prodigious bearer. The fruit is medium, roundish heart shaped; colour, bright red; flesh tender, juicy, rich, brisk sub-acid. Ripens one week later than the Waterloo.

#### THE QUINCE.

“This does well in moist, deep soils, and the cultivation is increasing. Near the town of Annapolis Royal they have been successfully grown from the earliest times, and probably were introduced by the French.

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## PEACHES AND NECTARINES.

"These also do well trained against a wall. I have known some worked on the plum, and trained on a brick wall, bear heavy crops at forty years from the bud before failing. As standards, without protection of any kind, the trees are short-lived and the fruit small. Apricots fruit well in a sheltered garden, the Moor-park especially.

## STRAWBERRIES.

"This fruit is grown all over the Provinces successfully, according to the care and cultivation given. I should place Wilson at the head of the list for profit, next Triomphe de Gand, Jucunda, Brooklyn Scarlet, and Agriculturist.

## RASPBERRIES.

"Although they seldom winter kill, still it pays to cover the canes through the winter, as the buds come much stronger. I would recommend Hudson River Antwerp Fastoff, Franconia, White Antwerp, and Brinckle's Orange. I know nothing about the "black caps"; do not think they have been fruited here yet.

## THE BLACKBERRY.

"Not much attention has been paid to the cultivation of this fine fruit, as it grows spontaneously almost wherever allowed; by the fences, roadside, and stone heaps, wherever it is protected from cattle and sheep. A few years ago I tried the Lawton (New Rochelle), but it winter killed badly. I then made a plantation of the best wild plants I could find, and I soon noticed that I had two varieties very distinct; one had tall, strong growing, dark reddish or purple canes the fruit varying from medium size to small, with large core. It did not improve much by cultivation, and I pronounced it worthless. The other had a feeble, almost branchless green cane, that would bend over until the tips reached the ground, and loaded with fine large fruit. I am so well satisfied with it that I have not sought for better. The only trouble is to keep it in order so that I can pick the fruit.

## GOOSEBERRIES.

"The English varieties do well on the Atlantic coast and most parts of the Province, but in this valley they are apt to mildew. Houghton Seedling and Mountain Seedling are very prolific, and free from mildew.

## CURRANTS.

"These used to grow everywhere and anywhere, but of late years the currant worm, *Abraxis vibearia*, has been destructive to both the currant and gooseberry. Powdered white hellebore is the only effectual remedy. The currant borer, *Prenocerus supernotatus*, is doing a good deal of injury to both currant and raspberry in some localities. The only remedy I know of is to cut out and burn all the affected parts as soon as discovered. For productiveness and quality, I would recommend Red Dutch, Victoria, White Dutch, White Grape, and Black Naples. In this climate they are better grown in stools, as the snow breaks off the side shoots and destroys the plants when grown to a single stalk.

## GRAPES.

"These are generally grown here with the protection of a wall, and on the renewal system, and the bearing wood is girdled soon after the fruit is set. By this method, with the protection afforded by the south wall of his office, Dr. Hamilton, the President of our Fruit Growers' Association, was enabled to show a number of bunches of Black Hamburg at our exhibition in Wolfsville last October which, for size of berry, perfect colouring, and exquisite flavour, excited the admiration of all present. The sorts which are best known, and which have

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#### FLOWERING SHRUBS.

"I can recommend as perfectly hardy in this locality—Daphne Mezereon, Japan Quince, Dwarf Double Flowering Almond, Rose Acacia, Roses of all hardy sorts, Guelder Rose, Waxberry, Spireas, Syringa, Missouri Currant, Laburnum, Venetian Sumach, Lilac, white, purple, and persian; Ampelopsis, Clematis, Honeysuckle of all varieties.

#### NATIVE APPLES.

"The following native varieties of apples are much esteemed:—

**SUTTON'S EARLY**, originated by W. m. Sutton, of Cornwallis, from seed of Ribston Pippin, is not yet thoroughly proved, but promises well. The fruit is large, conic, slightly ribbed, skin yellowish white, with faint russet markings around the stem. Cavity deep and narrow; stalk long and slender; flesh white, juicy, pleasant sub acid flavour; tree thrifty and spreading; young wood stout dark and downy; season, 20th to last of August.

**BISHOP'S BURN** is another seedling of Sutton's from the Ribston Pippin. The tree is hardy, a quick grower, spreading; young wood bright and tough. It bears abundant crops of fair fruit, which is much prized for stewing and baking, as it contains a great deal of saccharine, although classed as sub-acid. Fruit is medium, roundish conical, pale yellow shaded, and obscurely splashed and striped in the sun; flesh is white, crisp; tender, juicy, mild sub-acid, slightly aromatic; season, November and December.

**MARQUIS OF LORNE**, a seedling from the Gravenstein, by Sutton. The tree is large, vigorous and spreading; young wood stout and dark; the foliage is large, dense and dark; blossoms are large and dark rose coloured; fruit large to very large, oblate, sometimes conic; skin smooth, yellowish white, thickly sprinkled with carmine, and splashed with broken stripes of a darker shade of the same colour; dots small and brown; cavity, wide, deep, and regular, russeted; stem short and small; basin large, ridged and irregular; calyx large, open; segments reflexed; flesh white, breaking, rather coarse grained, juicy, pleasant, sprightly sub-acid; season, November and December; very promising.

**MORTON'S RED**. This is supposed to be a native. It was found growing on the farm of the late Elkanah Morton, of Cornwallis. It is a moderately strong grower, with spreading pendulous branches, a very good bearer and a good market apple. Fruit medium, round, inclining to conic, and always fair; skin smooth, of a dull greyish white, nearly covered with light and dark red, through which the grey skin shows in faint striated markings; calyx rather large, closed; cavity broad, shallow, and regular, stem medium, sometimes fleshy and knobbed, in a shallow even basin; flesh white, tender, fine grained, juicy, pleasant sub-acid; season, December and January, but will keep longer."

#### FRUIT IN THE VICINITY OF MONTREAL.

"The alluvial terraces surrounding the mountain in this part of the Province of Quebec have long been celebrated for the growth of fruit, especially apples, and in sheltered situations for pears and plums, while small fruits are grown successfully far north of Quebec city. Of the apples which succeed best in the vicinity of Montreal, I note the following in the order of their suitability. viz: Fameuse, St. Lawrence, Pomme Grise, Alexander, Early Joe, Spanish Reinette, Autumn Strawberry, Duchess of Oldenburg, Red Astrachan, Bourassa, Dominie, Ribston Pippin, Blue Pearmain, Indian Rarripe, Lady Apple, American Golden Russet, Keswick Codlin, Early Harvest, Primate, and Tetoffsky; also, the Montreal Beauty and Transcendent Crabs. All the above do well here if proper attention is given to pruning the trees after the leaves have begun to unfold in spring; some of them towards the end of my list, if pruned in winter (as is customary here) become affected with black heart or sap canker, which

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commences at the pruning, and spreads very often over the whole tree. This applies mostly to trees originated in warmer climates than ours, or rather where the winters are shorter.

The St. Lawrence apple originated in Montreal about fifty years ago, in the garden of the late Henry Schroden, from the seeds of some decayed apples thrown on a manure heap. Three other seedlings of some merit (one of them a russet), originated from the same lot; but the St. Lawrence is the only one now in cultivation, and the original tree is still alive and healthy, or, at any rate, *was* a few years ago. I have given these few particulars, as the origin of the variety is not generally known. The first Northern Spy and Early Joe apples in this Province were fruited in my grounds from trees brought from Rochester, N. Y., over 22 years ago. Early Joe fruited at five years old, and has borne regularly and profusely ever since, and is a perfect picture of health. Northern Spy fruited when fifteen years old, bearing a few apples that and the succeeding years, and then died root and branch. I have tried several trees of the same variety, with similar results. Both these varieties originated in the same orchard in New York, and both are of the finest quality; but I regret to say that Northern Spy will *not* succeed here, and we must look to you for our supplies of them, as they have already become the standard winter apple of this market. King of Tomkins County, Baldwin, English Golden Pippin, Detroit Red, Summer Rose, Early Strawberry, Maiden's Blush, Swaar, Gravenstein, Talman Sweet, Twenty Ounce, Hubbardston Nonsuch, and a number of English varieties, are not suited to this climate, while others, such as Esopus Spitzenberg, and Fall Pippin, are hardy, but very poor bearers with us.

About four years ago a succession of cold rains in the latter end of May completely killed off the apple caterpillars, which for the last fifty years have been so destructive to the orchards here as to cause many to abandon the culture of the apple altogether. The riddance of this pest has greatly stimulated the planting of fruit trees, and there have been more orchards planted during the last three years than during the ten years previous. I note these facts because it is erroneously supposed here that the protecting of insectivorous birds during the last few years has caused the disappearance of the apple caterpillar. During a close observation of twenty-five years, I have never seen an insectivorous or any other bird that would touch an apple caterpillar, and my observations are confirmed by our oldest orchardists. I do not wish to undervalue the protection of birds, but I can positively affirm that our exemption from apple caterpillars is in no way connected with such protection.

This whole subject of insect devastation is one which must in future compel the serious attention of the horticulturist. The prevalent ignorance of entomology, as practically applicable to horticulture, is deplorable. If the societies of the Dominion would apply themselves to study the conditions under which insect life prospers, they will inaugurate a new element of success in fruit culture, an element becoming every year of increased importance from the constant increase of our own minute but formidable enemies.

I may remark, however, that apple trees here, if we except the caterpillar, are exempt from many insect depredations, owing to the severity of the winters and the depth of the snow, as after a very mild winter insects here are much more numerous and troublesome.

The best time for planting fruit trees here is to take them up in the fall, heel them in for the winter, and plant out in the spring. The cold dry weather so prevalent at the commencement of winter is very destructive to fall planted trees. If the holes where the trees are to be permanently planted are prepared in the fall, and the tree laid in the same by the heels and well covered, so that in the spring it would only have to be raised to an upright position, not more than one tree in a hundred would fail.

I have planted a great number of dwarf apple trees during the last twenty-five years. With rare exceptions they succeed for a few years only. They form an enormous protuberance at the graft, and if the roots are not thrown out above the junction, the tree either dies or breaks off there. I have only one dwarf apple tree remaining (Autumn Strawberry), which is twenty-two years old, and a marvel of fruitfulness; but I know that it has rooted *above* the stock. Dwarf apples will never be a success here in a pecuniary point of view.

#### PEAR CULTURE.

"As this is the most northern limit for the pear tree to be grown with success, I must trespass on your patience a little by stating a few of the circumstances under which pears were formerly grown here, as contrasted with the modes of cultivation generally practiced at the

present time, as they furnish some useful hints to those who may attempt the culture of the pear in the northern parts of the Dominion. The early French settlers planed in the vicinity of Montreal a great number of pear trees, of kinds that were common in Europe over a hundred years ago, such as Summer Bon Chretien, White Doyenne, Capiemont, Green Chisel, and a few early summer varieties. Many of these trees attained a great age, and grew to a large size. I have trees grafted from a Beurre Capiemont, which was cut down a few years ago in this city, the wood of which was quite sound, and it was at least a hundred years old. I had these scions grafted on perfectly hardy wild pear stocks, and yet I have had the greatest difficulty in keeping these young trees from being winter killed, in one of the most sheltered and favourable situations on the island of Montreal. Now, previous to the terrible winter of 1858-9, there were quite a number of these large pear trees about here, which bore large crops of fruit, and were, for trees of such age, in a thrifty condition; and I find from personal examination and enquiry that most of these trees were never manured or had the ground cultivated about them; that they made a very small annual growth, which was in consequence well ripened at the end of our short hot summers; that this small growth had a tendency to make the tree fruit early, and this early fruiting would check the redundant growth of an unusually favourable season, and enable the tree to ripen its wood as usual. Such were some, at least, of the conditions under which these fine old trees grew and prospered. Let us consider for a moment the conditions under which pear trees are planted by the million at the present day, and which grow, but don't prosper.

In the first place, the nurseryman endeavours, by high manuring and cultivation, to have his trees fit for sale at two or at most three years from the bud, and his trees are as large as they ought to be at twice that age. These frothy half-ripened things are sent all over the country. The parties who buy them read up on the subject of horticulture; they learn of the immense progress trees make with high culture and manuring, and they saturate their ground with rich stimulating manure. In a season or two the roots have got fully established, and a strong rapid growth follows, very delightful to look at, but which the succeeding winter will certainly destroy.

In consequence of this over-stimulating method of cultivation, the pear trees which looked so promising in the fall are perfectly hideous in the spring following, and if not killed outright, the half-ripened wood speedily decays, and the trees die of old age before they are out of their "teens." I have no hesitation in asserting that in this northern climate ninety per cent. of all the pear trees which are planted and grow, die from manuring alone; whereas, by planting in well drained ground, which has only been enriched by the rain, snow, decayed foliage, and air, pear trees will grow slowly, but they will be sound and healthy; and when they arrive at bearing condition, by top-dressing them every fall with a compost of lime, wood ashes, and bone dust, increasing the quantity as the trees bear more profusely, the varieties suitable for the climate will be sure to do well. With such cultivation as this, the trees will make a short stocky growth; they will ripen their wood, and live and bear fruit that any one may be proud of. In a word, successful pear growing in this northern part of the Dominion requires clean and early culture, so as to start the tree into growth, and have the wood matured as early in the season as possible, in ground sufficiently good to grow a moderate crop of potatoes. No manure (except as top dressing), pinching off the ends of all rampant growing shoots, so as to equalize the growth as much as possible, and bring the trees early into bearing. I believe such culture as this will be good for the pear tree anywhere, but in this climate it is a matter of life or death.

The following varieties, selected from upwards of three hundred, which have been procured from the best sources in Europe and America during the last twenty-five years, and tried in my grounds, have succeeded well, viz., St. Ghislain, Flemish Beauty, Oswego Beurre, White Doyennè, Osband's Summer, Napoleon, Tyson, Gansel's Bergamot, Comte de Lamy, Belle Lucrative, Doyenne d'Etè, Sieulle, Lawrence, Easter Beurrè, Glout Morceau, Onondaga, Beurrè d'Amalis, Brown Beurrè, Beurrè Langelier, Wilkinson, Doyennè Defais, Beurrè Defais, Baronne de Mello, Poire de Fer, Beurrè Hardy, Beurrè Robin, Duchesse d'Orleans, Parsonage, Frederika Bremer, Beurrè d'Anjou, Passe Colmar, Louise Bonne de Jersey, Howell, Graslín, Jalousie de Fontenay, Supreme de Quimper, Henkel, Dana's America, Augustus Dana, Dana's Hovey, Adams, Fondante Charmeuse, Mollet's Guernsey Beurrè, Eliza d'Heyst, Vezouziere, Walker, Hacon's Incomparable, Bezy de Montigny, Summer Bon Chretien, Inconnu Van Mons, Rostiezer, Ananas, Winter Nelis, Dr. Trousseau, Beurrè Be-

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ner, Urbaniste, St. Michael Archange, Poire de Niede, and a few others not identified; also, Heathcot, Steinmetz, Ne Plus Meuris, Capiemont.

Of those that are unsuitable, after having been tried two or three times, both as dwarfs and standards, are the following, viz., Seckel, Sheldon, Buffam, Stevens' Genessee, Brandywine, Jargonelle, Winter Orange. Cattillac, Omar Pasha, Beurre Duhaume, Chaumontel, Beurre Giffard, Poire d'Avril, Belle de Noel, Dunmore, Prince's St. Germain, Conseilleur de la Cour, Beurrè Gris d'Hiver, Delices d'Hardenpont of Belgium, Triomphe de Jodoigne, Beurrè Superfin, Bezi de la Motte, Bergamotte d'Esperen, and a number of foreign varieties very little known in this country, of which not a vestige is left.

Of those which have partially succeeded under very favourable circumstances, may be mentioned:—Beurrè Diel, Columbia, Soldat d'Esperin, Bartlett, Beurrè Clairgeau, Deux Sœurs, Duchesse d'Angouleme, Catinka, Surpasse Virgalieu, Pratt, Petrie, Nouveau Poiteau, Kingsessing, Dana's Excelsior, Abbots' Shawmut, Dana's Admirable, Jones' Lodge, Shepherd, Gansel, Seckel, Doyenne Boussock, Williams' Early, Pound, Beurre d'Aremberg, Marie Louise, Dearborn's Seedling, Paradis d'Automne, Doyennè Dillen, Niles, Abbe Mongein, Benoist, Belle Epine Dumas, Beurrè Kennes, River's Winter Beurrè, Beurrè Goubault, Beurrè Brettonneau, Bezi des Veterans, Bishop's Thumb, Blanc Perne of Langelier, Bloodgood, Bon Chretien Fondante Calebasse Tougard, Gansel's Late Bergamot, Caen de France, Catharine Gardette, Forelle, Wilhelmina, De Louvain, Dix, Fondate de Malines, DeBavay, Swan's Egg, Philadelphia, Josephine de Malines, Beurre Bose, Beurre Montgeron, Beurre Moire, Crawford, Knight's Monarch, Croft Castle, Doyenne d'Alencon, Doyenne d'Hiver, Fondante du Comice, General Lamoriciere, Jersey Gratioli, Jaminette, Madame Eliza, Paquency, Louise de Prusse, Prevost, Rousset Stuttgart, Laure des Glymes, Thompson's Van Assche, Vicomte de Spoelberg, Vicar of Winkfield, Willermoz, Zepherin Gregoire, Beurre Burnicq. I have no doubt whatever that most of the varieties in this latter list would do well with you if cultivated in the manner before mentioned. The pear tree is such a gross feeder when once its roots are fairly established, that unless some such treatment is adopted the wood will not ripen perfectly, and the tree, instead of bearing fruit for a century, will die of mere rottenness in a quarter of that time.

"These notes on pear culture have, I am afraid, exhausted your patience, and I will make my remarks on the other fruits as brief as possible. The cultivated plum succeeds very well here, and some varieties flourish far north of Quebec city. The ravages of the curculio are, however, very great, and more recently black-knot has become very prevalent, and is now doing immense damage. Notwithstanding the assertions of Downing that black-knot prevails where the curculio is unknown, and that the curculio has done great damage without any signs of black-knot, my own observations, added to all the information I can obtain from others, goes to prove that although other insects may be found in these excrescences, black-knot is caused by the curculio alone. In my own garden, black-knot made its appearance several years after the curculio had become common. The first signs of it appeared in the year succeeding a great plum crop, and there being no plums, the apples and pears were badly bitten by the curculio. The same season small tumours began to appear on the plum trees, which next year broke into black-knots, and they have been increasing in size and numbers ever since. It seems certain that the larva remains in the tree all winter, as young plum trees taken up in the fall and removed to a distant locality where fruit trees had never been grown, were affected with tumours the following spring. Fresh tumours may also be seen extending from knots of the previous year. I have also frequently cut open these tumours very early in the spring, and found large well developed larvæ in them, larger than any I ever found in fallen plums, when the larva was evidently just about to enter the ground. The instinct of the insect seems to be modified by this change in its habits, and it will now just as naturally seek to deposit its eggs in the young wood of the plum tree as in the plums that grow thereon. In fact, we now find that when we are without plums for two or three consecutive seasons, the black-knot goes on increasing just the same, and the apples and pears suffer from the curculio very severely; the only complete exemptions are the seasons when plums are plentiful.

"Formidable as this curculio pest has now become, I believe that with our present knowledge of the insect it may be successfully combated and overcome. In the first place, the frothy, succulent growth of the plum tree, as at present cultivated, renders it very liable to attacks from the curculio. The tree should be so cultivated as to make a short, stocky

growth, and have its wood well ripened; next, all the plum trees should be grown in clay soil if possible, and by themselves, away from other fruit trees, and have all the entire surface of the ground rolled hard; then, besides jarring the trees, gathering the fallen fruit, or turning in pigs, I have gathered from four to five hundred in a morning by laying strips of cloth or canvas on the ground, or slightly raising the ends of bricks; the insects will creep under these things for safety and shelter during the night, and may be caught early in the morning.

"Most of the hardy kinds, especially the slow growing kinds, will do well here if cultivated in the manner recommended for the pear tree. I may mention Green Gage, Blue Gage, Corse's Nota Bene, Admiral and Field Marshal, Diapree Rouge, Huling's Superb, Coe's Golden Drop, Reine Claude de Bavay, Bleecker's Gage, Imperial Gage, Yellow Gage, Smith's Orleans, Purple Favourite, Pond's Seedling, Sharp's Emperor, Guthrie's Topaz, Guthrie's Apricot, Washington, Columbia, Red Gage, and some few seedlings raised here of great merit—one especially, rather larger than Green Gage, and considered by all who have compared them to be even superior, if possible, to that standard of excellence.

"All the Morello cherries do well here. The Dukes will live, and occasionally give a little fruit. The other kinds are useless here.

"Peaches cannot be grown, except against a wall or under glass. I have grown them very successfully in boxes or pots of a cubic foot capacity; have half a dozen holes in the bottom of the box about  $1\frac{1}{2}$  inches diameter, cover the bottom with broken crockery or flower pots, and plant two year old trees there in good soil; in the spring plant them out in a border of rich soil, sinking the boxes about half their depth. In the autumn, cut away with a sharp knife all the roots outside the bottom of the box, and place the box in a shed or cellar for the winter, and in the spring plant out as before. They will bear the second season, and plentifully thereafter. Peaches may be kept in the same boxes for a dozen years under this treatment, and bear enormous quantities of splendid fruit. The only precaution needed is to have the border they are planted in of good rich soil, and properly watered.

"Quinces cannot be grown here.

"Apricots and nectarines can be grown in pots in the same way as peaches, but are more liable to attacks of the curculio.

"Strawberries do well here. The kinds mostly grown here are Wilson's Albany and Triomphe de Gand. The enormous quantities brought here from Ontario have almost put a stop to strawberry growing here for profit.

"Raspberries do well here, especially on high ground. The canes remain without protection all winter. White and Red Antwerp, Franconia, Fastolf, and Brinkle's Orange, but the latter is not so good here as White Antwerp.

"Gooseberries do passably well here. Thorough pruning, clean cultivation, and rich soil are the best remedies for mildew. The English varieties, such as Crown Bob, Red Ironmonger, Sulphur, and Warrington, do well; I have tried Houghton, but find no advantage in it to make up for its small size. All the kinds are very much eaten by the currant worm.

"Currants.—Red, white and black do well everywhere. The kinds mostly grown are Cherry, Victoria, White Grape, White Dutch, and Black Naples.

"Blackberries—The Rochelle or Lawton has been extensively tried here, but is not satisfactory; the fruit is too acid.

"Grapes.—I have tried all the prominent varieties of out-of-door grapes; but except in very favourable seasons they do not ripen sufficiently to be worth eating; the only exception being Delaware, which is uniformly good; occasionally Rebecca and Diana are fine, the Adirondac promises well, as it ripens early, but it has not a high flavour.

"A friend has commenced a vineyard a few miles from Montreal. When in a condition to warrant my giving you the result of the experiment, I shall be happy to furnish you with any particulars of interest respecting the same.

Montreal, June 22, 1871.

J. H. SPRINGLE.

P.S.—With reference to dwarf pear trees, the only kinds that do any good on quince stocks are Louise Bonne de Jersey, White Doyenne, St. Ghislain, and Urbaniste. Many others will succeed with care and good culture, but no other kinds are worth growing as dwarfs.

The Secretary resident in the South our finer varieties of and the St. Lawrence least he believes it as hardy as the one which succeeded the two others, reached and they nearly all since tried," he says cess. The Early J Ounce, the King of Jonathan, and Ribes trachan (if I have Codlin and Golden

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## FRUIT IN THE SOUTH RIDING OF KENFREW.

The Secretary received a very interesting letter from a member, Andrew Russell, Esq., resident in the South Riding of Renfrew, who seems to find a great deal of difficulty in growing our finer varieties of fruit trees. He says he has had the Fameuse or Snow Apple, Talman Sweet, and the St. Lawrence, in bearing for a number of years and that he finds the Alexander (at least he believes it to be that variety, though he bought it under another name.) to be nearly as hardy as the crabs. A few years ago he planted an assortment of trees from Rochester, which succeeded pretty well for a few years, and the Rhode Island Greening, with one or two others, reached a bearing state; but a few adverse years came round about that period, and they nearly all perished, as indeed did most of the orchards in that vicinity. "I have since tried," he says, "a number of sorts, both on dwarf and free stocks, with very little success. The Early Harvest is always killed; the Northern Spy, the Sweet Bough, the Twenty Ounce, the King of Tompkins, the Rambo, Summer Pearmain, Wagener, Canada Reinette, Jonathan, and Ribston Pippin, fail. Notwithstanding the reputed hardiness of the Red Astrachan (if I have not been deceived in it), it has not succeeded with me. The Keswick Codlin and Golden Pippin bear, but are not thrifty trees.

"Of pear, I have tried about a dozen sorts on quince, but none of them have been a success. Some years since I had a few specimens of the Bartlett and Steven's Genessee, with careful protection. I have a few specimens mostly every year on a couple of trees, which I think are the Wilhelmine (Jaminette), a rampant grower, without protection. I have about half a dozen trees on the thorn, which give a few fruits, but are gnarly and small. I have not succeeded with plums; the Jefferson, Washington, and others fail; the Reine Claude de Bavay, the Imperial, and a blue plum would, for some years, yield a few fruits, and then perish. The Black Tartarian Cherry, the Mayduke, and other sorts on the Mahaleb, have been a failure. The quince is always killed down."

The gentleman who has favoured us with this information, has given us the results of his own trials. The spare moments snatched from business cares have been devoted to his garden, and he has cared for his fruit trees with his own hands. To this fact he very modestly attributes much of his want of success; but we feel confident that the thoughtful care of one who labours with a love among his fruit trees, is more worth than the self-confident skill of many a professional gardener trained in the school of another climate.

Our correspondent's soil varies from a clay loam to a sandy loam; the growth of his trees is always good, and he thinks possibly too good, as a graft or bud will rise the first season from three to six feet.

He says he has had better success with grapes, and has grown them for upwards of twenty-five years; eight sorts comprise his present assortment. We regret that we cannot state what sorts they are; but we hope to hear again from this enthusiastic lover of fruit culture, and be able at some future time to lay before our members a more detailed account of his experiments. The labours and the record of their results of such a careful and observing cultivator, are a guide to others whose lot is cast in a like unfavourable climate; and we only wish that the gentlemen who, with a love of fruit culture that knows no chill despite the bitter frosts of our Ottawa region, are devoting their energies, stimulated by experience, to ascertaining those varieties and methods of culture that shall enable them to gather fruit from their own gardens, would favour us with more frequent communications.

## FRUIT AT ST. JOHN, NEW BRUNSWICK.

From correspondents resident at St. John, we learn that owing to late spring and early autumn frosts, and the summer fogs from the sea, but few fruits succeed in that part of New Brunswick. The country about St. John, and for fifty miles inland, is very rocky and barren, and when the wind is from a southerly direction, it never fails to bring with it a thick sea fog, that is fatal to nearly all kinds of trees and shrubs.

Plums and Siberian Crabs are the only fruit trees that do well; the plum is free from the black-knot as far inland as the fog reaches; beyond that they are badly affected.

Raspberries and Strawberries do very well. The English kinds, which do not stand well in the United States, do as well as any other, if not better.

Currants and Gooseberries all do well, but they suffer from the saw-fly, though not from the mildew, which is so fatal to the gooseberry in other places. A high, dry atmosphere is no doubt favourable to the mildew. These are all the fruits that have the least chance of succeeding about St. John.

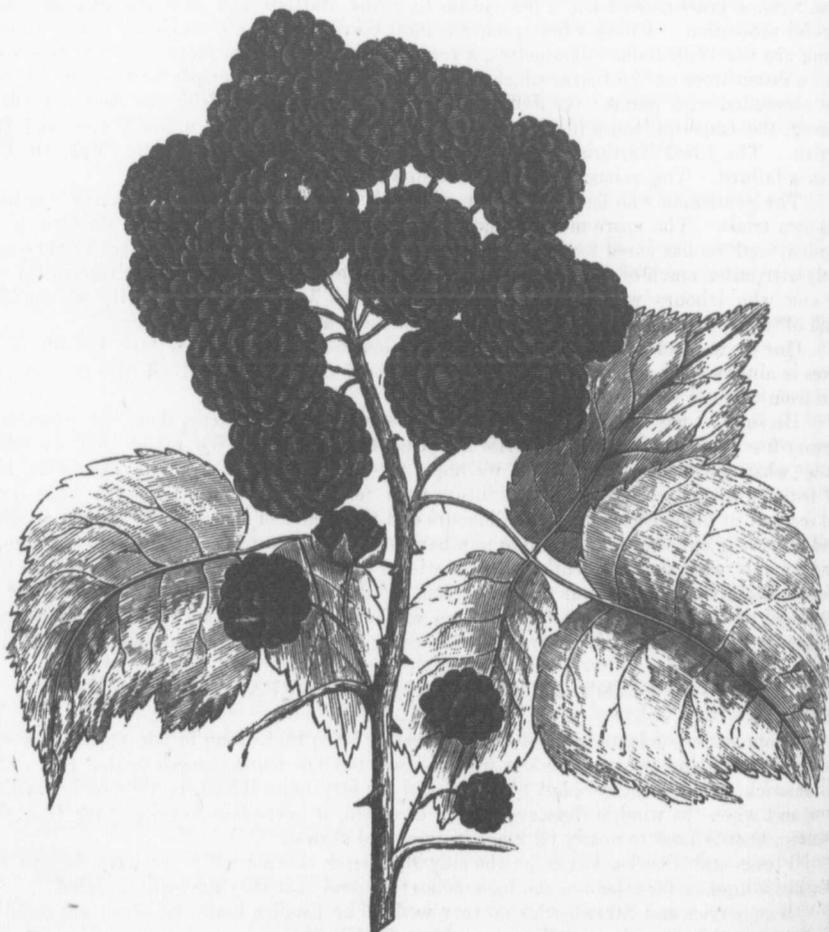
The list of flowering shrubs is also very limited. They are the Lilaes, Syringas, Weigelas, Spireas, Mezereon, and Viburnums. English White Thorns do well if planted where water cannot lie and freeze around the stems.

The foregoing remarks apply only to the east and south sides of the Province. On the north-west side the land is said to be good and the climate fine, with good apple orchards, and there also some varieties of grape vines do well.

#### MAMMOTH CLUSTER RASPBERRY.

The accompanying engraving is a good representation of this Raspberry, which has enjoyed such a high reputation where it has been cultivated, that the Directors thought it might prove acceptable to the members of the Association.

It has been claimed for this variety, that it is most wonderful in productiveness, in size and uniformity of fruit, stockiness and hardiness of plant; that, indeed, it is perfectly hardy,



MAMMOTH CLUSTER RASPBERRY.

having endured unharmed below zero.

The plant is a means exempt from frost, rich, purple bloom, market, and ripening

In a short time settle the value of the planting and testing the

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Sir,—At the last give some explanation of the microscopic observations you feel disposed to in

I have frequently free from fungus. To me to proceed to a moment, therefore, on the from a berry just plucked diameter, and from the composed of a well organized lower in the organic section consisted of a dense network along these filaments or particles, each containing conceptacles were constant vast numbers invisible extent, and in a very short soon form an environment for by the slightest motion of sustaining vitality (experiments of both Germanous generation), it was the organic structure, extreme conditions.

Now, our gooseberry extremely fine threads, braided most abundant and suitable depth of net-work or thickness of medium through which it is, in itself is not the most suitable for the development. I consider fungus matter. I would not willingly create a disease in the mouth of the horse upon which

Mr. J. N. Jones, of appearance, and before any surfaces put on a peculiar arises from its own excretion undergo continual evaporation contains the elements of constituting the essential food

having endured unharmed most severe winters, with the mercury down to *twenty-eight degrees below zero*.

The plant is a strong, upright grower, having comparatively few thorns, but by no means exempt from them. The fruit is large and keeps its size to the last; black, with a rich, purple bloom, very juicy, high flavoured and excellent; sufficiently firm to carry well to market, and ripening the latest of the family, excepting always the autumn-bearing sorts.

In a short time the reports coming in from members from all parts of the country will settle the value of this berry for cultivation among us, and the labours of those who are now planting and testing those fruits will be the heritage of those who shall come after them.

#### GOOSEBERRY MILDEW.

*To the Secretary of the Fruit Growers' Association of Ontario.*

SIR,—At the last meeting of our Association, held at Hamilton, I was requested to give some explanation of gooseberry mildew. I had not then given the subject those close microscopic observations which I have since done. These are quite at your service in case you feel disposed to include them in your annual report; they are as follows:—

I have frequently been defeated in securing a crop of gooseberries of the foreign sorts free from fungus. These frequent failures, and the request before mentioned, determined me to proceed to a more searching study of the phenomena connected with its last development, therefore, on the 5th day of July last, I placed minute pieces of the fungus (taken from a berry just plucked) on the field of a powerful microscope, commencing at its lowest diameter, and from thence gradually increasing its power. I found this fungus to be composed of a well organized cryptogamus plant, exhibiting a vegetable growth many degrees lower in the organic scale than the berry from which it derived its supply of food. It consisted of a dense net-work of filamentous texture, interwoven in every conceivable way; along these filaments or threads were disposed vast numbers of minute seed vessels or conceptacles, each containing from 4 to 8 sporangia, within which lay numerous germs. Now, these conceptacles were constantly maturing, bursting open and sending forth germ life to the air in vast numbers invisible to the naked eye, possessing the power to increase to a marvellous extent, and in a very short space of time. It is quite credible that in this way it might soon form an environment, in which the surface of every berry and leaf would become bathed, for by the slightest motion of the air these germs are wafted. When we consider them capable of sustaining vitality under extreme heat or cold, (for this has been verified by the experiments of both German and English scientists in their recent experiments to test spontaneous generation), it would almost appear from this to be a law that the more elementary the organic structure, the more difficult it becomes to destroy its vital properties under extreme conditions.

Now, our gooseberry cryptogam increases its size and form by extension of cilia or extremely fine threads, branching, overlapping, and reaching in all directions, where food is most abundant and suitable, not unlike the spread of mushroom spawn, so that in fact the depth of net-work or the density of the fungus will entirely depend on the thickness of the medium through which it passes and the quantity of suitable food supply. Mildew, therefore, in itself is not the cause of disease, but acts as a mere scavenger in the removal of matter unsuitable for the development of higher organic forms. It can only lay hold of refuse matter. I consider fungi as important in the economy of nature as the higher organic forms, and I would not willingly be guilty of charging those simple structures with the crime of creating disease in the more complex organism, any more than I would the crow for the death of the horse upon which he feeds.

Mr. J. N. Jones, of Charleston, ten years ago, observed that before a "fungus made its appearance, and before any trace of it could be observed under a high magnifying power, the surfaces put on a peculiar glazed appearance." Now this in the case of the gooseberry, arises from its own exudation becoming condensed upon the surface. Fruits, like leaves, undergo continual evaporation. If from any cause this exuded gooseberry vapour, which contains the elements of sugar, becomes condensed at the surface, it forms into a glaze (constituting the essential food), which soon becomes, when exposed to the action of sunlight and



air, chemically decomposed; the thickness of the glaze will depend upon the quantity of vapour and period of condensation. I have observed that when mildew makes its appearance both fruit and leaf appear affected, condensation taking place when the air becomes suddenly raised in temperature; all cold bodies which it surrounds are at once converted into condensers in the same way as a tumbler of ice-water will condense aqueous vapour held in the air, and deposit it upon its outer surface on a hot day. The operation of this same law would cause the berry (all other things being favourable) to be covered by its own excretions, which deposit would differ in point of quality, essence, and chemical composition, from ordinary air condensation, and also, to an appreciable extent, in one variety of gooseberry from another.

I cannot now dwell on any further explanation of this, but must proceed to explain the further appearance of things under the microscope. Upon submitting a small section of tissues of the inside of the skin of the berry, I also observed it to contain a net-work of filaments, with their conceptacles attached, same as that which overlay the berry; but no doubt the juices of the skin of the berry had by this time become involved in the chemical change. I am therefore satisfied that fungus does in no manner act as a parasite; but that its sporules do nothing more than seize upon and take advantage of the most favourable conditions presented to them, feeding upon such excrementitious matters as are wholly unfit to supply the requirements of the fruit.

Frequent syringing of the leaves and fruit at critical changes of atmospheric temperature, with warm water, might possibly remove the food of the fungus, or make it unsuitable. It is a mere suggestion, worth a trial however.

W. H. MILLS.

#### GRAPES ON THE SHORE OF LAKE HURON.

The writer of this has read with much pleasure the address before the Fruit Growers' Association of Canada, at Kingston by the Rev. Mr. Burnet. Much of what the Rev. President said was true; all interesting; but when that gentleman praised the Isabella grape, he was wrong; its merits compared with many grapes we have here in the Lake Basin are as those of the common Meshannock potato compared with the Early Rose or the Pink Eye—simply better than none.

It is to be doubted if the grape is yet produced which is the best that our soil or climate (that of the Lake Basin) will grow to advantage. So far, the Ives' Seedling, the Delaware, and the Catawba, have proved best.

My object in writing this is to say that all along from Goderich to say Lyell Island, on the east coast of Lake Huron, above Southampton, there are to be found the proper conditions for grape and fruit growing and wine making.

It is well known that in Europe the best wines are produced not far from the northern limit of the growth of the vine. There is nothing to compare with the wines of Johannisberger in all the world.

On the eastern shore of Lake Michigan, as high up as Northport and Traverse, peaches, grapes and apricots grow to the greatest perfection. This is due to the influence of the waters of that lake, and their modifying influence on the harsh westerly and northerly winds. The easterly winds are tempered by the waters of Lakes Ontario and Huron. Now it seems to me that these winds (the northerly and westerly) after sweeping over both Lakes Michigan and Huron, would strike the eastern shore of Lake Huron in a much more tempered and softened state than they are when they strike the shores of Lake Michigan; while the easterly winds would be tempered by passing over the waters of Lake Ontario, and those of the Georgian Bay, as well as Simcoe.

There seems to be every encouragement for the prosecution of fruit growing on the north-east, or rather the east shore of Lake Huron.

This matter of vine and fruit-growing, and wine making, is all new to the lake country. Twenty years ago the thing was not thought practicable; now you can get a better bottle (as good a one) of champagne here than can be produced in France; and there is no good reason, in my opinion, why the light wines of the Rhine country cannot be grown and made well in the lake country as in Europe.

I do not claim to be an expert, but have some considerable knowledge of wines and viticulture, and a most d

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Gilford, Ont., March

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culture, and a most decided opinion that the country along from Goderich and Kincardine to Lyell Island, on the east shore of Lake Huron, is the very *best* in all the lake region, and, for that matter, on the continent for growing grapes. Every acre of that land, near enough to the lake to feel its influence is, in my opinion, worth a thousand dollars for the growing of fruits, especially the wine grape.

I am an American, and have no special interest in Canada, writing this only in the interest of fruit growers, who are of my guild.

Grand Island.

B.

#### REPORT ON GRAPES IN NORTHUMBERLAND.

The Delaware is still at the head of the list with me both for quality and for productiveness.

I fruited the Adirondac this year for the first time, and find it among black grapes what the Delaware is among light, the very best. It is with me a slower grower than the Delaware on the same soil. The latter is here a good grower on common soil.

My vineyard faces the west, on the slope of a hill. Those vines on the foot of the hill lost their leaves first by frost. The vineyard contains  $4\frac{1}{2}$  acres. I have also some vines planted on a hill lying to the southeast, but these on the first named coloured earlier, and the same varieties were much larger. This, I think, must have been owing to their not suffering so much from drought and heat. All varieties ripened three weeks later this year than last.

In the fall of 1869 the Creveling ripened two weeks before the Clinton; but in 1870 and 1871 the Clinton has been a week earlier than it. All varieties are perfectly healthy so far.

I have lost the Isabella grapes this year from frost; they are too late here.

J. W. JOHNSTON,

Campbellford.

#### FRUIT-RAISING IN GILFORD.

I take some interest in fruit-raising, and find it both pleasant and profitable. I commenced on my farm (then mostly bush), about 11 years ago, and had this last year 300 bushels of apples, plenty of plums, some few pears, cherries in abundance, and a few grapes. I have given up the red and white currants and gooseberries; currant worms and mildew beat me. I find the people of this country buy lots of fruit trees, plant them in the most careless manner, take no care of them, let the cattle roam amongst them, and should any live for a few years, they become scrubby, unshapely things. Although we have any amount of beautiful evergreen and other forest trees none are planted. One may travel all day through this fine county, and see fine farms, fine barns, and many excellent farm houses, but no evergreens, no shade trees of any kind to shelter their homesteads. Could there be any means devised to create amongst our farmers a taste for planting trees around their homesteads and farms, our country would soon assume a much more pleasing appearance.

It strikes me very forcibly that our Agricultural Society might co-operate with the Fruit Growers' Association in some way so as to bring the subject of tree planting more prominently before the public. Could this be secured, much good might follow, and in a few years our country wear a much more inviting aspect.

Truly yours,

S. MACONCHY.

Gilford, Ont., March 1871.

WASHINGTON, May 29th.

To the Directors of the Fruit Growers' Association:—

I have been examining the buildings, gardens and grounds connected with the Agricultural Department of the United States, and have seen much that has been very interesting and instructive. With an enlarged apprehension of the value of agricultural products, and the position these occupy in the grand aggregate of national wealth, this department has been created and is now conducted with a view to the increased development of the science and

practice of agriculture. It is not designed to take the place of an agricultural college, or in any manner to give elementary instruction in the cultivation of fruits, grasses or cereals, but to furnish information based on actual experiment upon particular subjects, and to place within the reach of those who desire to make experiments the facilities for so doing. To this end an Agricultural Museum has been established, in which are collected samples of all varieties of grains, and models of fruits and root crops, from every State in the Union; so that one, by comparing the quality of the samples of any grain from Maine with the samples of the same grain from Georgia, or from any other State, may learn the respective capabilities of these States for the production of any particular grain. The same may be done in fruits for by the untiring industry and great skill of Mr. Glover, who in more senses than one is a model man, very accurate models of the leading kinds of the different fruits are so arranged that one may see, at least, the external appearance of, say, the Baldwin Apple, as it grows in Massachusetts, in New York, and in Illinois, and from the size, form, and colouring, obtain a very accurate opinion of the character of the apple as grown in the several sections there represented. It was interesting to notice the changes that difference of location makes in our well known fruits, and though it is not possible to indicate precisely what changes have been made in the flavour of the fruit by these causes, yet to one measurably acquainted with fruit, the external appearance of any specimen is not a bad exponent of the flavour. And in this way, by comparing specimens of different States, one is able to form some opinion of the adaptation of any State to the cultivation of any particular variety of the apple, or of any other of the leading fruits.

So also in roots crops, taking the potato as an example, there are models, exact in form and colouring, of all the leading kinds grown in each State, and one may, in a short time, by a careful study of these samples, ascertain what are the leading varieties grown in any particular State, and how they compare in appearance with the same varieties when grown in any other State.

Besides, there is a collection of the substances which are made from a particular product, showing at a glance its economic uses. Taking petroleum as a sample, it is shown there in its crude state; then as refined, with all the varieties of dyes which are obtained from it. Or a fibre producing plant is shown in the raw state, with all the products into which it can be profitably wrought. There, also, are gathered specimens of insects useful in the arts or manufactures, so arranged that their entire natural history may be learned at a glance. Take for instance the silk-producing insects; these are all brought together in a group, and of each will be found the male and female moth, then the egg, the worm in different stages of growth, the cocoon, the raw silk, and the manufactured silk.

Here, too, one may learn all that is known of injurious insects. Under the head of the subject you wish to investigate, for instance the apple, will be found a list of insects that destroy or injure the leaves, another of those injuring the bark and wood, another of those that prey upon the fruit; and of each of these insects, as far as possible, are well preserved specimens in addition to accurate drawings, showing the insect in all its stages of development, through its various metamorphoses, and how, when and where it commits its ravages, and the best known methods of prevention and cure.

Thus it will be seen there is here laid the foundation of such a collection of specimens and models and books, as will enable any student of agriculture, or horticulture or pomology, or any one interested in the manufacture of any of the products of these branches of industry, to learn by actual inspection all that is at present known in relation to these subjects, and so be able, with a clear and comprehensive understanding of the whole matter, to direct his exertions in such a way as to secure the most expeditious and most profitable results.

The same purpose pervades the operations out of doors. These are under the direction of Mr. Saunders, as able and energetic in his department as is Mr. Glover in his. And just here I may say that any one visiting this department with the desire of obtaining information, will find both of these gentlemen ready to give them every facility in their power, and politely attentive to all their inquiries. Many thanks are due to them for the kind attention which I received, and the generous devotion of their valuable time in showing and explaining the various items which were continually attracting my attention and inducing inquiry.

In the cultivation of trees and plants, at the Agricultural Department, two objects are kept in view - the one a specimen ground, in which may be found all the more prominent and valuable varieties of the different fruits, trees and shrubs, so that a visitor may see specimens

of these, as far as ground, where their adaptability such of the States. Here, just in proper restriction to the soil successful and same way a large directed to the known as the plant is equal to States would be of apples suited much felt want scions freely distributed the grounds of be scattered throughout found to be valuable summer and autumn.

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In closing tl be done for our worthy of all pra on the culture of trial. But it sho endure the clima abuse, to the exa should we have st

of these, as far as it is possible to have them all in this locality; the other an experimental ground, where plants, trees, fruits and shrubs are grown, not merely with the view of testing their adaptation to the climate of Washington, but also for the purpose of distribution into such of the States as may be supposed to possess the climate and soil suited to their culture. Here, just now, a large number of Cinchona plants are being raised, to be sent out under proper restrictions to those who are willing to undertake their culture and test their adaptation to the soil and climate where they may reside, in the hope and expectation that their successful and profitable culture may yet be established in some part of the country. In the same way a large number of tea plants have been sent out by this department, and attention directed to the culture of this plant in the United States. A new fibre-producing plant, known as the New Zealand Flax, is being introduced in the same way. The fibre from this plant is equal to the best manilla, and its introduction and successful culture in the United States would be a great national benefit. Attention has also been given to finding varieties of apples suited to the trying climate of the north-west, and in the hope of supplying this much felt want a quantity of hardy varieties were last fall imported from Russia, and the scions freely distributed through the north-west for trial. The trees have been planted in the grounds of the department, and are all living, and in due time will yield scions which will be scattered through all the colder parts of the country, where it is to be hoped they will be found to be valuable in extending the list of hardy apples, beyond those ripening in the summer and autumn months.

Some experiments are being made in the raising of new varieties of fruit from seed. Just now Mr. Saunders is turning his attention to the strawberry, and conducting a series of experiments in the raising of new varieties some of which give promise of being valuable sorts. In the Hautbois family especially there is a most marked improvement in productiveness, so that the lovers of the peculiar flavour of this family may hope to be able to gratify their utmost longings.

The grape has naturally commanded a large share of attention, and the collection of varieties is very extensive. The diseases and remedies are carefully studied, and the results of all these experiments are made known every year in the report of the able superintendent.

Nor is the beautiful overlooked. Possessed of a comprehensive view of utility, the Honourable Commissioner of Agriculture sees in the increase of knowledge of the culture of trees and shrubs an increase of taste in the adornment of rural homes, with a consequent greater attachment to home, a more widespread love of nature, more refined and elevated tastes, a more contented and virtuous people, and has caused to be planted, under the direction of the superintendent, collections of trees and shrubs, so arranged as to show the families and genera to which they severally belong, intending to have thus grouped together every species that can be grown in the climate of Washington. Here then one may have an opportunity of seeing every variety of tree, native and foreign, deciduous or evergreen, with which he may think to plant his lawn or ornament his grounds. If he wishes to select from the oaks, or elms, or ashes, those trees which to his eyes are most pleasing, he has but to step across the lawn to the group of oaks, &c., and there he will find every species likely to thrive with him, and the trees planted so near to each other that a comparison of their forms, foliage, habits of growth, can be easily made; and having made a selection of those he wishes to plant, he has but to transcribe from the label attached to each tree the correct name of the variety.

The same system is carried out with the shrubs, all so grouped that the comparison of different forms in the same genus is readily made. The value of such a collection of trees and shrubs, open to examination and study by every one who may choose to look at them, in imparting correct information, enlarging and refining the taste, and stimulating the enterprise of a people, cannot be overestimated.

In closing this letter, I can but express the wish that something of the same nature may be done for our own Province of Ontario. The Fruit Growers' Association, with a zeal worthy of all praise, is doing what it can with its limited means to disseminate information on the culture of fruit, and to send out through the country new and promising varieties for trial. But it should be provided with an experimental ground, where every variety that will endure the climate should be grown, and then open, under proper regulations to prevent abuse, to the examination of every one who wishes to study the collection. Yet not only should we have such a collection of fruits, but there should also be added, in the same vicinity,

a complete Arboretum, where the Canadian may find grouped together for study and comparison every useful and ornamental tree that can be grown in our climate.

These important objects might with great advantage be incorporated in the proposed scheme of establishing an agricultural college and experimental farm for the Province of Ontario.

THE SECRETARY.

PHILADELPHIA, June, 1871.

To the Directors of the Fruit Growers' Association:—

I have been enjoying the hospitality and delightful conversation of that most thorough student and botanist, so well known to us as the able editor of the *Gardener's Monthly*. In his grounds are some fine specimens of different ornamental trees; and while the climate here enables him to enjoy a somewhat greater variety of trees, shrubs and plants than we can ever hope to carry safely through our Canadian winters, yet one will return from a visit to Mr. Meehan with new courage and a keener zest to the culture of the many beautiful things with which the Canadian may increase the comforts and attractions of his more northern home. In the first place, I am more than ever persuaded that we have not given sufficient attention to the wealth of beautiful and hardy things that are to be found growing within our own borders and native to our own soil. We have many very handsome native evergreens and deciduous flowering trees and shrubs well worthy our attention, which one needs to see gathered together and grown from home, really to appreciate their worth. Our *Cornus Florida* makes a very ornamental spring flowering tree of moderate size, and in the autumn is gay with its scarlet coloured fruit. The *Malus Coronarius*, abundant in some localities, but scarce in others, vies in beauty with the flowering thorns of our gardens. But it is not so much of these that I wish to speak as of one or two very hardy, and, as grown here, very beautiful evergreens, not native, but foreign, which should long ago have found their way into every collection in the land. Why it is that Nordman's Fir has not been planted side by side with the Norway Spruce, seems unaccountable when one sees its exceeding beauty of form, and learns that the bright green colour of the foliage is retained through all extremes of weather. In growth it is vigorous, in verdure beautiful, graceful in outline and regular in form, adapting itself to any soil, and, so far as tested, as hardy as the Norway. The other evergreen is known as the Eastern Spruce, *Abies Orientalis*, and is certainly the perfection of compact growth, and this is combined with such a graceful elegance of outline as to make it a most charming object. This also seems to be as hardy as the Norway, and is well deserving of attention from every lover of the beautiful. These two charming varieties will make a most noble addition to our list of evergreen trees.

The Japanese maples are also a very interesting collection from the peculiar form and colouring of the leaves, which give the trees a very attractive appearance. These will probably be sufficiently hardy to endure the climate of a large part of Ontario, and if so, will be a very attractive addition to our collections of maples.

Mr. Meehan has also growing upon his grounds a variety of the peach with dark blood-red leaves, which he told me was found, since the war, growing on the battle-grounds near Fort Donaldson, and its foliage is indeed an apt reminder of fields of blood.

But it would only weary the reader were I to attempt to tell of all the beautiful and interesting plants I saw. One valuable hint, drawn from Mr. Meehan's experience concerning the care of newly planted evergreens, shall close my letter. He says that evergreens often perish in the winter, while young, because their roots have not yet penetrated to a depth sufficiently great to enable them to draw from the earth a supply of moisture to enable them to replace that which is given off through the leaves. When the tree has acquired sufficient age to send its roots down below the frost, it can then draw moisture from the unfrozen ground, and so replace that which is lost; but until the roots have penetrated to such a depth, the surface of the ground above them may be mulched sufficiently to keep out the frost, and thus many a valuable and desirable evergreen be carried safely through without injury. Many have experienced something of the difficulty which is here intended to be obviated, and may be glad to try the effect of such a protection to the roots of their trees. It is easily

applied, and if by this means sufficient suggestion.

Although not a Directors believed that in calling the attention to the expectation that had been already planned such planting had not

therefore, decided to s above will give as good ing. The pear is of stem, and a very small russet. The colour is sprinkled with russet and white, not very fine grain ant somewhat vinous flavor and December.

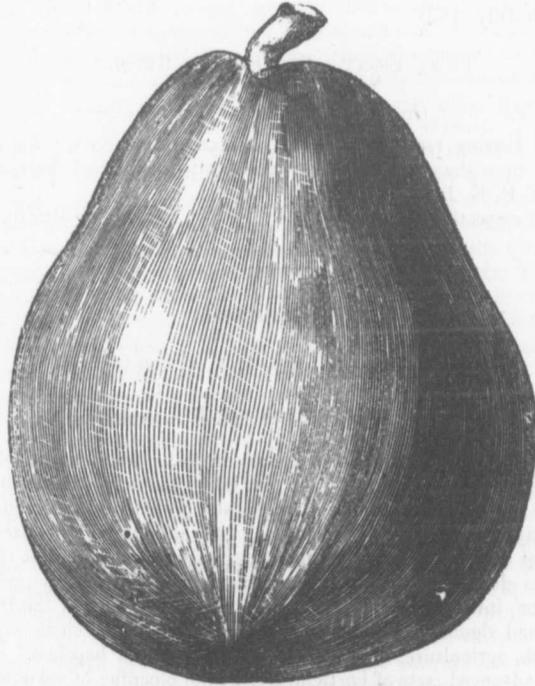
applied, and if by this means gentlemen may preserve their trees from injury until they have attained sufficient age to take care of themselves, they will be grateful for this simple suggestion.

Yours truly,

D. W. BEADLE.

### THE BEURRE D'ANJOU PEAR.

Although not a new variety, having been brought to this continent some time ago, the Directors believed that what was known of its performances in America fully justified them in calling the attention of the fruit growers' of Ontario more particularly to this pear, in the expectation that it would prove to be a valuable acquisition. They were aware that it had been already planted by some of the leading horticulturists of Canada, but felt that such planting had not been as extensive as the promise of general utility warranted; they,



THE BEURRE D'ANJOU PEAR.

therefore, decided to send it out for a more thorough trial of its merits. The engraving above will give as good an idea of its appearance as it is possible to do without colouring. The pear is of large size, obtuse pyriform in shape, having a short, thick, fleshy stem, and a very small open calyx, in an exceedingly small basin, which is surrounded with russet. The colour is light green, sometimes tinged with dull crimson on the exposed side, sprinkled with russet and studded thickly with brown and crimson dots. The flesh is dull white, not very fine grained, but melting and juicy, agreeably perfumed, and of a very pleasant somewhat vinous flavour. Downing ranks it as *very good to best*. It ripens in November and December.

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SECRETARY.

June, 1871.

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The tree has a very healthy, vigorous habit, growing well on both the pear and quince stock, bearing abundantly, yet with the fruit so evenly distributed as not to require thinning. It sells readily at good prices in city markets, coming in after the fall plethora is over.

PRIZE ESSAY.—AWARD.

To the Directors of the Fruit Growers' Association of Ontario:—

GENTLEMEN.—The committee appointed by the Association, to examine the Essays on Grape culture, beg leave to report.

Only one Essay on this subject was submitted to your committee, having for its motto, "I moisten the roots of all that is grown." Your committee have no hesitation in awarding the sum of fifteen dollars to the Essay, and recommend that it be published in the Annual Report of the Association.

All of which is respectfully submitted by

W. H. MILLS.  
ROBT. BURNET.

Hamilton, 17th July, 1871.

PRIZE ESSAY.—SECRETARY'S REPORT.

To the Directors of the Fruit Growers' Association of Ontario:—

GENTLEMEN.—Having received from the Committee of Award the accompanying report, I proceeded to open the envelope bearing the motto mentioned therein, and found it to contain the name of P. E. BUCKE, Ottawa.

All of which is respectfully submitted.

D. W. BEADLE, *Secretary.*

PRIZE ESSAY.

MOTTO.—"I moisten the roots of all that is grown."

ON THE CULTIVATION OF THE GRAPE.

The first mention of the vine made in history is to be found when "Noah began to be an husbandman and planted a vineyard" (Gen., ix. 20.) There is little doubt from this notice that anterior to this period the vine was cultivated, and probably in the garden of Eden itself. Ever since these early ages the vine has filled one of the most important places in agriculture, and on this continent and in our own Dominion, its beneficial effects are at this moment being felt. It is also, no doubt true, that, where the vine is extensively grown that fearful scourge of civilization, intemperance, is reduced to its lowest level, and the frequent use of its fruit brings health and vigour to the system. It is scarcely too much to say that, where the vine will not flourish, agriculture, as a profitable occupation, is hopeless. It is now known that in the present advanced state of horticulture, by the blending of varieties by natural and artificial hybridizing, vines may be obtained which will grow and produce profitably from the far south to those northern regions beyond the line where wheat is cultivated with success.

Although grape growing is yet comparatively in its infancy as regards the proper varieties for different soils, and locations, yet the short period of its introduction into this country, and its steady and rapid advance, augur well for its future, as one of the profitable agricultural products of Canada, and as such it should be fostered and encouraged.

*Soil.*—With regard to soil, the highest degree of excellence can only be obtained on a lime-stone subsoil, such as is found on the lime stone ridge of Burlington Heights from Hamilton to the Suspension Bridge, and also in many places about the city of Ottawa;—the fissures in these rocks giving the best possible natural drainage, and the lime itself being an indispensable article as food for the vine; but a gravelly subsoil underlaying a sandy loam gives also good conditions, and if a sufficient supply of black carbonaceous earth is not present, sods or swamp muck composted with stable manure should be added to the soil; what is principally wanted

and should be of length of summer and the thorough under-draining, Actual experiment and undrained land

It will be found ing and light ploughings should be applied being so essential the most desirable line phosphates and surface clays when drained then

*Planting.*—To obtain which ten are necessary. The selected—those stalks or four inches high below the surface deep. This shallowest part of the sea long barn-yard manure leaves from the floor over them. As much task on the owner, followed to sow be France and the Isle amount of nitrogen as a manure or manure growing, and are cut black pea is recommended Cincinnatti, states rot, whilst others in

*Pruning.*—Main stand pruning and no wonder many in culture, supplies the kingdom; it is the or extended over yards trees. Pruning main and the autumn cut will principally rest or arm. Having per spring select the two the third, then drive them as they grow appear; the leaves do not be checked by cutting long, as the more leaves canes. After the leaves to four eyes on each one taking care to pin the vine to let it fruit and then only a special to each shoot; the fruit be allowed to bear fruit bered in pinching the

and should be chiefly aimed at by the cultivator is a *warm* soil, in order that the greatest length of summer heat may be made available for the early starting of the vines in spring, and the thorough ripening of the canes in the autumn. This can only be arrived at by under-draining, as no soil can be warmed up in the spring that retains any excess of moisture. Actual experiments by the thermometer show a great difference in temperature in drained and undrained land.

It will be found more advisable to add manure to the soil from year to year by top dressing and light ploughing, or forking in, than having the ground very rich at first; these dressings should be applied either in autumn or early in spring. A very rich soil for planting not being so essential as a thoroughly pulverised one. The following is a list of soils found to be the most desirable:—Reddish clay mixed with sand—limy loamy soils—soils containing alkaline phosphates and humus—silicious and calcareous soils—gravelly clay soils rolling on the surface—clays when properly drained and limed—shales—calcareous and aluminous soils when drained thoroughly—loose limestone soils.

*Planting.*—The soil should be light and as fine as ashes, sifted, eighteen inches deep, to obtain which ten or twelve ploughings, and two or three times as many harrowings, will be necessary. The vines should be set ten feet apart—strong two year old plants being selected—those started from single eyes in a hot bed and removed to a rich border when three or four inches high, are the best plants to select from, the crowns should be set four inches below the surface of the soil, the roots sloping gradually downwards to about eight inches deep. This shallow planting will require the ground to be shaded, especially during the hottest part of the season. This may be done with any kind of coarse litter, such as pea-straw, long barn-yard manure, the bottom of a straw stack, spent tan, &c., but the best mulch is leaves from the forest, which may be retained in their places by a little earth being sprinkled over them. As mulching an acre or two of vineyard with these substances would be a serious task on the owner, it has been found more economical in the States where this practice is followed, to sow between the rows a large kind of pea, known as the Clay or Cow Pea, and in France and the Island of Madeira the Lupin—a sort of pea, is used, the pea having a greater amount of nitrogen, and alkaline salts, than any other vegetable, is therefore more valuable as a manure or mulch to the vine. These shade the ground during the hot weather whilst growing, and are cut down when in blossom and placed over the roots of the vine. The early black pea is recommended for the more northern climate of Canada. Mr. Longworth, of Cincinnati, states that vines on dry warm soils, accidentally mulched with weeds, escaped the rot, whilst others in the same locality suffered materially.

*Pruning.*—Many people do not grow vines, simply from the cause that they do not understand pruning and training them, and there is such a cloud of authority on this subject that no wonder many intending planters have become confused; but the fact is, the grape, in agriculture, supplies the place in the vegetable kingdom that the horse and dog do in the animal kingdom; it is the most docile of all plants, it can be cramped in its growth to a small bush, or extended over yards of trellis, dwarfed to the ground or run over the highest buildings or trees. Pruning may be divided into two classes: summer pinching of the fresh grown shoots, and the autumn cutting of the older wood to keep the plant in shape. The method of pruning will principally rest upon the proposed system of growing the vine, either spur, renewal, fan, or arm. Having planted two-year old vines with three buds each, as soon as these burst in the spring select the two strongest, and, if no difference be detected, the two lowest, nibbing off the third, then drive two stakes into the ground in the shape of a  $\vee$  and tie the shoots to them as they grow, allowing no side branches, which should be removed so soon as they appear; the leaves only on the main stems are to be retained. These two branches should not be checked by cutting, as is sometimes the case, when they have grown from four to six feet long, as the more leaves the grape has the stronger will become the roots and the thicker the canes. After the leaves have fallen in the autumn these canes should be cut off, leaving three to four eyes on each of them. The next year the same mode may be adopted as the previous one taking care to pinch off any blossoms or fruit that may appear, as it is very injurious to the vine to let it fruit the second year after planting, unless an occasional very strong one, and then only a specimen bunch. The third year they may be fruited to the extent of one bunch to each shoot; the fourth and fifth years, if the vine has become thoroughly established, it may be allowed to bear from ten to twelve bunches every four feet of cane. It must be remembered in pinching the shoots and leaves when the vine is fruiting, that although the *leaves*

require all the sun they can get, the *fruit* ripens fully as well, if not better, without it. It will be noticed that all fruit is produced on the lower end of the young growing wood, and that there is seldom more than from four to five bunches on a single shoot. When the first buds break in the spring there will usually be two at the same joint; select the strongest one and nib off the weakest. All other pinching should be done during the stoning process of the berries; this lasts from three to four weeks; after they have taken their second swelling no more cutting should be done until the leaves fall. Many vineyardists are opposed to autumn pruning, and the writer favours summer pruning very highly, but where vines require winter protection—and it is believed all, even the very hardiest, are the better of it—it is highly necessary, and, in fact, indispensable that all superfluous wood should be removed before laying down the canes. At the time the fruit is stoning any stimulant in the shape of manure should be applied and, if possible, in a liquid state; but dry manures may also be used on the surface of the soil. The greatest results have been obtained by the application of hen manure—no doubt guano would answer quite as well—in Montreal; this fertilizer brings readily one dollar per barrel for this purpose, being chiefly used for grapes under glass, but it proves of equal value for the native out-door varieties; an inch spread over the ground before mulching gives remarkable results. The writer is not aware that the “souche,” or low stump system of training vines, has ever been practised in Canada; it is doubtful if our free-growing varieties can be curtailed sufficiently. It is estimated that an acre could be cultivated at one-third the cost on the souche method that they could on wires and high trellises. No stakes, tying, or summer pruning is required, all pruning being done in the late autumn. Short jointed varieties are recommended. The vines should be set five feet apart, and the stock or “souche” should, at the third year, be from ten to twelve inches high, with five or six branches spreading in all directions. The radiation of heat from the earth becomes of great assistance in ripening the fruit.

*Training.*—The third year after two-year old vines have been planted, they should have proper trellises to run upon. These may be erected on various plans, but it is believed it will be found the most economical in the end to build them of three by four pine scantling; these should be obtained from the saw mill, sixteen feet long, so that they may dry and be cut in two without waste. The scantling should be sunk two feet into the ground. Before, however, placing them in position, they should receive a good coating of gas tar, to be obtained at any gas works at little expense. The best method of application is to have the tar in an old wooden pail; set the post into it and paint, as high as required, with the stump of an old paint brush; by this means the tar penetrates into the end of the grain, and a few seconds only is required for each post. Cedar, tamarac, or other durable wood may, in some situations, be more cheaply obtained, and answers equally well. Six feet out of the ground is quite sufficient, as the vines are difficult to get at if allowed to run any higher; the posts should be set ten feet apart in the rows, and ten feet between the rows. They should stand in rows each way. One and a half inch stuff, commonly called “furring,” should be nailed along the top of the posts, and when the wires are put on, two rows of posts should be connected across the top by furrings also. The best wire to use is that which is galvanized, and any No. from 13 to 18, will answer—the larger is the most serviceable, the smaller comes a little the cheapest. The posts should be set so that the vines will be mid-way between each post in the row running north and south. A furring or wire may be run along twelve inches from the ground, and the rest of the space may be divided with two wires eighteen inches apart. When trained on the arm system, the lower arm should be twelve inches from the ground; this arm may be extended to the post, up it and across the furring to the trellis opposite; this will give the main stem of the vine room to extend twenty feet on each side, making a total of forty feet if required. This main stem should never be checked during the growing season, the laterals only should of course, be kept off; these, as in all other cases, should be removed *after* the fruit is formed, excepting in the case of young vines not yet fruited, from these they should be removed so soon as they appear. The canes from the main vines should be stopped on reaching the top of the trellis, and every time the eye at the tip of the cane bursts, one leaf should be left, the rest pinched off. The main cane must be cut back every autumn, leaving it five feet long, or to the end of the fully ripened wood, the first year the vine bears; and after that one new joint should be left on the vine every year. This cane will be of great advantage if the multiplication of the plants is required; because if four feet or five of it is buried in a trench early in the spring after the shoots

have started, fill that will bear fruit after the leaves fall the vines are grown on a greater branch showing driving down soon

And the far having high post

It is believed run, will give less mode of attaching Obtain galvanized and a pair of wire points for the same the wire is cut off with a tight square a few days, when next seasons use.

When the first hardiest varieties, are opposed to the vines having been No time can be given season; but the vines uncovered before the vines are uncovered time should be all when lying down the best point or that for the tying up and

*Picking.*—It are frequently picked just begun, it is un before they are full like tomatoes, the the vine until it is brown and begins to and sells for more coloured, and will ing. Those destined scissors, made for fruit of imperfect bunches forwarded but each kind should be free from damp—fination.

*Packing.*—The grower's name. B fruit, a name may they profess to be, headed. The box market, as the slight should be kept in a degrees. The early signs for fruit have representative in this respect in any of our agricultural profits by the addition

without it. It will grow wood, and that on the first buds the strongest one and the vigorous process of the second swelling is exposed to autumn frosts require winter protection—it is highly recommended before laying of manure should be used on the application of hen fertilizer brings grapes under glass, spread over the ground aware that the method in Canada; it is estimated that that they could be led, all pruning should be done. The vines in the third year, be in different directions. The fruit.

And the fan system may be carried out on low cedar fences, constructed on purpose, having high posts and cross bars.

It is believed, however, that wire trellises, besides being the most economical in the long run, will give less trouble in tying the vines as the tendrils cling to the wires. A very simple mode of attaching the vines to the wire trellises, is extensively in use, and is as follows:— Obtain galvanized wire of the thickness of "stove pipe" wire, and a pair of "round noses," and a pair of wire nippers; with the round nosed nippers a figure 8 is made by using the points for the small end, and the part nearest the handle for the largest end of the figure; the wire is cut off with the wire nippers, and the small end of the 8 is attached to the trellis with a tight squeeze; the larger end is put loosely round the vine, the tendrils will catch in a few days, when the wire may be taken off the vine and allowed to hang on the trellis for next seasons use.

When the first frosts begin to harden the ground, it is highly useful, even with the hardiest varieties, to lay them down and protect with a few inches of soil. Many vine growers are opposed to this practice, not having been successful, but this probably arises from the vines having been covered too early in the autumn, or uncovered too early in the spring. No time can be given for these operations, as it depends on the state of the weather and the season; but the vine should not be covered until the ground begins to freeze up for winter, or uncovered before the warm weather sets in from the 1st to the 15th of April. After the vines are uncovered in the spring, they should not be immediately tied in their places; but time should be allowed for the buds to burst, and they do so more regularly along the cane when lying down, than they do when tied up, as the sap has a tendency to rush to the highest point or that furthest from the root, besides when the buds have started about an inch, the tying up and the rubbing off of those buds not required, can be done at the same time.

*Picking.*—It is unfortunately the case that in order to get grapes early to market, they are frequently picked before they are ripe; and, as a rule, when the ripening process has only just begun, it is usual for most varieties to change colour, from fifteen days to three weeks before they are fully ripe. It is a mistake to suppose they will ripen after they are gathered, like tomatoes, the orange, lemon, and many of the small fruits. *The grape must hang on the vine until it is ripe, or it will not ripen at all.* It should not be cut until the stem turns brown and begins to shrivel. When the fruit has been ripened on the vine, it looks much better and sells for more than that gathered in an unripe condition. The fruit will be evenly coloured, and will retain its plumpness, whilst that which is unripe, will lose it after gathering. Those destined for market, should be removed from the vine with a pair of hooked scissors, made for the purpose, taking care not to rub them so as to injure the bloom. All fruit of imperfect quality, or injured by disease, should be removed, and only the finest bunches forwarded to market. No two varieties should be placed in the same box or basket, but each kind should be kept separate. Picking should be done whilst the fruit is perfectly free from damp—for this cause, dry days and warm weather, should be selected for this operation.

*Packing.*—They should be packed in neat pasteboard boxes, carefully labelled with the grower's name. By strict attention to selection, and the appearance of the packages and fruit, a name may soon be obtained which will be a guarantee that the packages are what they profess to be, and these will command a good price when others will be passed by unheeded. The boxes should be firmly packed, so as to prevent shaking whilst in transit to market, as the slightest friction destroys the appearance of this delicious fruit. Grapes should be kept in a dry, airy room, and, if possible, at a temperature of between 40 and 50 degrees. The earliest varieties will, as a rule, bring the highest prices. Boxes of many designs for fruit have been invented in the States, although, so far, Canada is without a representative in this respect; at least I have been unable to discover any advertisement of such in any of our agricultural papers. Some of our wood-ware manufacturers might add to their profits by the addition of the necessary machinery for this purpose. It is believed that fruit

boxes which can be procured at about ten dollars per thousand, given in with the fruit enclosed, are the best, as there is much difficulty in regaining boxes which have passed through several hands from the time they leave the vineyard, besides which, although grapes do not stain like strawberries or raspberries, yet fruit in a fresh new box always looks neater and more cleanly than it does in boxes that have been used before. The return freight on empty boxes is saved, and the commission agent is relieved from considerable trouble and annoyance. Grapes being a fruit that keeps longer than those of a softer nature, the boxes, as a rule, are not returned so promptly as those containing fruit more perishable. Grape boxes, though the better for it do not require ventilation, as is the case with many of the small fruits, and for this reason cardboard or veneer answers better than chip or splint cases, being smoother in the interior and not so liable to rub the fruit. The boxes should be shallow, not more than six inches high. The stems of the bunches should be cut as long as possible, for more conveniently handling. A layer of vine leaves should be laid on the bottom of the box, then a layer of grapes, and so on until the box is full, laying the bunches as close as possible, and having a layer of leaves on the top, under the cover, which should be pressed down tight. When the fruit is destined to be kept for any length of time, the bunches should be cut from the vines, and laid on a floor or shelves of an airy room for a day or two, and then packed in boxes, with paper instead of leaves between them. The room should be kept at as near 40° as possible. By occasionally examining them, and removing the bad ones, they may in this way be kept in good order for several months.

*Varieties.*—It is a difficult matter to speak of new varieties, as it takes years to thoroughly test any new kinds, both as to climate, diseases and soil, and also with regard to their hardiness. Again, a young vine may prove a vigorous grower, and productive, with fine berries and bunches, at first, and after some years they may turn out below the ordinary standard. The Catawba, which was once so highly prized, from disease and other causes has greatly sunk in estimation, and in Canada is scarcely heard of. There is no doubt much to be done in the direction of new varieties to suit our northern climate and soil, and we have particularly to thank Mr. Arnold for what he has already done. As it is impossible to patent new varieties of fruits, it would be well that prizes should be awarded for new grapes of tried excellence, the same as is now given for apples by the "Fruit Growers' Association." This would, perhaps stimulate exertion, and bring forward something which might be left as a footprint in horticulture to posterity. The following varieties have proved themselves so far at the head of all others that have been cultivated for the same length of time:—Concord, Hartford Proflic, Ives, Adirondac, Iona, Delaware, Canada, Creveling, Isabella, Rebecca.

#### FRUIT SENT TO NOVA SCOTIA.

The Fruit Growers' Association sent to Nova Scotia a box containing forty varieties of apples. In response thereto, we received from them the following report:—

#### REPORT OF FRUIT COMMITTEE ON APPLES SENT FROM ONTARIO FRUIT GROWERS' ASSOCIATION, 1870-71.

The box contained some *forty* varieties, and came to hand in good order and condition, some of the kinds rather over ripe and partly decayed. On the whole, they are a well-grown, well-ripened, and very high flavoured lot of apples; very far in advance of the collection sent from Ontario to our Provincial Exhibition, in 1868.

In comparison with the same sorts grown here, we find but little difference in size and colouring, but, as a general rule, the Ontario apples are the highest flavoured, and most matured; as in case of "Baldwin," which was over-ripe and partly decayed, while we can scarcely get a specimen ripe enough to eat at this season.

The names, with some exceptions, seem correct. No. 24, "Hubbardston's Nonsuch," is Blenheim Pippin. The late A. J. Downing made a mistake in calling this apple "*sweet*," and his brother Charles continued it through inadvertence to all the subsequent editions of his great work. It is a pleasant sub-acid; is well-known here, having been introduced some thirty years ago by the Hon. C. R. Prescott, of Accacia Grove Farm, who received the scions from the London Horticultural Society.

No. 5. Pom  
It is one of  
rich, high flavoure  
The collectio  
"No. 3," which  
Appended is

To C. C. HAMILT  
President 1

No. 0. Pom  
" 1. Fall  
" 2. Yello  
" 3. Wagn  
" 4. Cayug  
" 5. Pomn  
" 6. Boura  
" 7. Golde  
" 8. Ameri  
" 9. Rox I  
" 10. Flush  
" 11. Esopu  
" 12. Baldw  
" 13. King  
" 14. Ramb  
" 15. Vand  
" 16. R. I. C  
" 17. Swaar  
" 18. Westfi  
" 19. Snow  
" 20. Canad  
" 21. Northe  
" 22. Penno  
" 23. Fallaw  
" 24. Hubba  
" 25. Mother  
" 26. Fall W  
" 27. Talmar  
" 28. Domini  
" 29. Wine S  
" 30. Yellow  
" 31. Name u  
" 32. Cowher  
" 33. "  
" 34. "  
" 35. "  
" 36. "  
" 37. "  
" 38. "

NOTE.—No. 5 is also

No. 5. Pomme d'Or. Is this a local name?

It is one of the synonyms of Golden Pippin. (See Downing, page 194.) This is a rich, high flavoured apple of the Pomme Grise class, and should be a favourite dessert fruit.

The collection of seedlings contains some very good sorts, especially No. 36 or Cowherd's "No. 3," which seems worthy of extensive trial.

Appended is a detailed list with remarks.

I am, &c.,

R. W. STARR,

Chairman of Fruit Committee.

To C. C. HAMILTON, M. D.,

President N. S. F. G. Association.

#### LIST OF APPLES—WITH REMARKS.

- No. 0. Pomme Grise; true, good specimens, high flavoured.  
 " 1. Fall Pippin; true, very fine, is not first-class with us.  
 " 2. Yellow Bellefleur; true, good, high flavoured.  
 " 3. Wagner; new to us, good.  
 " 4. Cayuga Redstreak; new to us, fine, correct: Downing and Warder.  
 " 5. Pomme d'Or; don't know it, rich high flavoured.  
 " 6. Bourassa; true, good specimens.  
 " 7. Golden Russet, of West New York; new to us, fine, high flavoured.  
 " 8. American Golden Russet; seems different from ours.  
 " 9. Rox Russet; correct, fine: Downing, Warder.  
 " 10. Flushing Spitzenburg; true, good, fine specimens.  
 " 11. Esopus Spitzenburg; true, good.  
 " 12. Baldwin; true, fair size, over ripe, lost flavour.  
 " 13. King of Tomkins County; true, high coloured, good.  
 " 14. Rambo; true, good specimens.  
 " 15. Vandervere; new to us, high flavoured, good.  
 " 16. R. I. Greening; true, good specimens.  
 " 17. Swaar; true, good.  
 " 18. Westfield Seek No Farther; true, good.  
 " 19. Snow Apple; true, very rich, and fine.  
 " 20. Canada Red; new to us, don't think it agrees with Downing or Warder.—cook.  
 " 21. Northern Spy; true, well grown, partially decayed.  
 " 22. Penneck; new to us, correct: Downing and Warder.  
 " 23. Fallawater; new to us, correct Downing and Warder, very large, handsome.  
 " 24. Hubbardston Nonsuch; is *Blenheim Pippin*, good specimens.  
 " 25. Mother; may be correct, but is not the apple we have here as *Mother*.  
 " 26. Fall Wine Sap; new to us, large, handsome, over ripe, does not agree with Downing.  
 " 27. Talman Sweet; true, good Specimens.  
 " 28. Dominic; new to us, correct, Downing, good.  
 " 29. Wine Sap; new to us, correct, Warder.  
 " 30. Yellow Newton Pippin; we think this Green Newton Pippin. See Downing and Warder.  
 " 31. Name unknown; don't know it, large, handsome, pleasant, rather over ripe.  
 " 32. Cowherd's No. 20; scarcely good.  
 " 33. " " 6; good cooking, past season.  
 " 34. " " 2; good, past season.  
 " 35. " " 7; good, close fine grained, pleasant flavoured.  
 " 36. " " 3; very good, handsome, fine flavoured, appears worthy of extensive trial.  
 " 37. " " 22; only fair in quality.  
 " 38. " " 11; good baking, sweet.

NOTE.—No. 5 is also known as Swayzie Pomme Grise.—D. W. B.

" 39. Freed's Seedling; very juicy, almost sweet, think it would cook well.

" 40. Land's Vandervere; don't know it, pretty good quality.

Those marked "true" have been proved here, and those marked "correct" agree with the description given by the authorities quoted.

## THE CANADIAN FRUIT, FLOWER AND KITCHEN GARDENER.

*To the Directors of the Fruit Growers' Association of Ontario :*

GENTLEMEN,—Every fruit grower among us will hail with the greatest satisfaction the publication of a Canadian Manual of Horticulture—this satisfaction is not unlikely to be much enhanced because one of the prominent and much esteemed members of our Association is the author, and because the work is to be printed and issued to the world by a Canadian Publishing House, viz, that of Campbell & Son, Toronto.

This work I took the liberty of noticing in my annual address to the members of our association, and having recently seen the enclosed critique of this forthcoming work in a daily paper, and being deeply impressed with its importance to our country as inaugurating a new era in horticultural literature, and of the beneficial results of its dissemination among fruit growers, I have taken the earliest opportunity of bringing it under your notice.

I am, gentlemen,

Your obedient servant,

ROBERT BURNET;

Hamilton, 28th Oct., 1871.

### A CANADIAN MANUAL OF HORTICULTURE

We have received from the publishers, James Campbell & Son, advance specimen sheets of a forthcoming work on horticulture, by D. W. Beadle, of St. Catharines, and it is with great pleasure and confidence that we bespeak public attention to this much needed and very valuable addition to our young Canadian literature. The qualifications of the author for the task he has undertaken are an ample guarantee for the excellence of the work. His long practical acquaintance with the subject in all its branches, his constant intercourse with the foremost horticulturists in this country and in the United States, as well as in Great Britain, and the experience gained from his connection with the press give him peculiar fitness for the office of a teacher and a guide in Canadian horticulture.

There are many excellent manuals for the gardener, but hitherto no work on the subject has been published by a Canadian, and the special value of the forthcoming volume is derived from the fact that it is written by one who has spent the greater part of his life in this country, and has for many years been practically familiar with the peculiarities and difficulties of our own soil and climate, and is therefore well acquainted with the peculiar position and wants of the Canadian cultivator.

The title of the new publication is the "Canadian Fruit, Flower and Kitchen Gardener," a title which correctly indicates the general scope and arrangement of the work. It is adorned with three beautiful coloured engravings, appropriate to each of the principal departments of which it treats, and is throughout profusely illustrated with explanatory wood cuts, which are accurately and clearly executed.

The following brief summary of the contents will give a fair idea of the full and practical information and the varied range of subjects, which the work will embrace. Under the first part—or the Fruit Garden—are chapters on the propagation of fruit trees (including grafting and budding,) pruning, transplanting, mulching, treatment of young orchards, location of an orchard, injurious insects, and the production of new varieties; then follow chapters on individual fruit adapted to this climate, with special attention to the cultivation of the grape both in the open air and under glass. In the second part, all the vegetables which can be successfully grown in Canada come under notice. They are arranged in alphabetical order, and all requisite information is given concisely but fully for the cultivation of each. The third section—The Flower Garden—treats of the more strictly ornamental department of Canadian

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horticulture in the following order: Hardy flowering shrubs, Hardy climbing shrubs, Hardy herbaceous flowers, Bedding plants, Annuals, and Roses.

We shall look with much interest for the completion of the work and its speedy publication, and cordially recommend it to all Canadians who love a garden, and who would be aided in its cultivation by the ripe experience of a thoroughly practical and accomplished horticulturist, who is at the same time a fellow-countryman.

## PAPERS READ BEFORE THE ASSOCIATION.

### THE GARDEN AND THE FARM.

BY A. B. BENNETT.

There is no pastime so pleasant and attractive for persons, who, during their early manhood have been engaged in business or professional pursuits, in most cases confined to the dull atmosphere and routine of a business office—I repeat there is no occupation more inviting to persons at this middle stage of life, no matter how they may have been previously occupied, than the garden and the farm.

To be released from a monotonous routine and close atmosphere, to walk out at perfect liberty and enjoy the free air; the eye, in one sense, the purveyor of the soul, captivated at a glance the green fields; the mind given up untrammelled to the pursuit of nature represented in horticultural farming, is the highest gift of God to man.

The garden is a morning pastime, the trees and shrubs, which may have been planted, pruned and cared for, by one's own hand, become identified with the family idols. Meeting them in the morning walk, every bud has a smile for you, and every flower a fragrant greeting.

The farm has its broader attractions, though not less inviting. The wide-spreading wheat fields, how interesting, from the preparation of the soil, the casting in of the seed, the springing into life, the broad green autumn carpet, so gratifying to the eye, occupying the mind through every stage of its promise of plenty, and when ripened for the harvest, giving occupation of a busy, bustling, hurrying character; an agreeable change.

The clover fields, with their wide clustering leaves—giving a soft, graceful matting to the broad acres, with what delight is the haying time anticipated—when the sweet scented clover casts its fragrance for miles around. The dark green foliage of the luxuriant corn fields, the staunch hills at stated distances, the broad blades flashing in the sunlight, front and rear ranks, dressed in parallel lines, reminding one of Prussian hosts marshalled for battle. One has not to imagine himself William the victorious to be really a farmer king. The barley fields with their graceful, drooping heads, not bowed in sorrow, but bending with a coyish nod to the farmer, promising abundance—the pea fields and the pea blossoms—the potato patch, every hill swelling out and cracking the soil with its fulness—the ample orchards of choicest fruits—the horses, the cattle, sheep—the poultry yard each and all contribute their share of interest, and give promise of ample stores, filling the barns, the graneries, the cellar, the larder, with abundance, not only inviting, but impelling the heart to thankfulness. Such is the farm.

The embellishments of farms and gardens. The subject is not so unimportant as may at first appear, and when considered in an extended sense is worthy of more attention than is generally accorded to it. Embellishments may be considered in two classes, remunerative and ornamental. Ornamental farm buildings may be considered as embellishments while they may be more convenient and useful than those constructed without ornate character, through the influence of rural ornamentation. Persons accustomed to town or city life, generally opposed to living in rural residences, may be induced by degrees to take an interest in agriculture, tending to draw more capital into this most healthy, and, I am convinced, ultimately most remunerative of all occupations.

As to the embellishments of the garden, the garden properly laid out is itself an embel-

ishment as a whole, but if the proper taste is not displayed, and the various objects thrown together confusedly, it ceases to be so. The shape of trees, itself, is an important matter, for beauty in them, as in all shrubs and plants, is spoiled by want of arrangement. The pruning knife must be used with skill, to regulate them and other equally important matters attended to. The eye readily detects the departure from the line of beauty, and the interspersing of trees of varied outline and figure, add variety to the landscape. A long line of our luxuriant sugar maple, with sameness as to figure and height, may be quite imposing. Alternate the same with the horse chestnut or elm, and this change to variety of shape, and tint of foliage will add beauty and attractiveness.

By observation the mind becomes more or less experienced, arising from the diversity of objects observed, and the power of justly discriminating is developed, and the understanding thus instructed will acquire a knowledge with respect to form, colour, and, I might add, of all external attributes of nature.

We have within us, no doubt, an innate admiration of all created things, but *taste* is a peculiar quality of our nature *attained* by experience and cultivation, and the attainments of this peculiar quality are endless, only circumscribed by the breadth of our experience.

The line dividing the farm and the garden it is difficult to define. The plodding, old-fashioned, slow and easy mode of cultivating, or, more properly speaking, running over large tracts of land, would, a generation ago, have been fairly the definition of farming. At the present day, thanks to the public interest, and patronage of government, to both agriculture and horticulture, it is quite another thing. A thorough cultivation and enriching of a small plot of ground to its utmost capacity of production, would at any period be called gardening. Our improved and improving system of farming is only horticultural cultivation applied to agriculture, there is really no dividing line. Every farmer enjoying a portion of this peninsula of Western Canada, which is one of the choicest half acres of God's footstool, should become an horticulturist on a large scale, giving more attention, if, as a source of profit only, to the fruit orchard and the vine. A share of attention given to ornamental trees and shrubbery, encouraging at the same time a taste with the younger members of the family for the flower garden, all contributing to advance infinitely their pleasures and enjoyments crowned by God's instrumentality, through the irresistible teachings of nature, with a moral influence, no where else to be found. No farm is so attractive as when accompanied by practical horticulture, giving completeness, as well as adding pleasure, clustering a thousand pleasing associations, filling to perfection the real, as well as the ideal, picture of home.

## VEGETABLE TISSUE AND FIRE BLIGHT.

BY W. H. MILLS.

MR. PRESIDENT AND GENTLEMEN,—In submitting this paper upon the subject of vegetable tissue and fire blight, I am aware that it would have been more clearly explained if accompanied by suitably enlarged diagrams and cross sections of the pear tree, so as to have aided the eye, as well as the mind, in its construction.

In the absence of so necessary an adjunct, the next best thing to be done is to explain, in some simple way, the formation of cells, which would be familiar to most of you, and at the same time convey an idea of how the vegetable cells are constructed, and how they would act under certain conditions. Let me refer you to those beautifully wrought cells in the comb of the honey bee as having analogous relations in some respects to each other. They are both vessels for liquids and fluids, and when compressed empty their contents by diffusion into adjoining cells; and if the pressure be sufficiently great, they become emptied of their contents, and their walls collapse, and are thus formed into a more compact and solid figure. It is in a very similar way the vegetable cells build up the various tissues in concentric circles from the heart wood of every tree to its bark, from year to year, as the tree enlarges by growth, and are thus annually modified by cohesion and pressure, each containing its peculiar bundles of ducts, having separate and distinct functions. What the bee does for the honey comb heat does for the vegetable.

Let us proceed, then, to point out some of the conditions which govern plant growth, and

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so approach, if possible, an explanation of the phenomena of fire blight, without offering proof in detail to establish the truth of the laws of plant growth herein expressed, for they would so enlarge the bulk of this paper as to make it unsuitable for delivery before an ordinary meeting of this Association. Be it sufficient to state that these proofs have been arrived at by numerous experiments, and promulgated by the latest and best authorities. You will, therefore, observe I claim no originality, other than the arrangement of the constituents. You are, therefore, asked to take upon trust the statement of bare facts, which I feel can only carry conviction to the mind in so far as they are intelligibly expressed. Should they fail, therefore, to lead to a satisfactory explanation of fire blight, they will, at least, afford material for discussion, in which all of us are interested. Without further qualification, I will say that since vegetable tissue is the medium through which the various phenomena of life, death, vital force, and fire blight exhibit themselves it must be obvious that at least a slight knowledge of its formation should precede the investigation of the causes which affect the tree's organization, as well as to what extent this same tissue depends upon the atmosphere on the one hand and the soil on the other for its development; and since it is not suitable to give more than a brief mention of the elements, with some of their compounds, which build up the tree in a chemical sense, I will merely say that these primary elements are, indeed, few, and consist of carbon, hydrogen, oxygen, some nitrogen, sulphur, and phosphorus.

The combination of these in definite proportions form water, starch, sugar, gums, wood, the vegetable acids, fats, oils, albuminoids, and indeed all the numberless products to be met with in the vegetable world. They constitute the destructible parts of a tree, and are subject to rapid or slow decomposition under certain conditions. By adding mineral ash to these we have the tree's entire composition, making up its whole organic matter or material. Although the proportions of the component parts of any one of these compounds may be ascertained with considerable accuracy, chemists are unable to combine these parts so as to build up a tree; this can only be accomplished by the functions of the cell, and specially to it belonging.

Now, since matter carries with it an attribute of infinite divisibility—for I cannot think of a particle of matter so small that it does not possess two halves with space between—yet I know, to assume this, is to assert that it has no beginning, and therefore no limit between matter and nothing, and that a finite thing has infinite proportions; and I also know that Sir Isaac Newton has conjectured that matter is composed of indivisible, perfectly solid particles or atoms; but if the ultimate particles of matter be perfectly solid, they cannot be pervaded; if they be incapable of wearing or separation, they can throw nothing off; and lastly, if no single atom can receive or part with anything, how can an aggregation of atoms possess a power incompatible with the nature of its component parts?

Any one taking the view of the matter that I do, will not be startled when told that the more attenuate matter readily permeates the more gross, perpetually creating modification, and that essential change of constituents we see in the multiform things of life; and that by this infinite divisibility a single drop of water may occupy a space as large as our planet. But to go back to a more perceptible condition of matter. The microscope has revealed that a certain state of organized matter presents itself in the form of minute vesicles or cells, filled with solid or liquid material. These cells and their contents are again subdivided into molecules and atoms, all of which may be reduced by chemical analysis to those very few primary elements above named. Hence an aggregation of atoms form a compound, these compounds aggregate and form a molecule, and these molecules again combine with each other and form cells. and a primordial cell (I call it primordial, because vegetable tissue or life commences with a single cell), multiplies itself by duplicative subdivisions to an aggregation of cells. This aggregation of cells, as touching our subject, is vegetable tissue; some of these have been appropriately classified by vegetable anatomists into cell tissue, wood tissue, bast tissue, and vascular tissue. It is principally with two of these, namely, cellular tissue and vascular tissue, that we are concerned. I know how difficult a thing it is to comprehend this extreme tenuity of matter, and yet it is more difficult to convey an intelligible expression of it by words. What a surprising lesson science teaches, when it demonstrates that our five good old cardinal senses cannot any more be relied on as a record to establish truth without experimental and mechanical aid. But to return to the consideration of these microscopic cells, because it is the aggregation of these that forms vegetable tissue. They are often changed greatly in shape and contents to suit various parts and purposes of the same tree, yet it is always easy to find in the matured plant cells of the same essential form as those in the germ or seed. In some kinds of tissue

these cells cohere tenaciously, and again, in others, readily admit of separation. They contain a material called protoplasm, commonly known as sap, (which contains all the necessary vegetable nutrient), is contractile in the living cell in all young growing parts of every tree. This material is constantly changing its figure, while the granules suspended in it keep moving as in a stream of liquid; but in the maturer parts of our pear trees these cells are greatly modified.

As each part of the tree has different functions to perform, we find the cells conforming to the conditions imposed on them by the forces in the world around. We see an example of this in those which come in direct contact with the sunlight and air; they become emptied of their cell contents, their walls collapse, and by this means are formed into bark and epidermis, which has no life in itself, but stands as a shield against the forces from without for the protection of living tissue within. The most important of all the tissues lying beneath the bark, that which contains the greatest vital activity, is the one called the cellular; it forms the bed of the river through which flows the various vegetable nutrients, and is the base of all other tissues. A cross section of a limb shows the adjoining vascular tissue with its spiral, dotted tubular and sieve ducts forming the important chemical laboratory for the whole tree. Here we find the cambium, that plays such an important part in healing over any wounds the tree sustains. Here all the vegetable principles are constantly undergoing transformation from forces exerted upon them from the world around; they are supplied partly by the atmosphere through the leaf, and principally by the soil through the root. The vegetable albuminoids exist here in a liquid state. We must, however, always bear in mind that the circumstances under which the cell itself develops determine the character of its contents although the law which governs this particular process remains still hidden. The truth of the assertion is apparent, since facts sufficient have been experienced by all of us to point out the greatest difference in the cell contents of both fluids and vegetables in seasons that vary much in moisture, sometimes quite destroying the qualities we prize so high.

The same law governs the cellular tissue, hence the formation of cells under certain circumstances, with their contents, may contain a greater proportion of one ingredient at one time than another. Is it not important to ask what the result would be to all normal growth were a considerable disturbing cause of this nature to intervene just at this most critical stage of vital activity?

I will endeavour to point out shortly what I believe the result would be. In the meantime let me remark, that, notwithstanding we bring the highest magnifying power to bear upon the membranes of these vegetable cells it fails to reveal any apertures in their walls. Yet they do readily admit the passage of liquids, and this obviously can only take place because the particles which compose the cell walls are separated by greater diameters, than the diameter of the particles which go through the walls.

Since I have endeavoured to point out the composition of cells, their formation and contents, and have thus given what I am aware is a very superficial view of vegetable tissue, yet, enough has been said to warrant me in proceeding to show what relation it may possibly bear to fire blight.

Taking the pear seed and observing the living germ it contains, we see the tree's most important stage. Because, it is in fact, a ready formed plant in miniature, with its tissues already organized and perfected by forces derived from its parent, in the shape of all necessary vegetable matter contained within itself, and is beside surrounded by a sufficient supply of protoplasm for its development when placed in contact with heat and moisture, up to that point of perfection, when root, stem, and leaf can independently assimilate organizable matter from the soil and atmosphere. It may thus appear to assume at this stage an independent existence. But it is quite otherwise in point of fact; because, in addition to those surrounding influences climatic, chemical and geographical, it carries from its primordial cell a hidden force which gives it a directive agency that eventually builds up the tree in its characteristic type. This, indeed, is the great hidden law of being, not yet scientifically demonstrated. It is "the divinity that stirs within and shapes its ends."

This wonderful directive agency impressed at the moment of conception, and thereafter retained through each successive change of plant-life from aggregation of molecules, from the germ to the cell, from cell to germ, from germ to youth, from youth to old age, and from generation to generation, exhibits such a regular persistence in perpetuating its like, we are not surprised that a casual observation would lead one to think that types were fixed and unchange-

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able. Thanks to the revelations of the microscope, chemistry and science, this phenomenon, like others, that have been solved, is about to lose its sacredness, and thus forever fail to perplex our understanding with vain surmises. We can begin to see that the physical basis of types rests upon molecular mechanism, that the aggregation of atoms is influenced and brought about by heat acting through matter. That each molecule thus built up by aggregation of atoms, becomes one grand microcosm of the whole type coming through, and subject to the arrangements of its organic parts, and of its environment. I have only sought to push this thought sufficiently far to enable me to explain the action of vegetable tissue, for it is with that I am more immediately concerned. Dr. Mayer, in one of his treatises sets forth the principle, that all the changes in the living organism lie in the forces, acting upon it from without. And Dr. Carpenter in confirmation states, that these forces are generated in living bodies by the transformation of light, heat, and chemical action supplied by the world around. By many experimental facts, Professor Tyndall has conclusively proven the soundness of these statements. Thus, we may safely conclude, that the influence of light (which is nothing more than transmuted heat) upon vegetable organism, brings about what may be considered a mode of chemical combination, between oxygen, carbon, and hydrogen, with sometimes the addition of nitrogen, sulphur, and phosphorus. Thus, their appropriation into plant growth depends upon the agency of heat as the sole organizing force.

I have stated above that the vascular tissue contains an important constituent of Pear growth, the albuminoids. Now, what is the character of these vegetable albuminoids that occupy in common with other material the cells in such vital activity?

Professor Johnston says, they contain in addition to carbon, oxygen, and hydrogen, 15 to 18 per cent. of nitrogen, with a small quantity of sulphur, and sometimes phosphorus. In the living plant they exist in a liquid state, and are highly complex in their chemical constituents. Chemistry also demonstrates that albuminoid, in a moist state, when subjected to warm air, putrefies and decomposes, and yields a large variety of products. The volatile constituents are set free, and the residue is inorganizable matter. I suppose the quantitative relation with nitrogen is destroyed. But, be that as it may, however, a strong presumptive evidence that this is true presents itself by analysis, for by applying this chemical test to the section of a dead limb produced by fire blight the albuminoids are no longer there. The tissue has thus, by blight, been converted into a comparatively simple binary compound, suitable only for the building up of the lower organisms of life such as the fungoids.

Now, I can readily understand this metamorphosis taking place by the surrounding influences from without. Let us enquire what some of these are? Looking over the American Horticultural records for the last ten years, we are surprised at the great quantity of writing upon this subject of fire-blight by many observers. But in the experience of all these writers, one fundamental condition is expressed, namely, allow barometric state of the atmosphere accompanied with heat, which precedes fire-blight, namely, warm mists fogs, rains, sometimes accompanied by lightning, following a period of drought. The effects produced on the pear tree by these most unusual conditions have given rise to fungoid, lightning and other theories. But, to my mind, the absorbent activity of the cellular tissue is put to its greatest test under these conditions, changing the normal operations of the vital forces. The active cells become dangerously gorged, extravasation takes place, chemical combinations are carried forward locally. I say locally, because the pressure is never even on all parts of a plant. The tree being thus placed in a wet and heavy medium, is unable to exhale or evaporate its surplus moisture through the leaf to relieve itself from the extreme pressure of the atmosphere, hence the onward flow and motion of sap is arrested. The almost distinct material of the cellular and vascular tissues is forced to meet and combine chemically; heat is generated, the volatile matters are set free, and the whole organizeable material is changed from an elevated plane to a lower level, or simple binary compound, the vital process being thus locally checked, death ensues. The limb or body turns a dark colour and carbonic acid is exhaled!

In conclusion, let me remark that, this chemical change rapidly turns starch to sugar and ferment. Payer and Persoy attribute this action to a nitrogenous substance which they term diastase. They say that one part of diastase is capable of transforming two thousand parts of starch. It is now known that any albuminoid may produce the same effect. These changes are rapidly wrought in our pear trees, under the conditions before expressed. A chain of magnificent sequence may thus be traced from the inception of life to death. First, by

cohesion and aggregation of atoms to the building up of the proximate principles of life to a perfect type. Secondly, from thence to the melting away of this same type to air, through the diffusion and dispersion of these same atoms by the chemical and mechanical agency of heat, to death and decomposition.

I know some of you may ask, what possible practical effect may all this writing about atoms and tenuity of matter have to enable us to understand fire-blight. But surely that may be fairly answered by asking another, namely, if one of us received mechanical or chemical injury to our body involving life, which of two men would we prefer to treat our case? The skilful anatomist, with a fair knowledge of diagnosis, or he that understood neither anatomy nor discrimination. I need not answer, the thing is patent.

In Professor Tyndall's twelfth lecture on heat, considered as a mode of motion, the following beautiful sentiments are expressed. I think I may suitably close this paper by quoting him. He says: "To nature nothing can be added, from nature nothing can be taken away. The sum of her energies is constant, and the utmost man can do in the pursuit of physical truth, or in the application of physical knowledge, is to shift the constituents of the never varying total, and out of one of them to form another. The law of conservation rigidly excludes both creation and annihilation—waves may change to ripples, and ripples to waves; magnitude may be substituted for number and number for magnitude. Asteroids may aggregate the suns, suns may resolve themselves into floræ and faunae, and floræ and faunae melt in air. The flux of power is eternally the same. It rolls in music through the ages, and all terrestrial energy. The manifestations of life, as well as the display of the phenomena, are but the modulation of its rhythm."

## IMPORTANCE OF SHELTER.

BY GEORGE LESLIE, JR.

To the Fruit Growers' Association of Ontario:—

MR. PRESIDENT.—I regret that my time has been so occupied lately, that I have not been able to prepare a paper on any specific subject connected with the objects, the promotion of which this Society has in view. I, therefore, in a hurry, just jot down a few *stray thoughts* as they come uppermost in my mind, and the first that presents itself with the thermometer below zero, and fierce winds howling across the bare fields, is the

### IMPORTANCE OF SHELTER.

This Society and its members have done and are doing much good in giving this subject so much prominence; and I believe that I am not over-estimating it, when I express my conviction that if the idea mooted at some of the meetings of this Society, namely—that of offering a valuable prize, a few years hence, for the farm the best and most successfully sheltered by planting, be carried out it will be productive of more lasting good than all the other actions of this Society put together.

The fact that lasting benefits will accrue to the climate and to the soil of our country, and that its power of producing and quality of its productions, will be greatly enhanced, the beauty of its landscapes added to, and the comfort of its people promoted by "planting for shelter," in the most extended application of the term, cannot be too often or too persistently drilled into every owner or occupier of land who has sense enough to understand palpable facts.

Day by day our forests and even isolated trees are being swept away; and day by day in just the same ratio, our climate is becoming more changeable and uncertain.

Only think of the immense destruction in our forests by fires, the immense amount of timber annually made marketable; the cordwood cut and the innumerable other ways in which vast quantities of trees are used; and let us ask ourselves if the *planting* bears any thing like the proportion *it should do to the felling*? It must be patent to every sensible mind that it does not, and that the most evil consequences will ensue if not remedied in time, that *that time* has now fully come, and that recognizing this, every one should "put his shoulder to the wheel" in the matter with right good will.

Plant, PLANTING, but plant some of them to where roads and streets are pleased with your property. that a "thought" people would of NOTHING). PLANTER; and last, on this subject, Provinces to the thousands of acres just the place for

I refer to our years, would be this purpose. If would it not be in it not be a good in this manner. would in time find the way of shelter traveller would be To this I would s way, and where the planting should be in many places in

ness. To the owner of trees to plant is able pens than mind of the soils and p What would be mo nuisance. I have it a perfect terror t every tendency can service in much the growing tree, soon Poplar grows to a without a rival as a handsome trees, an Elms are in the for seldom be transplan the Hickory, the B the climate, ought t be a large source extensively used.

To produce the their branches t people will persist in to me a great eye-so arborical education excelled, such for in Hemlock is graceful Norway Spruce, how almost all soils and p

*Plant, PLANT, PLANT*, I would say, and do not dwell too much on the order of your planting, but *plant*. Do not let a season slip by because you cannot decide WHERE to plant, but plant *somewhere*, and if the positions do not suit you, take up your trees and *transplant* them to where they will—and *add a few more*. As to *where* to plant, let me say plant your *roads and streets*; this takes no land from you, and every year your trees grow, you will be better pleased with what you have done, while you know how it is yourself, it *adds to the value of your property*. Plant along your fences, (and in this connection, let me say in parenthesis, that a "thought" strikes me that thousands of tons of *grapes* could be grown in this way, if people would only take the least trouble, on ground which is now wholly occupied with NOTHING). Plant your side hills and your hollows; plant every unoccupied nook and corner; and last, not least, plant just *everywhere you ought to*. Amongst my "stray thoughts" on this subject, I find one regarding a narrow strip of land running from one end of the Provinces to the other crossed and re-crossed by branches running from it, containing many thousands of acres of the finest land, nicely enclosed by fencing, now entirely barren, and just the place for forest planting in the style it is done in the old country.

I refer to our *lines of Railway*. What is to hinder them being planted with such trees as the European Larch, for instance, a quick growing tree, which, in the course of a few years, would be invaluable for railway sleepers; this timber, I think, being unequalled for this purpose. If the railway companies were to take this matter up themselves and act on it, would it not be in time a source of great revenue to them? Or if it can be done, would it not be a *good speculation* for men of capital, to lease miles of railway enclosures and plant in this manner. They might not reap the benefit themselves, but it strikes me, their heirs would in time find it a "good thing." The immense benefit from such a source accruing in the way of shelter, is undeniable. Perhaps it may be objected to this, that the view of the traveller would be obstructed, and the landscape hidden, making it wearisome travelling. To this I would say, that the planting need not be done so closely as to interfere in this way, and where there is a really fine landscape view to be seen from the line of travel, no planting should be done at all; and on the other hand there would be a real advantage gained in many places in planting so close as to shut out unsightly objects or monotonous barrenness.

To the owners or occupiers of land about to engage in planting for shelter *what varieties* of trees to plant is a most vital question. This has been so often and so well treated by more able pens than mine that I shall dwell upon it but lightly. Everything depends on the nature of the soils and positions; to be successful the proper tree must be in the proper place. What would be most suitable in one place might in another be the very opposite, in fact, a nuisance. I have seen the Silver Abele planted to the greatest advantage, and again have seen it a perfect terror to the person who planted it, from its tendency to throw up suckers. This very tendency can be made use of to hold bank sides together. The Willow can be made of service in much the same way, and by the side of streams. The Lombardy Poplar is a quick growing tree, soon attains a great height, and very seldom produces suckers. The Balsam Poplar grows to a great size, and may be planted to advantage. The Silver Maple almost stands without a rival as a quick growing shelter producing tree. The Sugar and Red Maple are handsome trees, and especially useful with the Silver Maples as street trees. The varieties of Elms are in the foremost rank for almost all purposes. The Birch is a beautiful tree, but can seldom be transplanted with success, except when very young. Nut-producing trees, such as the Hickory, the Butternut Edible Chestnuts, Walnuts, &c., where they will severally stand the climate, ought to be planted largely, and in time their productions and their timber would be a large source of revenue. The European Larch, formerly mentioned, cannot be too extensively used.

To produce the best shelter *Evergreens* must be mixed with the Deciduous trees, allowing their branches to grow *quite to the ground*. The sight of an Evergreen trimmed, as some people will persist in doing, to a bare pole, with a tuft at the top like a flag of distress is always to me a great eye-sore, and I cannot help mentally noting down the owner as one whose arboricultural education has been sadly neglected. Some of our native Spruces can hardly be excelled, such for instance, as the Balsam Spruce, the White and the Black Spruce. The Hemlock is graceful and pretty, but has the drawback of being difficult to transplant. The Norway Spruce, however, being such a quick grower, so hardy, so readily adapting itself to almost all soils and positions, and withal such a handsome tree, must, I think, in this country,

forever stand A No. 1. The American Arborvitae or White Cedar, after once or twice transplanting, will grow almost anywhere. *Evergreen hedges*, I am happy to see, are now beginning to attract much attention, and very deservedly so from their beauty at all seasons, and the fact that they will stand any amount of *clipping* to keep them in shape, as well as the great shelter to be derived from them, especially about dwellings and gardens. Pines deserve a passing notice; of these our native Red and White Pines are not to be despised, while the Austrian and Scotch Pines are grand and effective trees when judiciously planted.

But in advocating the claims of the foregoing one is continually met with the remark: "Oh! I cannot afford the expense." Too often this remark springs not from pecuniary poverty but from poverty of taste, of thought, of inclination, and of will "to do these things," lack of public spirit, and want of appreciation of the benefits to be derived therefrom. But for the benefit of those who really cannot afford to go to much expense in the purchase of trees, and all others "whom it may concern," let me try to give you a hint or two by which, if you will, you may do a good deal at very little pecuniary outlay, though it will take time to accomplish your object. I would advise you, then, to portion off a sufficient piece of ground, for the purpose of a little "nursery," which put into as good condition as your time and circumstances will admit of. Into this *transplant* seedlings from the woods, the swamps, or wherever you can best get them. Seeds of such kinds as you cannot get in this way can be procured from almost any seedsman, and a little experience in your "nursery" and study of nature will soon teach you how to grow them with success; or apply to your nurseryman, of whom you can procure small seedlings at a very small cost indeed. Cultivate carefully your stock in your little nursery till they are of sufficient size to transplant to the positions they are to occupy permanently, and if your heart be in the work you will find both pleasure and profit in the following out of this plan in all its stages.

### THINNING OUT FRUIT.

BY REV. R. BURNET.

To an enthusiastic horticulturist, every department of his favourite art has strong attractions, and when he undertakes to illustrate any special part of it—that part doubly bulks in his estimation. We find it so with ourselves, and at the very threshold of our paper, feel inclined to utter some strong expressions regarding the importance of fruit thinning.

There are few writers on horticulture, who have not impressed this important subject on fruit-growers. Year by year, we feel more and more impressed that it is a matter that must soon engage general attention. We propose, therefore, under our present favourable circumstances, when so many fruit-growers are here assembled anew, to do our small endeavour to bring this matter before our association.

Analogy is in favour of thinning out. Our near neighbours, our vegetable growers, act largely on this principle. Whoever heard of a market-gardener leaving his onion beds unthinned? What would be the result as regards the market value if he did? What, if a bed of carrots were allowed to grow up, just as they had sprung from the hand of the sower? How carefully does the vegetable grower thin his rows, and leave space and verge enough between them to improve the growing crop? The practice of this principle plays an important part among our farmers. A. Mechi has shown the wonderful yield from *dibbled* wheat,—the saving of seed,—the product larger in quantity, finer in quality than that grown in the old fashioned way. The same, too, he has shown really becomes finer, and larger. Turnips, root crops of all sorts, potatoes, mangel, and all crops of a like nature, have room allowed for their free expansion—and the fuller this space allowed, as a general rule, the better the products. Man himself, depends much on similar principles for the development of his comfort and happiness. Pen him closely up in a compact and narrow city, and he soon begins to deteriorate, even his physical frame soon begins to show the need there is for light, and heat, and air. Intellectually too, man stands in need of room for his spiritual developments. Indeed, it seems a common, a general law, that growing products must not be over-crowded, either in reference to the earth, or to man.

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It would seem strange then, if fruit-growing was the only exception to the law. It is not an exception however. Nothing repays the fruit-grower better than a systematic thinning of his fruit. To skilled horticulturists among us, and presently assembled in our winter meeting, these views express the sentiments of the merest tyro. We are to remember, however, that views enunciated here are not so much for the good of our own individual members, who give diligent heed to all these matters, but for fruit-growers at large, who are willing to go on in the old-beaten track, and allow nature, as they say, just to do as she likes. To all such we desire to awaken in them a desire for the production of better samples of fruit, than the small gnarled specimens which they now gather from their orchards.

The consummation wished is within the reach of all, and most farmers, who are also, on a small scale, fruit-growers could successfully compete with garden experts.

How, then, it may be asked, is this end so desirable to be accomplished? There are several ways to further this object, to each of which in succession we will direct attention.

First,—There is no better method to secure good, fair, fruit than *careful pruning*.

In fact, this is one grand pre-requisite of fruit-growing. Fruit trees are apt to put forth every effort to render their tiniest twigs fruitful, and often a vast amount of energy is lost to the tree in the expenditure of this energy. Pruning relieves the tree, in great measure, of this useless effort, and vigour and sap are sent into those channels where their development will benefit both the tree and the fruit-grower.

Much beautiful and handsome fruit is lost for want of careful pruning. The heads of our fruit trees, for the most part, are allowed to grow as close as a cabbage, and the result is just what might be expected, a large and prolific crop of small fruit rewards the laziness and want of foresight on the part of the fruit-grower. Quantity, not quality is the object of such horticulturists, and they steadily attain to that goal.

A second plan, which requires as much judicious management as the foregoing one, is to whip the trees when in full flower with a long sapling.

The prodigality of nature is something astonishing, and ought to call forth our admiration and thanksgiving. What a waste, we are ready to exclaim, when we see a fruit tree clad in its snowy covering in early spring!! Where is the need of such prolificness? There's need, and there's intention too in such fruitfulness. To those of us who follow fruit-culture as a means of increasing our happiness in the contemplation of the wonders of an all-powerful and ever-working providence, we cannot but be struck at the numerous difficulties that beset the horticulturist. One winter is too open, one is too severe, another the weather is too variable—one spring has the weather too hot and parched another too cold and damp. Every change in the atmosphere produces its change on fruit and forest trees. How needful, then, for a superabundant supply of buds and flowers to supply the place of those that may be hurt, injured, or destroyed altogether by the outward elements. In fruitful seasons, therefore, it must become the duty of the fruit-grower to counteract this fecundity. This is to be done by drubbing the over-blossomed tree with a long, slender, light sapling, and thus destroy two-thirds of the over-luxuriant blossoming.

Another, and to amateurs, a more desirable mode is to thin out the fruit with a pair of scissors, shortly after the fruit has fairly set, and fully formed. To those of us, who have climbed up the hill of competitive exhibition, the thinning out of fruit is vigorously practised, and the results are invariable. The severest thinner is generally the highest prizor. A neighbour of mine, to whom I have been indebted for many hints, assured me, that from his experience in fruit thinning, he has discovered that the aggregate weight of good fruit after thinning, is just about as great as is obtained from a large quantity of half worthless fruit. We, ourselves, are in a position to verify this statement.

Many collateral benefits arise from thinning out. It improves the tree, it, as we have seen, improves the fruit, makes the tree more continuously fruitful, for, instead of only getting a crop, perhaps, once in two years a crop is thereby secured every year. The thinning out with the scissors, enables the fruit-grower to make direct inroads on the ravages of the apple and pear worm, of itself, no contemptible gain to pomologists.

Craving the indulgence of the members of the Association, for the manner of presenting these necessarily brief thoughts, and trusting that, however much others know better of this

subject than I myself do, they will overlook the deficiencies of the paper, and allow me to say in the words and with the very sentiment of the old Roman :

“Fungar vice cotis, acutum,  
Reddere quæ ferrum valet, exors ipsa secandi.”

“I'll play the whetstone, useless and unfit  
Myself to cut, I'll sharpen other's wits.”

HAMILTON, 7th Feb., 1871.

## EXPERIMENTS IN THE CULTURE OF SMALL FRUITS.

BY REV. G. BELL, CLIFTON.

The position of the garden is peculiar, and in some respects unfavourable for small fruit culture. The wind in summer is often strong and scorching in its effects on vegetation. The ground had formerly been occupied by an old orchard. Many of the apple trees are still standing, probably more than half a century old, and although somewhat decayed, I do not like to remove them, as they still produce some good fruit. They must have an injurious effect both from their shade, and from their having been for many years exhausting the soil of some chemical elements of essential importance.

The soil is an unsatisfactory one being tough when wet and baking very hard in dry weather. It is underdrained, but perhaps not sufficiently so for soil which settles down into such a tough mass. The soil is not a poor one, but it, of course, needs peculiar treatment in the circumstances.

*Manure.*—The principal article used has been the cleanings of the cattle cars from the railway, consisting of sawdust mingled with the cattle droppings. To this has been added all the ashes which could conveniently be spared, and a compost consisting of very heterogeneous materials. A considerable quantity of liquid manure has been applied once or twice a year, from a cess-pit which receives the wash of the closets flushed by the water from a sink. The soil which cannot be dipped up in a liquid state, is removed and mixed in the compost heap with stable manure, grass, weeds, chip rubbish, leached ashes, soot, kitchen refuse, leaves, woollen rags, and everything else, animal or vegetable, which is capable of being so used. This produces a very good manure. I rely on bones ashes and the liquid manure to restore the elements of which the trees have exhausted the soil. I find that the liquid manure produces a most vigorous growth on raspberries, blackberries and strawberries.

*Strawberries.*—The sorts tried were the Wilson's Albany and the Triomphe de Gand. The latter was soon discarded, as 250 plants of it produced about 100 berries per annum, and these small. The Wilson did very well at first, but they appear to suffer from the nearness of the trees, and are not very productive. They are perfectly hardy and vigorous in growth. A bed was prepared a year ago, after removing an old tree, by digging in leaves, manure, and bones coarsely broken on a wooden block; and last Spring plants were set in rows prepared by mixing bone dust into the soil just under their roots. The plants were placed 15 inches apart in two rows 15 inches apart, and then 30 inches to the next pair of rows; 18 or 20 inches would probably be better for such a large grower as the Wilson. The plants were with difficulty kept alive during the dry weather of the early summer, but later in the year, they made a vigorous growth and promise well for this year. To succeed in strawberry culture the ground must be kept thoroughly clean and well mulched at first planting, and at the fruiting season.

*Currants.*—These have not done well. They have generally made a fair growth, but the insect pests have caused disappointment. The currant worm (the false caterpillar of the *Nematus ribesii*), has been very destructive. White hellebore has proved an effectual remedy when applied, but if constant attention is intermitted for a few days, which has often to be the case, we have the mortification of finding some bushes stripped by a brood which has been hatched during the cessation of hostilities. The bushes suffer from a borer, probably the larva of a species of *Egeria*, which eats out the pith of the wood, and the bush

becomes sickly borer.

*Raspberries* complete failure not sufficiently growth was too by the cold, hecess. In size, f the canes make although someti injured. The r the new canes, a ground unless t (*Oberea tripuncti* kill the cane. / berries can gener son, generally A the cut, and care

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*Gooseberries.*— which appeared to probably) grows vig but the quantity is Catharines, (I thi of 1870, allowed t vigorous, the fruit currant worm is ve frequent doses of h numerous.

*Other Fruits.*— large fruits. *Peach* The soil is evidently yet been grown with curculio, decaying, liness of the fruit seasons, done well, t *Apples* grown on the

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becomes sickly and feeble. The black currants are free from the worm, but suffer from the borer.

*Raspberries.*—The Belle de Fontenay were tried as a Fall-bearing sort, but proved a complete failure. They produce a prodigious growth of suckers, and these were, perhaps, not sufficiently kept down at first, and the plants may have suffered in consequence. The growth was too late in the Fall, and the berries did not ripen well; this was probably caused by the cold, heavy nature of the soil. The Red Antwerps have been grown with fair success. In size, flavour, and beauty the fruit is all that can be desired; but the tenderness of the canes makes success uncertain. They are too large and brittle to be laid down, and although sometimes passing a winter without material injury they are at other times seriously injured. The rampant growth of these requires vigorous shortening during the growth of the new canes, and their long growth in fruiting makes it difficult to keep the fruit off the ground unless they are staked. The only insect troublesome to the bush, is the girdler, (*Oberea tripunctata*), the larva of which, if allowed to bore down the stem, will certainly kill the cane. As it takes some time to do this, the mischief to the summer bearing raspberries can generally be prevented if a little time can be given to the plants at the right season, generally August. The girdled tops should be cut off, leaving no punctured pith below the cut, and carefully destroyed.

One year's experience of the Black Cap raspberry, shows hardiness and an immense growth. It promises well, and will probably be successful.

*Blackberries.*—The Lawton is the only variety which I have, and it has been the most successful of all the small fruits which I have tried. Complaints are often made of its want of hardiness, and of its tendency to sucker, but my experience has been the opposite of both. I have found it perfectly hardy, and producing very few suckers, and these very easily disposed off. The excessively dry season of 1868, caused a failure of fruit by drying up the berries before they were full grown. The fruit in 1869 and 1870, was very fine. Its large size, fine quality when thoroughly ripened, and long continuance, lasting from six weeks to two months, all point it out as a fruit of great value. Besides being valuable as a dessert fruit, its vinous flavour makes it the best of all berries for canning. The growing canes should be headed in at the height of four or five feet. They do well on the north or west side of a fence, and may be tied up to a nail in the fence. I have not been troubled with insects on them.

*Gooseberries.*—These have not been successful. Several English sorts were planted, which appeared to do well at first, but afterwards mildewed badly. A small red sort (native probably) grows vigorously, and does not suffer from mildew. The fruit is good for preserving, but the quantity is not sufficient to make it valuable. Some obtained from Mr. Beadle, St. Catharines, (I think named American Seedling) promise well, although the excessive heat of 1870, allowed them no fair opportunity of showing what they could do. The bush is vigorous, the fruit is large and abundant, of a peculiar ashy tint of green in colour. The currant worm is very destructive to the leaves of the Gooseberry, and needs attention with frequent doses of hellebore. The measuring worm has often been seen, but has not been numerous.

*Other Fruits.*—Although somewhat apart from the subject, I may mention some of the large fruits. *Peaches* have made a rapid growth of wood, but have produced very little fruit. The soil is evidently too tough and cold for them unless on plum stocks. *Cherries* have as yet been grown with indifferent success. *Plums* have been a failure; those which escape the curculio, decaying, drying up and falling off. One *Apricot* tree has not done well; the earliness of the fruit exposing it to the ravages of the curculio. *Dwarf Pears* have, some seasons, done well, but the trees are yet small, and have not produced much fruit. The *Apples* grown on the old trees are good, but the crops are not large.

In conclusion, I wish to draw some practical lessons from my experience:

1st. If we expect any kind of plant or bush to feed us with fruit, we must feed it. Bone dust, ashes and liquid manure are of the highest importance in fruit raising.

2nd. For all small fruits the cultivation should be very shallow, and in nearly all cases the manure should be applied on the surface. *Raspberries* will be much the better of having the surface of the ground covered with a mulch of tan-bark, and currants with one of chip rubbish. *Strawberries* should have leaves, grass, or straw.

3rd. Politicians say that eternal vigilance is the price of freedom. But the fruit

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raiser will soon find that the adage is equally true in his case, whether the freedom be from noxious insects or weeds. A vigorous and unremitting warfare must be carried on against both.

4th. We need not expect two crops to grow on the same ground. If trees are grown, not many smaller things will grow near them, and a crop of fruit and one of weeds will not be successfully raised together.

Clifton, February 6th, 1871.

### REPORT ON CURCULIO-CATCHING.

BY JAMES COWHERD, NEWPORT, COUNTY OF BRANT.

I have eighteen plum trees. I commenced to catch them May 21st, 1871, with the following results:

May 21st.	Morning,	-	0	Evening,	-	12
" 22nd.	"	-	1	"	-	0
" 28th.	"	-	0	"	-	16
" 29th.	"	-	1	"	-	33
" 30th.	"	-	41	"	-	28
" 31st.	"	-	45	"	-	50
June 1st.	"	-	18	"	-	22
" 2nd.	"	-	21	"	-	28
" 3rd.	"	-	—	"	-	25
" 4th.	"	-	23	"	-	38
" 5th.	"	-	5	"	-	15
" 6th.	"	-	9	"	-	2
" 7th.	"	-	10	"	-	4
" 8th.	"	-	5	"	-	5
" 9th.	"	-	0	"	-	1
" 10th.	"	-	—	"	-	2
" 11th.	"	-	4	"	-	0

From this it seems that the Curculio were most abundant from the 29th of May, until the 5th of June, a period of only eight days, and that taking the whole period there were 98 more curculio caught at evening than in the morning, or about three-fifths of the whole number were taken in the evening. This report shows the importance of looking for them at evening as well as morning, and suggests inquiry as to the probable duration of the period of their greatest activity.

### FRUIT IN COUNTY OF RENFREW.

BY ANDREW RUSSELL, EQR., ARNPRIOR.

For the past ten or twelve years I have found Tolman Sweet, Alexander, St. Lawrence, and Fameuse to succeed, but most of the established varieties fail, among other noted kinds the R. I. Greening, Ribston Pippin, Keswick Codlin, Northern Spy, Red Astracan, Early Harvest, Twenty Ounce, King of Tompkins, &c., &c.

The green aphid is the main pest; and winter killing. Have succeeded best by obtaining the trees in the fall, heeling them carefully in during the winter and planting them out in the spring.

I have tried seedling pears which always fail, and most of the noted kinds on quince fail. One year a small tree of the Stevens Genessee bore about sixty or seventy large fruit, but the next year perished. I generally have a few fruit from trees grafted on the thorn every

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year, it may be the Bartlett. I have generally given them some protection. During most winters the previous year's shoots are partially killed. A gentleman in this locality has from ten to twelve trees trained low as espaliers and protects in winter, which I saw this spring in full blossom and have borne for some years.

I have tried the most noted sorts of plum, but none succeed. I had hopes this spring of having the Lombard, McLaughlin, and Egg bear; they apparently came through the winter so well, but there was only a solitary blossom.

I have tried the hardiest kinds of cherry, the Mayduke, &c., for many years, but they never produced one fruit. The trees seemed always to suffer in winter.

A seedling peach raised by me bore for a few years. With careful protection they may be got to bear. The Quince do not succeed; are killed down in winter.

Strawberries do well and bear good crops. I have had partial crops of the White Antwerp Raspberry with protection in winter. The Fastolf failed. English Gooseberries only partially succeed, owing to the mildew. The Houghton and American do not mildew, and give large crops, but in my opinion are miserable things. The Blackberry plants I tried failed. The old kinds of currants succeed and are good; the new sorts promise well. An early and repeated application of hellebore destroys the worm.

I have cultivated for the last twenty-five years a black and a white grape got from an old gardener who had been with Lord Dalhousie when Governor, and cultivated in his garden at Sorel. He gave me the names, but I could not reconcile them with Downing's nomenclature. However, they succeed well, and get coloured pretty well by 1st September in good seasons. The cluster of the white grape often weighs about a pound. I have fruited the Rebecca which also succeeds. The Delaware, Diana, Hartford Prolific and Adirondac, I have on trial. The winter protection consists in laying them down and covering slightly. I allowed one vine of the black grape to remain on the trellis one winter apparently without injury.

#### HOW ANY ONE CAN GROW GRAPES UNDER GLASS WITH LITTLE TROUBLE OR EXPENSE.

PAPER READ BEFORE THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

Many persons would be induced to erect a small vinery for the culture of the finer varieties of foreign grapes, were it not for the great trouble attending their culture under glass in the ordinary manner, in watering, syringing, ventilating, &c., requiring the services of a professional gardener, or occupying more time and attention than the generality of persons can spare.

By adopting the following plan in erecting the vinery they will be relieved of the greater part of this trouble, and have a fine supply of delicious grapes, with no more trouble or attention than is required to grow the natural vine out of doors.

The sashes are made stationary, but so that they can be unscrewed and taken off for repairs at any time. They extend from the front wall to within a foot or ten inches of the back wall at the top, leaving an opening of ten inches wide along the top to be closed by sheet-iron ventilators in winter or when requisite, but which is kept constantly open from the time the vines are uncovered in the spring till they are laid down and covered in the fall.

The principal peculiarity is in the glazing. The glass is laid end to end without lapping or putty, and merely kept in its place by small pieces of tin, and a space of half an inch or an inch is left open between every third or fourth pane, so that all the rain that falls upon the house is distributed pretty equally over the entire house, very little running off the roof except in very heavy thunder storms. There is no ventilation whatever below, as a draught I found injurious to the vines. Any air that comes in is by these openings in the glazing, and the heated air finds vent at the top.

Last year was a very dry one, as well as this, we having no rain here for months; but the vines never suffered from the drought, though they were never watered or syringed from the time they were uncovered in spring, when it was done copiously, till they were again uncovered this spring. Nor were they the least affected either last year or this with mildew or

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red spider; though previous to adopting this plan I was annually troubled with both, in spite of syringing copiously morning and evening.

My present vinery was not erected for that purpose, but for a small conservatory, and the floor was sunk about  $2\frac{1}{2}$  or 3 feet, with a brick wall all round. About 12 years ago I filled it up level with good compost, and planted the vines all inside, there being no opening for their roots to extend to a border outside. It was intended principally for proving seedling vines of the foreign varieties and the newer varieties then out, with a few of the best old varieties, and in a space of 24 by 14 feet contained for several years 36 vines, which were thinned out as they were proven worthless, till it now contains 24; this is still too many, about 16 being all that could be properly grown in that space. Last year it got a liberal supply of liquid manure in spring; this year it got nothing but clear water at first, and rain as it falls, and is doing as well as last year, and vigorous enough for a house containing so many vines.

The ends of my present vinery are not glazed, having only a small window and door on each end. Were I to erect a new one I would have the ends glazed to within three feet of the ground, and would have openings in the front wall to allow the roots of the front row of vines to extend into a prepared border outside.

For those who may wish to try this plan, I would recommend the following varieties as being the most successful with me, and of the finest quality:

1. Black Hamburg.
2. Muscat Hamburg.
3. Champion Hamburg.
4. Lady Downes.
5. Golden Hamburg.
6. Bowood Muscat.
7. Buckland Sweet Water.
8. Genersl della Marmora.

The first four are black or purple grapes, and the last four white grapes.

No. 1 is by far the most profitable and best of the blacks, and Nos. 6 and 7 of the whites. Nos. 4 and 6 are the better of artificial impregnation, as they do not set the fruit very well.

The principal trouble in following this plan, more than is required in out-door culture of the native, is the necessity of thinning the grapes on the bunches to about one-half when about one-quarter grown, to give room to the rest of the berries to swell.

WINDSOR, 3rd July, 1871.

JAMES DOUGALL.

#### REPORT OF COMMITTEE TO INSPECT THE FRUIT CAPABILITIES OF BRANTFORD AND VICINITY.

*To the Directors of the Fruit Growers' Association of Canada.*

We, the undersigned committee, appointed by your directors to make a personal examination of the country lying in the vicinity of Brantford, and report in writing as to the character of the soil and country, its capabilities for the production of fruit, its peculiar advantages and disadvantages for such culture, its present fruit production, and such other matters affecting fruit production therein as may be thought worthy of attention, beg to submit that they visited that section of country by the way of Paris, in the latter part of September.

The road from Paris passes through a fine rolling country long settled; the orchards, apparently forty or fifty years of age, indicate by their still vigorous and healthy appearance the favourable condition of the soil and climate.

The first orchards your committee visited were those of Henry Moyle and William Smith, Esqs. The apple orchard of Mr. Moyle appeared very healthy, although somewhat crowded from too closely planting, some forty years ago. This orchard is remarkable for having produced what naturalists would call a case of bud-variations; in this instance, the

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singular transmutation was an old apple tree that for years had borne Spitzenburg apples upon every branch, until some four years ago, when one branch, from some unknown cause, began to bear apples of an entirely different character. This fruit was exhibited at the last winter meeting of the Fruit Growers' Association. Upon Mr. Smith's grounds we found a great variety of pears; the trees appeared remarkably healthy, and most of them heavily loaded with fine large fruit. Mr. Smith has recently planted a belt of Norway Spruce upon the north and west sides of his orchard. The prevailing soil seems to be a substantial loam, becoming light and sandy as we approach Brantford.

The Brantford Horticultural Society were holding their fall exhibition on the day of our arrival, and we had an opportunity of meeting a number of the leading fruit growers of the township, to whom we are indebted for much valuable information as to the present state of fruit culture in the adjoining country. In the show itself we saw abundant evidence of the cultivated taste of the people of the town; the display of choice green house plants and fruits would have been creditable to a much larger place.

In the afternoon we visited the country to the east of Brantford. On our right the road borders the Grand River flats, widely celebrated for the depth and fertility of the soil. Here in old times were the favourite hunting grounds of the Indian, and the natural home of the wild plum and the grape. It presents a very pleasant appearance to the eye of the passer by. The soil which appears to be a dark sandy loam, is evidently favourable to the growth of all the leading varieties of fruit suited to the climate. Further to the north we were told that the soil was of a more adhesive character, with a larger proportion of clay, and requiring more thorough drainage to fit it for orchard culture.

The next morning we crossed the river at Brantford, and took the Newport road, passing for a considerable distance through a broken and hilly country, until we arrived at the farm of Mr. James Cowherd, a mile or two beyond the village of Newport.

His farm occupies quite an elevated position, and from the number of Indian utensils and curiosities found here, is no doubt on the site of an ancient Indian village or town. The soil is of excellent quality, varying from a rich crumbling mould to a heavy loam mixed with clay.

We spent considerable time here, highly interested in examining his numerous seedlings of the apple and the peach; many of which, from their good quality and hardy character, we have no doubt will prove permanently valuable. He has devoted considerable time and thought to the production of these seedlings, and we think his efforts to introduce new and hardy sorts native to the climate should receive some recognition from the Fruit Growers' Association.

We spent the afternoon examining the country to the south and west of Brantford; the soil generally a fertile sandy loam, and although the season has been a very dry one, the trees looked healthy and thrifty, with a fair show of fruit. We noticed, however, in all parts of the township, the extensive ravages of the codlin moth, fully one quarter of the apple crop being injured by the worm.

But little attention has yet been paid to the planting of shelter screens for the protection of orchard trees. In the few instances that came under the notice of your committee where screens had been planted on the west and north-west sides of the orchard, the beneficial effects were plainly perceptible.

The present state of fruit culture in the country surrounding Brantford is not what might be expected. With a soil and climate evidently well suited for the growth of the apple, the pear, the plum, the cherry, and the grape, your committee noted with surprise the limited number of young orchard plantations. This seems the more remarkable in view of the fact that the Buffalo and Lake Huron and Great Western Railways offer excellent facilities for sending fruit to the best markets. At present, as far as your committee could learn, no great amount of fruit is sent from Brantford by railway, the most of the surplus being disposed of in the town at low prices and without much regard to careful handling.

The farmers not only of this township but of all the fruit growing sections of Ontario, have much yet to learn as to the best methods of assorting and packing fruit, as well as planting those sorts most likely from their keeping qualities, size and colour, form, &c., to be most in demand for a distant market.

In conclusion, your committee noticed with great satisfaction the general interest expressed in fruit culture, the desire to give and receive information on the subject, manifested

by all with whom they came in contact, as hopeful signs for the future advancement of the fruit interests of the townships.

C. ARNOLD,  
W. HOLTON.

### REPORT.

*To the Directors of the Fruit Growers' Association of Canada.*

GENTLEMEN,—Your Committee on the fruit claimed to be a seedling plum, grown at Walkershall, near Beamsville, beg to report that they visited these grounds on Monday, the 21st day of August, 1871, and at this date found but one or two specimens still remaining upon the tree, and these so nearly resembled the common Early Orleans in point of flavour that we should have no hesitation in pronouncing it such, more particularly after observing the manner of growth of the tree, and other characteristics. The fruit was medium, size round oval, suture from shallow to obscure, stem varying in length and thickness, cavity moderate, skin purplish, flesh only second rate, yellowish green. We should, as a comparison with others, only put it down as a moderately good cooking plum. We observed, beside, no black-knot upon the tree, although this disease freely exhibited itself on a tree a few yards away. And as to the freedom from attack of the curculio, which the proprietor claims as one of its distinctive excellencies, we are compelled to leave an open question to the cultivators of this particular variety.

We would, however, in this connection, beg to record our conviction that not only the appearance of the black-knot, but even the attacks of the curculio become greatly modified, and sometimes wholly suppressed by slight changes of conditions in soil and position, and other particulars.

The black-knot is sometimes wholly suppressed by peculiarity of cultivation and manuring, and the curculio by the trees hanging over water or being grown where hens and pigs have free access to the grounds, and also, in some seasons being more unfavourable than others for the protection of the crysalis and in the periodical return of its enemies. All these bear a share in the suppression, at stated periods, of this pestiferous insect, so that greatly to the surprise of the cultivator, the plum, in some seasons, will be remunerative. In view of these facts we would recommend a more diligent study of conditions.

W. H. MILLS,  
ROBERT BURNET.

### REPORT ON THE LAKE SHORE IN ELGIN.

*To the Directors of the Fruit Growers' Association.*

GENTLEMEN.—Your Committee appointed to visit the Lake Shore District of the County of Elgin, with the object of ascertaining as far as possible, its adaptability for fruit raising; beg to submit the following report:—

On the second day of September, we left London by the early train for St. Thomas, where we arrived at 8 A. M. Here we were met by Mr. J. Laing, one of the active members of our Society in that place—who by previous arrangement, had secured horses and carriage, and very kindly consented to accompany us on our trip. His thorough knowledge of those portions of the country we were to visit, and wide acquaintance with its settlers, made his presence most invaluable, both as guide in directing our course, and as a friend, to introduce us to the parties from whom we desired to obtain information, relating to the object of our visit.

The route laid out for the first day, was to drive from St. Thomas, through Yarmouth to Sparta—which is in the centre of the most extensive fruit-growing district—and to leave there, early enough in the afternoon to reach Port Stanley by night-fall. The weather was very pleasant, and the drive through one of the most charming districts which our western country contains. Along the Talbot Street road, we observed that there were very many old apple orchards, probably from 25 to 35 years old, in a fair state of cultivation, but the crop this year appeared light. We noted also, that nearly all those farmers who had not old orchards, had young ones; many of them just coming into bearing. Cherry trees were about

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dant and thrifty—the Kentish variety very common. While some of the orchards showed evidence of care, in the way they were kept, the major part of them had a neglected look, as if the owners expected the trees to grow and produce fruit without labour, either in pruning or cultivating. In many such cases, there was evidence of premature decay; the orchards were nearly all scented down even while quite young. The fall web worm, *Hyphantria Textor* (Harris), we found every where; we regret to see this pest becoming so wide-spread, as we fear it will soon cause much damage to orchards. The red humped caterpillar, *Notodonta Concinna*, was also very common on apple trees.

The settlers in the north part of the Township of Yarmouth, are chiefly Scotch, from Argyleshire, while those in the southern portion, are mainly Quakers, from Pennsylvania, with some few settlers from Nova Scotia. The land along here is undulating, and produces fine wheat; the crop this season was excellent. The soil on the north side of the Talbot street road, is chiefly a rich clay loam; on the opposite side it is lighter, the greater portion being a sandy loam. The land had not suffered so much from drought as in most other portions of Western Canada; this was evidenced in the rich fields of green clover of the second crop.

At Mr. Rapplegee's, on the 7th concession, we saw two very fine, healthy seedling pear trees, about 20 years old, heavily laden with fruit of fair promise; these were said to bear well every year. In the same garden was a tree of the Duchesse d'Angoulême, cropping well. Peaches also were very good and fairly loaded; and there were Lawton Blackberries bearing abundantly, with no evidences of the wood winter-killing; these latter are represented as quite hardy in this section. The Whitesmith gooseberry bears well here, but the foliage had been almost destroyed by the saw fly caterpillar, *Nematus Vetricosus*.

Along the road we observed a few wild plum trees fruiting. Hickory trees were very abundant thrifty, and well laden; and we heard of a small marsh of wild cranberries in the Township of Southwold.

One farm belonging to Mr. Martin, was a fine orchard in bearing, chiefly Rhode Island Greenings, but the trees were being allowed to overload, and the fruit in consequence was small. The owner spoke well of the Greening; it bears well and sells readily. His Spitzenburghs yield a good crop every second year; is not troubled much with the codlin worm. In one orchard near here, we noticed that the Fall Pippin was affected with black spots.

On the 5th concession, we inspected the orchards of Mr. Benj. A. Doan. His farm is situated on a ridge, about four miles from the lake, where he is rarely, if ever, troubled with spring frosts. He raises more or less peaches every year; this season the crop was good; but his chief fruit is apples, of which he has a large orchard, mainly Greenings, Fall Pippins, and Baldwins. The fruit is sold chiefly to buyers from a distance, who visit the locality for the purpose, and realizes an average of about \$1 50 per barrel on the spot. The worm of the codling moth, he says, does not trouble his apples as much now as formerly. Kentish cherries looked vigorous here, and bear abundantly. The trunks of his trees, were more thickly covered with lichens, than is usual in well kept orchards, a result influenced probably by the nearness of the lake.

All along this ridge, which reaches about four miles, fruit seems to succeed admirably, besides apples in abundance, we saw many peach orchards with trees heavily burdened with fruit.

We next called on Mr. Merritt Palmer, also a large fruit grower along the ridge. His apple crop was lighter this year than usual. The varieties chiefly grown were, R. I. Greening, Roxbury Russet, and Spitzenburgh; and of all these he preferred the Roxbury Russet, since it brought him about double the price of the Greenings. The former he finds ready sale for at \$1 per bushel, while the price of the latter seldom exceeds 50 cts.; and if his Russets are kept over until spring, and marketed in London, he usually realizes \$1 50 per bushel for them. The Spitzenburghs are not equal in yield to the Greenings, and sell at about the same price. He does not look upon peaches as a sure crop, his peach orchard which contains about 200 trees, was originally planted with budded fruit; but a severe winter, some eight years since, killed the trees below the bud, after which they sprouted again, but the natural fruit is small and inferior. He has seeded down his peach orchard, and believes it does just as well in grass; his trees, however, did not look thrifty.

A neighbouring farm, occupied by Mr. Merriman, was next visited. He also regards peach culture as not very reliable; his crop this year was fair. The Greening, he esteems,

as the most valuable and reliable apple for cropping—he can keep his till June; and he ranks the Spitzenburgh as next in value. Has not planted many Russets. He complained of want of a good market. In the garden adjoining the house, we observed some pear trees, chiefly Lawrence, Duchess, and Louise Bonne de Jersey, all doing well. From his remarks we gathered that the English cherries do not set their fruit well here, and plums do not succeed, because of the curculio.

In front of the dwelling on Mr. Moore's farm, near by, we saw a fine old tree of the Summer Bonchretien pear, with a good crop on it, but the fruit was much spotted.

The next place visited was that of Mr. Abner Chase, on the 4th concession, near the village of Sparta. He has a fine orchard of apple trees, and gives the preference to the Greening as a market fruit, although the Spitzenburgh and Baldwin both succeed fairly with him. He gives the price for apples as usually about 90 cts. per barrel, delivered at Port Stanley. His peach orchard numbers from 400 to 500 trees, from which he has had fair crops for three years past, and estimates that of the present year, at from 200 to 300 bushels. Last year he sold 200 bushels, and the usual price is \$1 per bushel on the spot. English black cherries bear well on this farm every year, and attain a good size; but we could not ascertain the name of the variety here referred to. The black aphid, which infests the tips of the young shoots and stunts their growth, has established itself here also. Mr Chase is 88 years of age, but quite brisk and active, with the use of all his faculties; his family came from Rhode Island.

Mr. Isaac Mills residing in the same township, was next called on. He raises strawberries for market, as well as other fruits, chiefly the Wilson, and this season he sold \$115 worth, at ten cents per quart, from less than an acre of ground. Some six or eight years since Mr. Mills planted about 1,000 peach trees, and has now some 600 living; they are all seedlings from a medium sized yellow-flesh peach and very similar in character, and of fair quality. He thinks his trees do not bear a full crop oftener than once in three years, and the price realized for the fruit varies from \$1 to \$1.50 per bushel. A few young trees are planted now and then to take the places of any that may die out. In his apple orchard there is 300 trees, principally Greenings, Spitzenburghs and Roxborough Russets, which he finds to be preferable to any other varieties. His trees were raised from seeds planted by himself 51 years ago, and afterward top-grafted. Cherries, quinces, and pears are said to do well here; of the latter, we saw the following varieties bearing good crops: White Doyenne, Bartlett, Louise Bonne de Jersey, and Duchesse d'Angouleme. The pear tree slug, *Selandria cerasi*, which devours the leaves in such an unsightly manner, we observed at work here. Mr. Mills had a few grape vines, chiefly Concord and Clinton; they were growing well, but were too young to fruit.

In the garden of Mr. Elihu Marsh, on the farm adjoining, we saw the Orange Quince, fruiting finely, as well as several varieties of grapes, some of which were suffering much from *Thrip*; we noticed the Clinton, Delaware, and Hartford. This gentleman purchased what he supposed to be, quite a number of different varieties, from a tree pedlar, some of them being furnished with very high sounding original names, quite new to your committee, but, on maturity, most of them had proved to be Clinton. It is very unfortunate for fruit growing interests that farmers will continue to patronize such unscrupulous characters, as most of these wandering pedlars are. It would cost them no more, indeed, often less, to send to some reliable nurseryman for their stock.

As evening was now approaching, we drove next to Port Stanley, where we put up for the night, at the Fraser House, a new hotel, beautifully situated, high up on the banks bordering the lake. We learnt here that the Rev. Mr. Latimer had been very successful in his efforts at plum raising, and saw some magnificent samples of his fruit. His success was mainly owing to his attending to the curculio, jarring his trees regularly, and catching and destroying this insect pest.

The first day having been spent in inspecting the district east of Port Stanley, the next morning we started early in the opposite direction, along the lake shore road, in the Township of Southwold, towards Port Burwell. We first called on Mr. P. Breen, where we found plenty of Clinton vines doing well. In his orchard we saw the following varieties of apples, all bearing good crops: Baldwin, Northern Spy, R. I. Greening, Rambo and Swaar. There were several late Crawford peach trees here, making vigorous growth, but not bearing much fruit. He has two varieties of cherries, which do well with him, one bearing a red and the

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Our next call was Association in this district chiefly grapes and strawberry plants, as well as marfow of which were promised well.

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other a dark red fruit. Mr. B. had a few pear trees, but they had not been well cared for, and did not appear thrifty. On an adjoining farm we observed a handsome, well-grown tree of the Louise Bonne de Jersey variety, bearing heavily.

On the farm of Mr. Thomas Brady we found the Duchesse d'Angouleme, fruiting well; one of the trees was slightly affected with leaf blight. He had plenty of Concord and Clinton grapes, also seedling peaches, all bearing fruit; there were also a few plum trees here, but they do not hold their fruit, owing to the attacks of the curculio; when these are kept under by jarring, but little difficulty will be found in raising good crops. All along the lake shore road orchards were very common, and fruit plentiful.

We next visited the farm of Mr. George Miller, where we saw a very fine collection of fruits growing very thriftily. His land extends to the lake, and is well sheltered from cold winds by the surrounding woods. The Lawton blackberry flourished here in perfection, and was very heavily laden with fruit, with no sign of the wood winter-killing; and he had also several hundred grape vines, including Hartford, Concord, Delaware, Clinton, and Catawba, all bearing fruit, the size of which was large, furnishing evidence of the suitability of this locality for grape raising. His late Crawford and George the Fourth peach trees were very thrifty, and bearing good crops; and the same may be said of a large number of seedling peaches on his grounds. He realizes from 50 cents to \$1 per bushel for his seedling peaches, but the better varieties sometimes bring \$2. The nearest markets are Fingal and Port Stanley, both  $4\frac{1}{2}$  miles distant. The grapes when marketed bring six cents to nine cents per pound. His Catawba vines are planted chiefly along the bank on the lake shore, where they are protected by a heavy belt of woodland. Here they ripen well, no frosts troubling them till early in November.

Our next call was at the place of Mr. John Ferguson, one of the few members of our Association in this district. He has five acres which he is planting out with fruit stock, chiefly grapes and strawberries, with the view of furnishing the neighbouring farmers with plants, as well as marketing the fruit. He had a large number of young-grape vines, some few of which were fruiting; their growth was quite luxuriant; the strawberries also promised well.

Passing along we entered the Township of Dunwich, and visited the orchards of the late George McBeth Esq. On the way we passed through a charming avenue several miles in length, which had been left by the late Col. Talbot when the road was first opened. The trees were chiefly beach, mixed with maple and basswood, and exhibited the most luxuriant growth and lovely forms we have ever seen. On arrival at Mr. McBeth's place, we found a magnificent apple orchard, covering some 33 acres in all, and embracing many varieties. The St. Lawrence had been planted largely, and was fruiting well, but the fruit in most instances was badly spotted, and sometimes cracked. We were told that it is not usually so spotted, this season being an exceptional one in that respect. Specimens furnished later in the season to one of your committee from this orchard were very fine, and of excellent flavour. His Poughkeepsie Russets were very good, and the same may be said of the Red Astrachan, (now nearly over) Bourassa, and Tallman's Sweet. The Baldwin succeeds admirably, is perfectly free from spots, large, and handsome. The few peaches we saw here were rather indifferent, but cherries were growing luxuriantly, and we were informed that two varieties of English cherries, a white one and a red one, bear abundantly every season, but the birds are so numerous that they take them all. There are some trees of the Summer Bonchretien pear on an adjoining farm, which have grown to a very large size, and bear well.

The land on each side of Talbot street west, between Burwell's Corner and Fingal, is much less undulating than the districts over which we had previously passed, and the heavy clay soil appeared cold and damp. Here and there we found some of the more intelligent farmers alive to the importance of draining, and no doubt much will yet be done in this way towards improvement in that section.

At Fingal, we met with Mr. Glasgow, of the firm of McPherson, Glasgow & Co., who grows fruit largely. The Snow Apple, Spy, Baldwin, and Greening, were all spoken favourably of. Besides the apple orchards, Mr. Glasgow has a few pear trees, which bear very well, but occasionally suffer from blight. Plums grow well here, but there is the same complaint as elsewhere about the fruit dropping when partly grown, from the attacks of curculio. Peaches usually yield fair crops; they bore well last year and this year, but do not succeed every season. Mr. G. informed us that for many years the large white English gooseberries,

(probably Whitesmith) yielded well with him, and were free from mildew; but about two years since the gooseberry sawflies became plentiful, and since then the foliage has been so destroyed that where the bushes have not been killed outright the fruit has been worthless.

On the road between Fingal and St. Thomas, we passed many orchards, chiefly old ones; but from the appearance of the trees and character of the soil, we deem this section less favourable for fruit culture than most of the other portions we have visited.

In St. Thomas we observed an unusual number of fruit trees in the gardens surrounding the dwellings, among others some peach trees with full crops. We called upon Mr. George T. Claris, who has a very fine and well kept garden, where we saw some good specimens of apples, pears, plums, and grapes; and also inspected the grounds of Mr. Ellis, where we saw some Tokalon grapes, and good pears and apples. In the garden of our good friend Mr. Laing, we found some well grown grapes, principally Delaware and Concord.

The time at our disposal for this visit to the Lake Shore district of Elgin was not at all sufficient to admit of a thorough inspection of its whole length; still we believe that in our route we have gone over some of the best districts which that county embraces. We examined a stretch of nearly 20 miles of the frontier, and are fully satisfied that much of it is admirably adapted both by soil and climate for fruit culture. We feel sure that if the farmers would pay a little more attention to cultivating and manuring their orchards, that it would be to their advantage, rewarding their endeavours by better crops of finer fruit. We regretted to see the cultivation of pears so much neglected. Plums also could be produced in abundance, where they are now scarcely known, by giving a little attention to the curculio. We would also urge upon the farmers of these favoured regions the advisability of their paying a little more attention to small fruits, which at present, with the exception of a few strawberries, are almost entirely ignored. Our finer raspberries would probably succeed well in many of the locations we have referred to, and these, with currants, gooseberries, and blackberries, all of which could be raised with but little trouble—would add very much to home comforts and attractions—besides being conducive to health.

On our return to London, we visited the extensive fruit farm of Mr. W. Saunders, covering about 40 acres; and although planted but two or three years since, we found the young trees making good growth. We were pleased to hear of another large fruit orchard being planted in this district, that of Dr. W. Woodruff, situated about four miles from London. Already about 600 trees have been planted in it, mainly pears, plums, and cherries, most of which are doing well. Should these enterprising efforts prove successful, London will shortly become an important fruit centre.

D. W. BEADLE,  
WM. SAUNDERS,  
A. B. BENNETT.

#### REPORT ON THE TREE, PLANTS AND VINE DISTRIBUTED BY THE ASSOCIATION TO ITS MEMBERS.

**BRANT.**—Ten replies have been received from this county. The pear tree in every instance is living, and the raspberry and blackberry in all but one. Three have lost their vine of the Eumelan grape, in two instances it suffered from mildew, in one it was winter-killed, but with the remainder it has done well. Some gave it winter protection and others did not.

**BRUCE**—But one reply has been sent in. The pear tree is living, but not the berry plants. The Eumelan was covered in winter but perished.

**DURHAM.**—One reply—All living.

**ELGIN.**—One reply. The pear and blackberry are living, but not the raspberry. Nothing concerning the Eumelan.

**FRONTENAC.**—Only one reply. The pear tree, and blackberry, and raspberry are doing well, the Eumelan has made a good growth, did not mildew, was not injured by the winter, and was not protected.

**GLENGARRY.**—One reply. Pear and Raspberry living, blackberry dead.

**GREY.**—Four replies. The pear tree is living in all, one blackberry and one raspberry dead, the Eumelan made a good growth, did not mildew, was protected in winter.



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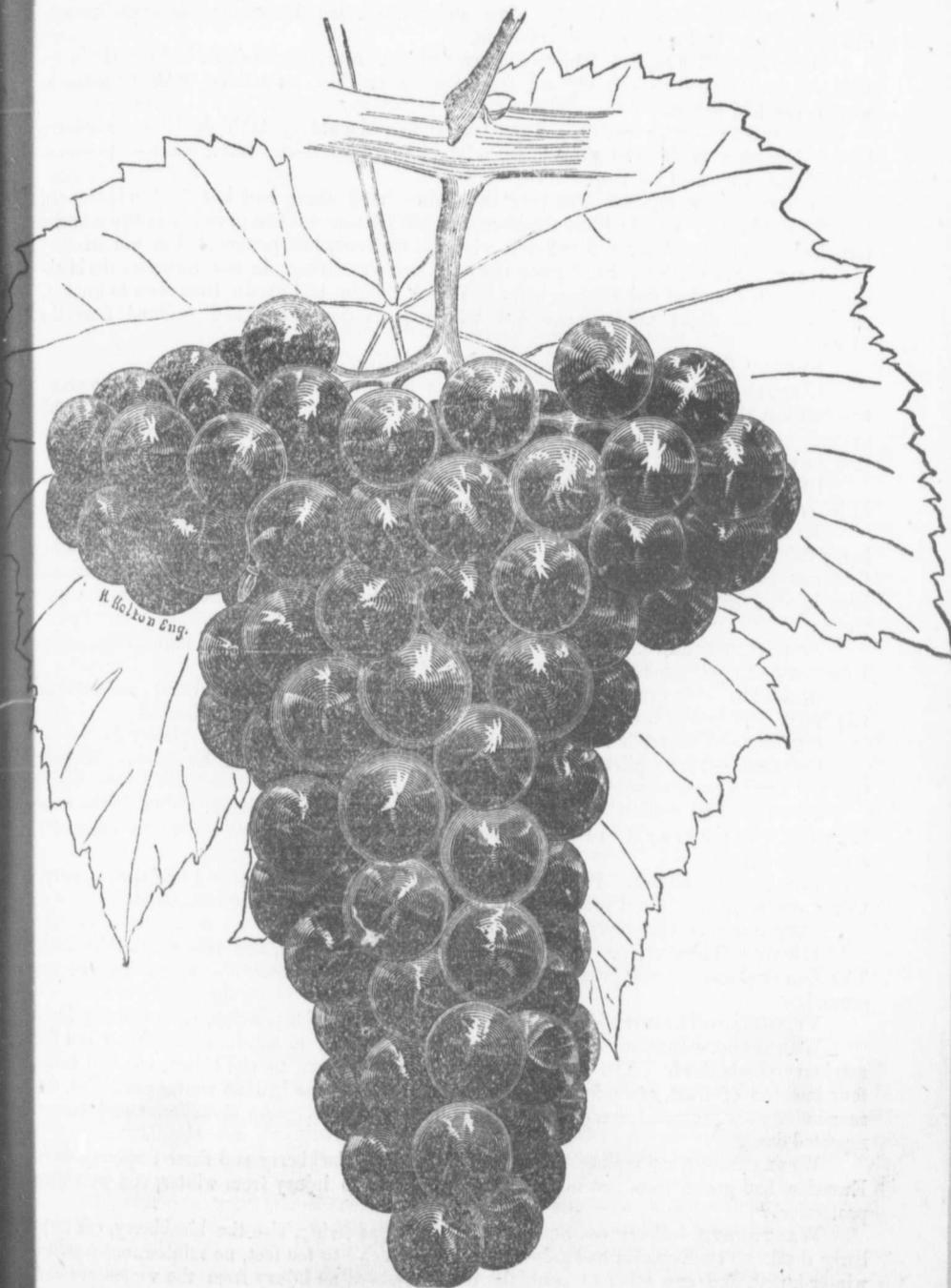
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THE EUMELAN GRAPE

**HALDIMAND.**—Only one reply. Tree and plants living, Eumelan made a small growth, did not mildew, had some winter protection.

**HALTON.**—Five replies. Pear tree living, two blackberry plants dead, and one raspberry. Eumelan made good growth, ripened fruit September 15th, no mildew, were protected in winter, one had lost it.

**GRENVILLE.**—Two replies. Pear tree living, blackberry both dead, one raspberry living. Eumelan made good growth, no mildew, not injured in winter, one was protected. One Eumelan ripened its fruit 4th September.

**HURON.**—Nine replies. The pear tree living in all, three had lost the blackberry and two the raspberry. One had lost the Eumelan. With others it had grown from two to twelve feet, had not mildewed nor suffered from winter. One only had protected it in winter.

**KENT.**—Six replies. In all cases the pear tree was living; in two instances the blackberry had died, and in two the raspberry. The Eumelan had grown from two to five feet, and had some slight mildew, one had winter protection, none had suffered from the winter.

**LEEDS.**—One reply. Pear tree and plants all alive.

**LINCOLN.**—Fourteen replies. In only one instance had the pear tree failed to grow; two had lost their blackberry, and three their raspberry plant. The Eumelan had made full growth, no mildew, one had been injured by the winter, and but one had given any protection in winter.

**LENNOX and ADDINGTON.**—One reply. Pear tree living, berry plants dead. Eumelan killed to the ground, yet grew five feet this summer, had slight winter protection.

**MIDDLESEX.**—Twenty replies. In all the pear is reported living; two report the blackberry dead, and three had lost the raspberry. The Eumelan had made various growths, from one to twenty-five feet, and one had borne fruit; none had shown any mildew, nor been injured by the winter, and ten had covered the vine with some slight winter protection.

**NORTHUMBERLAND.**—But one reply. The pear tree and plants were living. The Eumelan had made good growth, no mildew, was protected in winter.

**NORFOLK.**—Two replies. Pear tree living, one had lost the blackberry, and both the raspberry. They had become members since the Eumelan had been distributed.

**OXFORD.**—Two replies. Pear tree alive, one blackberry, and one raspberry dead.

**ONTARIO.**—Five replies from members who had not received the Eumelan. The pear tree and berry plants were all living.

**PERTH.**—Two replies. The pear tree and berry plants were living. One had lost the Eumelan, with the other it had shown no signs of mildew, had passed the winter safely with a slight covering.

**PEEL.**—Four replies. Pear tree living, two lost the blackberry, and one the raspberry. One Eumelan died, the rest grew well, no mildew, were slightly protected in winter.

**PETERBORO'.**—One reply. Pear tree and plants all living.

**SIMCOE.**—Three replies. Pear tree living, one blackberry, and two raspberries dead. The Eumelan made good growth, no mildew, no injury in winter, was merely laid on the ground.

**VICTORIA.**—Three replies. The pear and blackberry plants living, one raspberry dead.

**WATERLOO.**—Sixteen replies. The pear tree living in all, four blackberry and the raspberry plants dead. The Eumelan had grown from two to eight feet, one had borne four bunches of fruit, one mildew, no injury from winter, one had no winter protection, the remainder were protected, some with straw, and some with evergreen branches. One Eumelan reported dead.

**WELLAND.**—Nine replies. Pear tree living, two blackberry and three raspberry dead. Eumelan had grown from two to four feet, no mildew, no injury from winter, and no winter protection.

**WENTWORTH.**—Seventeen replies. The pear tree living, also the blackberry, one raspberry dead. The Eumelan had grown from "not much" to ten feet, no mildew, one reported winter-killed, and one other as dead, the others showed no injury from the winter nor any mildew, four were not covered, most of the others reported to have had slight winter protection.

**WELLINGTON.**—Three replies. The pear, raspberry and blackberry all living.

One Eumelan on winter.

**HASTINGS.**—One raspberry.

**LAMBTON.**—Berry plants report bunches of grapes, the others a slight

**YORK.**—Nine dead. One Eumelan by the winter, and

*To the Fruit Grower*

GENTLEMEN,—fruit-culture, through climate of Canada, but of late, since ex has been greatly st surface of the cour realize that even he one's own vine, and pending from it; a nature and enjoy th of the vine; there is freshing combination heat of summer; an whose richness, flavo fruit season till spri

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We cannot do l the greatest perfectio exports. Already ou Europe, that the dem our exports increased The apple is mer three references are n like apples of gold, i this refers to the appl translators have thu fruit.

The apple tree is

One Eumelan only reported, this grew eight feet, showed no mildew, was protected in winter.

HASTINGS.—Seven replies. In all the pear tree and plants were reported living, except one raspberry.

LAMBTON.—Twenty-three replies. The pear tree living, three blackberry and six raspberry plants reported dead. Eumelan growth varying from two to five feet, one bore two bunches of grapes, none suffered from mildew, none from the winter, four had no protection, the others a slight covering.

YORK.—Nine replies. The pear tree living, three raspberry plants and one blackberry dead. One Eumelan reported, had no winter protection, made good growth, was not injured by the winter, and was free from mildew.

## FRUITS AND FRUIT-CULTURE.

BY W. SAUNDERS, LONDON, ONTARIO.

*To the Fruit Growers' Association of Ontario :*

GENTLEMEN,—It is very pleasing to note the rapidly growing interest manifested in fruit-culture, throughout the Province. But a few years since, it was generally held, that the climate of Canada, was quite unsuited to the growth and perfection of many of the finer fruits, but of late, since experiment has shown to some extent the falsity of this view, fruit-culture has been greatly stimulated; and now orchards, vineries, and small fruit patches, dot the surface of the country, at least all over this western section; and people are beginning to realize that even here, it is quite within the reach of all, to sit in summer under the shade of one's own vine, and while enjoying the cool shelter which it affords, admire the rich clusters pending from it; and before the golden autumn has gone, to gather these refreshing gifts of nature and enjoy their sweetness. We need not, however, limit our remarks to the juicy fruit of the vine; there is the rich and melting pear, the fragrant sweetness of the plum, the refreshing combination of acid, and sweet in the strawberry and raspberry, so agreeable in the heat of summer; and last, but by no means least, the numerous varieties of beautiful apples, whose richness, flavour, and long keeping qualities, enable us to prolong the pleasures of the fruit season till spring.

It would, perhaps, be interesting to look back some few centuries, and see how our forefathers were supplied with those good things; may be it will provoke in our hearts a spirit of gratitude to the Great Giver of all good, to note how much more highly favoured we are than they. With this purpose in view, it will, we think be best to take up separately some of the more important fruits, and briefly trace the history of their progress, up to their present state of perfection; and in doing so we shall draw freely from material contained in the standard works on fruits, particularly from Warder's "American Pomology," and that elaborate and exhaustive volume, the last edition of Downing's "Fruits and Fruit Trees of America." We make this acknowledgement here to avoid repetition in the text.

### THE APPLE.

We cannot do better than begin with the apple, a fruit which our climate produces in the greatest perfection, and which promises before long to hold an important place among our exports. Already our Canadian apples have such an excellent reputation in the markets of Europe, that the demand far exceeds the supply, and would probably continue to do so, were our exports increased two-fold.

The apple is mentioned several times in the Holy Scriptures; in the "Song of Solomon" three references are made to it, and there is one also in "Proverbs," "a word fitly spoken is like apples of gold, in pictures of silver." It is much doubted by commentators, whether this refers to the apple as we have it, and it is more commonly held, that the word which our translators have thus rendered, refers to the citron, orange, or some other subtropical fruit.

The apple tree is a native of Europe, and the fruit was well known to the Romans. Pliny

refers to it in his writings, and talks of the improvement of the wild sorts by grafting. He speaks of 29 kinds, as then cultivated in Italy—this was about the beginning of the Christian era—subsequent progress, however, in the improvement of this fruit, led to the discarding of the varieties mentioned by Pliny, better ones being substituted, and nothing is known now of any of the sorts then so highly extolled.

The apple is probably a native of England, as well as of other parts of the continent of Europe; for history tells us, that in the year 973, King Edgar, when fatigued with the labours of the chase, rested under a wild apple tree. In the 16th year of Henry the VIII, Pippins were introduced into England, by Lord Masehal, who planted them at Plumstead, in Sussex. Soon after this the celebrated English Golden Pippin originated at Perham Park, in Sussex, and its cultivation rapidly spread. The Ribston Pippin had its origin also about that time, and was a native of Ribston Park, Yorkshire, the original tree having been raised from the seed of a Pippin brought from France.

At a somewhat later period, 1597, John Gerard published his "Lessons of Plants," in an extensive folio. In reference to apples, he says:—"The fruit of apples do differ in greatness, forme, colour, and taste, some covered with red skin, others yellow or greene; varying infinitely according to soil, and climate. Some very greate, some very little, and many of middle sort; some are sweet of taste, or something soure, most be of middle taste between sweet and soure; the which to distinguish I think it impossible, notwithstanding I hear of one who intendeth to write a peculiar volume of apples, and the use of them." This author was somewhat of an enthusiast in his department, and evidently appreciated the value of fruits, and thus urges on their culture. "Gentlemen that have land and living, put forward, graft, set, plant, and nourish up trees in every corner of your grounds; the labour is small, the cost is nothing, the commoditie is great, yourselves shall have plentie, the poor shall have somewhat in time of want to relieve their necessities, and God shall reward your good mind and diligence." He also gives us one peculiar use of the apple, which we in modern times appear to have overlooked. "There is," he says, "made an ointment, with the pulp of the apples, and swine's grease, and rose water, which is used to beautify the face, and to take away the roughness of the skin; it is called in shops *pomatium*, of the apples whereof it is made."

In America, most of our finest apples appear to have originated by chance. They have been accidental seedlings, in orchards, gardens, or sometimes even in waste places. In most of such cases, there has, no doubt, been a happy blending of fortunate circumstances, the seed has probably been from a good sort, fertilized by insects, or some other of nature's agents, with pollen from some other good variety, and in the resulting seedling, there has been an excellent combination of the best qualities of both; with the addition of other valuable properties, such as new flavour, and improved keeping qualities. The Esopus Spitzenburgh, probably the highest and richest flavoured of all our apples, and one which takes the lead in European estimation, originated at Esopus, a famous apple district, originally settled by the low Dutch, on the Hudson River, New York. The Rhode Island Greening, as its name suggests, was probably first produced in Rhode Island; although its exact origin is unknown. This excellent variety, is perhaps, more widely disseminated and extensively grown, than any other apple we have, owing mainly, no doubt, to the healthiness and hardiness of the tree, and to the fact of its bearing large and regular crops.

The Baldwin is a native of Massachusetts, while the Northern Spy, originated on the farm of Hermann Chapin, of East Bloomfield, near Rochester, N. Y. Many more might be enumerated in this way, but these examples will suffice. Every now and then, a valuable new seedling makes its appearance in our own country, and from thence its cultivation spreads.

#### THE PEAR.

The pear is also a very ancient fruit. It was common in Egypt, and Greece, so long ago as the earliest times of the Romans, and from Greece, it was transplanted into Italy. Virgil mentions some pears, which he received from Cato. Pliny, in his 15th book, describes the varieties in cultivation in his time as very numerous. "Of all pears," he says, "the Costumine is the most delicate and agreeable." The Falernian Pear, was esteemed for its juice, and the Tiberian, because it was preferred by the Emperor Tiberias. There were "proud pears," so called because they ripened early, and would not keep, and "winter pears," pears for baking as at the present day. None of these old Roman varieties have survived,

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Clapp's Favourite, having been raised from not yet very widely dis

and we might have believed that some of them approached the buttery lusciousness of our modern pears, did not Pliny pithily add, most unfortunately for their reputation; "all pears whatsoever are but a heavy meat, unless they are well boiled or baked."

In portions of Europe; Western Asia, and China, the pear grows wild, in company with the apple, in hedges and waste places. In its wild state, it is one of the most astringent of all fruits, and when eaten seizes the throat, with a most unmerciful grip. The pear tree is not a native of America, but has been brought here by foreign agency. The French Huguenots in their native homes paid much attention to the cultivation and improvement of the pear, and when exiled from their country, they carried with them the seeds of some of their choicest varieties, and planted them around their new homes. When some of these persecuted people were led to cross the ocean, to seek in the new world that religious liberty, which was denied to them in the old; they brought their favourite pear seeds here with them, as is shown by the number of aged trees, in the immediate neighbourhood of their first settlements; particularly on Long Island, and at New Rochelle, also in Michigan, and Illinois, and from thence they were disseminated over other portions of the country.

The pear tree is celebrated for its longevity. There are several in Europe known to be near 400 years old. The Stuveysant pear tree which was destroyed in New York City in 1867, was originally planted by the old Governor of the Dutch colony there, more than 200 years ago, on what was then his farm, but which is now a thickly built portion of the city.

Downing states, that one of the most remarkable pear trees for growth and productiveness in this country, is to be found about ten miles north of Vincennes, in Illinois. It is not believed to be more than 40 years old, but the girth of its trunk, one foot above the ground is twelve feet, and at nine feet from the ground, it is six and a half feet; and its branches extend over an area ninety-four feet in diameter. In 1834 it yielded one hundred and eighty-four bushels of pears, and in 1840, it yielded one hundred and forty bushels. The fruit is tolerably large and of fair flavour.

During the 17th and 18th centuries, many excellent varieties of pears were brought into notice, but the highest points of pear excellence, were not reached until within the last fifty or sixty years, during which period the better sorts have been subjected to a process of continual improvement, by crossing and selection, until now there remains but little to be desired, in relation to the perfection of this fruit. It is undeniably the favourite production of modern times and modern cultivators.

There is one peculiarity in reference to this fruit which should always be borne in mind; that is, that it should never be allowed to ripen fully on the tree, but gathered a week or ten days before maturity, and ripened in the house, as in this way it attains a much higher and finer flavour, as well as a more buttery texture, and rich juiciness. Want of attention to this point, has led some pear growers to speak disparagingly of varieties which are highly deserving.

Many excellent pears have originated in this country, chiefly from chance seedlings, while many others of equal importance have been imported from Europe. The Bartlett, probably now the most popular, and best known of all pears, is an English variety, known at home as Williams' Bonchretien. It originated about 1770 in Berkshire, and was afterwards propagated by a London grower, named Williams. When first introduced into this country, its name was lost, and having been chiefly cultivated and disseminated by Enoch Bartlett, of Dorchester, near Boston, Mass., it became so universally known as the Bartlett pear, that it is impossible to alter it now. The climate of this country suits it admirably, the tree grows well, and the fruit has a finer flavour here, than it has in England.

The Duchess d'Angouleme, is a magnificent dessert pear, very large, sometimes weighing a pound or more, and of fine quality. This is also a European sort, and is said to be a natural seedling found in a forest hedge near Angers.

The Seckel, the standard of excellence among pears, and without doubt the most exquisitely flavoured variety known, is of American birth; and had its origin on the farm of a Mr. Seckel, about four miles from Philadelphia. The original tree is still living, and continues to bear fair crops of fruit.

Clapp's Favourite, a very fine variety recently introduced, is also of American growth, having been raised from seed by the late Thaddeus Clapp, of Dorchester, Mass. Although not yet very widely disseminated, it has been awarded on several occasions the highest

premiums for excellence of quality. It is said to ripen late in August, or early in September, or a week or ten days before the Bartlett. These are given merely as samples, for this portion of the subject is almost inexhaustible, since more than one thousand varieties of pears have been fruited in this country, and many of them have proved to be first class fruits.

The method of dwarfing the pear, by grafting it on the roots of the quince, has greatly stimulated pear culture; for by this method, instead of waiting from five to fifteen years for fruit, the cultivator usually reaps some reward from his labours in the second or third season. Besides, the small bush-like form of the tree adapts it to the small garden of the amateur, where the tall-growing standard would be inadmissible. It is said by some that the trees thus dwarfed are short lived, frequently dying out after fifteen or twenty years, but experience seems to indicate that if properly cared for, and not allowed to overbear, they will endure for a very much longer period. In this country there are many dwarf pear trees upwards of thirty years old, and in Europe there are some as old as fifty years.

#### THE PLUM.

The finer varieties of plums are nearly all of recent origin, most of the best American sorts having been produced within the last fifty years, but some few of the best European sorts date back much further than that. The Green Gage for example, a well-known fruit of very superior flavour, was brought into notice some time during the last century. An English family of the name of Gage obtained a number of fruit trees among the monks of Chartreuse, near Paris, France, and among them was a tree of this plum, which having lost its name, was called by the gardener Green Gage.

Among the finer American sorts the following are deserving of special attention. The Washington, which originated about fifty years since on Delaney's farm, on the east side of the Bowery, in New York city; the Lombard, a seedling raised by Judge Platt, of Whitesborough, near New York, which is probably the most prolific and profitable variety grown; Smith's Orleans, raised by a Mr. Smith, of Long Island; the Imperial Gage, a seedling of the Green Gage, grown at Prince's nursery, Flushing, New York; the Jefferson, raised by the late Judge Buel, of New York, and the McLaughlin, which originated with Mr. James McLaughlin, of Bangor, Maine.

Nearly all the different sorts of cultivated plums are believed by the best botanists to have sprung originally from the sloe. In this country we have several species of wild plums, which would, no doubt, if properly experimented with, be capable of great improvement; but thus far little or nothing has been done in that direction. The perfect hardiness and adaptability of the European species to the varied climates to be found throughout the United States and Canada, leaves little to be desired on this head.

#### THE CHERRY.

The cherry is a handsome tree, of luxuriant growth, and comes early into bearing. Its fruit is exceedingly pleasant and refreshing, and coming in as it does in the hottest parts of the summer, before any of the other larger fruits mature, it is deservedly held in high esteem.

The cultivated cherry comes originally from Asia; a Roman general named Lucullus, after a victorious expedition into Pontus, has the reputation of having brought it to Italy from Cerasus, a town in the conquered province, in the year 69 B. C. One hundred years after this, according to Pliny, the Romans had eight varieties in cultivation, and they were soon afterwards carried to all parts of Europe. The seeds of this species of cherry were brought to America very early after its settlement, both from England and Holland. There are two classes of cherries grown, one comprising the "Hearts" and "Bigarreau's," characterized by the firm flesh of the fruit, the large and somewhat drooping nature of the foliage, and the upright and vigorous growth of the trees. The other includes the "Dukes" and "Morello's," which are weaker growing, with slender sometimes drooping branches, smaller foliage, and fruit more acid, tender and juicy. To the latter class belongs the common cherry cultivated here, known also under the names of the Kentish Cherry and Early Richmond, a variety unsurpassed in hardiness and fruitfulness, and notwithstanding the comparatively low price at which the fruit is usually sold, is probably the most profitable sort grown. In some parts of Germany it is the custom to plant avenues of cherry trees along the roadside, which,

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Downing in this country, many Ohio, has been the kinds, has raised fruit cultivated, in addition Purple Guigne, Bl

Although the in the northern portion tolerable certainty. as far as Amherst fully grown. In the present we know but known, we are led for our people.

The peach tree to Italy by the Romans in Britain, as early about 1680. The temperate climates, young. It is new walls. Even at Mc cultivating the peach America are the of highest perfection in finest in the world, a the same place in the does in the sacred sci conferred immortality tree of knowledge, with the fruit of which pr

There is, probably in such abundance as western states, they Thousands of acres are some growers having perhaps, for the public quantities thus thrown by the fruit canning to Baltimore, Maryland then in full working of 200 hands, and the da portion of the employe use of machinery for tl

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while affording ornament and shade, furnish the poor and the traveller with pleasant refreshment during one of the hottest portions of the year. This is particularly the case in the northern parts of Germany, where some of these avenues are many miles in length. Mr. Loudon, in his "Arboretum," says: These avenues are planted by desire of the respective governments, and that all persons are allowed to partake of the cherries, on condition of not injuring the trees; but the main crop, when ripe, is gathered by the respective proprietors of the land. When it is desired to preserve the fruit of any particular tree, a wisp of straw is tied in a conspicuous part to one of the branches. The highest respect is paid by the peasants and travellers to these appropriating marks, and the fruit remains untouched, and there is something as highly gratifying in this as in the humane feeling displayed by the Princes of the different countries in causing the trees to be planted, showing that kind treatment produce a corresponding return.

Downing enumerates one hundred and eighty-seven varieties of cherries as cultivated in this country, many of which are of American origin. Professor J. P. Kirtland, of Cleveland, Ohio, has been the chief experimenter in this direction, and by carefully crossing the different kinds, has raised from the seed thus influenced many excellent sorts. Among those chiefly cultivated, in addition to the common cherry, the following hold an important place: Early Purple Guigne, Black Tartarian, Elton, Black Heart, Governor Wood and May Duke.

#### THE PEACH.

Although the culture of this comparatively tender fruit does not promise much success in the northern portions of our Province, yet on some of our lake shores it may be grown with tolerable certainty. Along the lake shore district, in the county of Elgin, and stretching up as far as Amherstburgh, and again along Lake Huron near Sarnia, this fruit has been successfully grown. In the latter locality several large peach orchards have lately been planted. At present we know but little of the fruit capacities of these extensive districts, but from what is known, we are led to believe that they will eventually furnish an abundant supply of peaches for our people.

The peach tree is a native of Persia and China, and was brought from the former country to Italy by the Romans, in the reign of the Emperor Claudius. It was cultivated considerably in Britain, as early as 1550, and was introduced into this country by the early settlers, about 1680. The tree is more tender and short-lived than most of the other fruits grown in temperate climates, but it is very easily propagated, grows rapidly, and bears fruit while quite young. It is never raised in England, and not generally in France, excepting against walls. Even at Montreuil, near Paris, a village whose population is mainly employed in cultivating the peach for market, it is grown entirely upon white-washed walls. China and America are the only temperate countries where the peach and apple both attain their highest perfection in the open orchard. The peaches of Pekin are celebrated as being the finest in the world, and of double the usual size. It is said that the peach tree holds very much the same place in the ancient Chinese writings, that the tree of knowledge of good and evil does in the sacred scriptures. The traditions of a peach tree, the fruit of which, when eaten, conferred immortality, and which bore only once in a thousand years; and of another peach tree of knowledge, which existed in the most remote period, guarded by a hundred demons, the fruit of which produced death, are distinctly preserved in some of their early writings.

There is, probably, at the present time, no country in the world where the peach is grown in such abundance as in the United States. In all the middle, southern, and some of the western states, they grow and produce the heaviest crops, in every garden and orchard. Thousands of acres are devoted to this crop for the supply of the markets of the large cities, some growers having orchards varying from 10,000 to 100,000 trees. It would be difficult, perhaps, for the public to consume, in the short time that the fruit will keep, the enormous quantities thus thrown suddenly upon the market, were it not for the immense amounts used by the fruit canning establishments in the various cities of the Union. During a recent visit to Baltimore, Maryland, we enjoyed the privilege of going through one of the largest of these, then in full working order, it being the height of the peach season. The firm employed about 200 hands, and the daily consumption of peaches was fifteen hundred bushels. A large proportion of the employees were engaged in peeling the fruit, its soft character preventing the use of machinery for this purpose, and it was amusing to watch the dexterity shown by old

hands in this department. Others were engaged in filling the cans, and more in securing them, every can being thoroughly tested before shipment for market. The air being entirely excluded, the fruit is preserved for an unlimited time without change, which allows of its being forwarded to all parts of the civilized world.

Farther south, a large business is done in drying peaches, which are merely dipped in boiling water for a few minutes, then halved with the skins on; and after the stones are taken out, dried in the sun, exposed on boards or frames.

In former years, the Niagara district was famed for its peaches, indeed, as far west as Hamilton, excellent crops were grown, but of late the yield has been so uncertain as to divert the attention of most fruit growers to other and more profitable channels of enterprise. The varieties most commonly known in the markets, are the Early and Late Crawford, both American seedlings, which originated with Mr. Wm. Crawford, of Middleton, New Jersey. Hale's Early is a very promising peach for Canadian cultivation, as the tree is more hardy than most varieties, and the fruit matures early.

#### THE NECTARINE.

The nectarine is merely an accidental variety of the peach, with a smooth skin. The fruit is usually smaller, but it is one of the most delicate and exquisite of all productions for the dessert; but it is particularly liable to destruction from the curculio, and hence is very little cultivated. There are many different sorts of nectarines, among which the Victoria, a seedling of Thomas Rivers, Esq., of England, holds the highest rank.

#### THE APRICOT.

This is also a very delicious dessert fruit, ripening after cherries, and before plums and peaches. It also is very subject to insect attacks, and perhaps, partly on this account, has not received from fruit growers that attention which it is deserving of. The Breda, Turkey, Moorpark, and Early Golden, are prominent among the varieties well spoken of.

#### THE GRAPE.

The grape next claims attention, the history of which is almost as old as that of man. Growing in its highest perfection in Syria and Persia, its luscious fruit, and the tempting beverage which its fermented juice affords, recommended it to the especial care of the earliest tillers of the soil; and vineyards were extensively planted long before orchards or collections of other fruit trees were at all common. It is early mentioned in the Scriptures, and the evil of excessive wine drinking was clearly shown in the case of Noah, whose indiscretion in this respect brought shame upon himself and a curse upon his son Ham. It is altogether probable that the native home of the vine is Asia, and that as civilization advanced westward, this plant accompanied it, first to Egypt, then to Greece and Sicily, and gradually to Italy, Spain, France, and Britain, to which latter country the Romans carried it about 200 years after Christ.

All the cultivated varieties of the vine in Europe have descended from a common stock; all being derived from a species called *Vitis Vinifera*, or the wine grape of Europe. Some of the early colonists brought with them the seeds of their favourite European grapes, and planted them in this country, but the stock from this parentage has not proved itself adapted to the climates of America excepting on the Pacific shores. They have been found either too tender, or so subject to mildew, as to be more trouble than profit, hence their culture has been restricted almost entirely to glass covered buildings, where the temperature, and degree of moisture, is under control. Our own native American varieties are quite distinct from the European sorts. We have four of them in all, one of which need not be referred to as it is confined to the southern portions of the country. The three native northern vines are the fox grape, *Vitis labrusca*; the frost grape, *Vitis cordifolia*, and the Summer grape, *Vitis æstivalis*. These are usually more vigorous in their growth, with larger and less indented foliage, than the wine grape of Europe; and in their wild condition, the fruit has a foxy flavour and odour, or else great acidity, with more or less hardness of pulp; but by judicious crossing and cultivation, these peculiarities are fast disappearing, and already we possess some fine varieties suitable for dessert, and others more adapted for wine making. Most of these

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possess superior hardiness and productiveness, with comparative earliness of ripening; in this latter respect, however, we look for still further improvement.

The quantity of land under culture of the vine in the wine districts of Europe, is immense; in France alone, there are more than five millions of acres; and in Europe, altogether more than twelve millions; with an average production of two hundred and fifty gallons of wine per acre; producing in all, a yearly average of 3,107 millions of gallons of wine. This interest has also been largely developed in California, where many millions of gallons are now yearly made.

The vine is noted for its longevity, there are many now in Europe, supposed to be from 200 to 400 years old, and some thought to be older. The Hampton court vine is the most famous in England. It was planted in 1769, and now covers over 2,200 square feet, having a stem 30 inches in circumference at three feet from the ground. It is a Black Hamburgh vine, and bears an average annual crop of about a ton of grapes. Two thousand five hundred large bunches have been gathered from it, in a single season; its main cane is 120 feet long, and it entirely covers a roof seventy feet long and thirty feet wide.

Since the Black Hamburgh and its relatives can only be grown in this country under glass, and as this is too troublesome and expensive to become very general, the large majority of fruit growers must content themselves with such grapes as will ripen on the open trellis. The garden culture of the hardy grapes, is by no means difficult, the vines will grow under almost any system of training, or under no system at all. They will bear pruning and clipping to an unnatural degree, and also thrive under the equally unreasonable "let alone" system, allowing growth to proceed how and where it likes; but if a vine is to produce large and regular crops, for a succession of many years, and the fruit brought to proper perfection, some attention must be paid to its habits and wants.

#### PRUNING AND TRAINING.

The various systems of training and pruning recommended by different authors who have written on this subject, would occupy too much space to explain here; it is, however, necessary to remark, that since the fruit is borne chiefly on wood of the previous year's growth, enough of this should always be left to ensure a fair crop; while overbearing tends to weaken the vine and shorten its term of life. The following varieties are among the best for table use, and most of them are hardy and will ripen well in all but the northern parts of our Province: Deleware, Concord, Hartford Prolific, Creveling, Othello, Canada, Salem, Wilder, Adirondac, and Israella.

#### ON HYBRIDIZING.

Within the past few years, increased attention has been paid to the crossing of some of our native grapes, or their improved descendants, with the finer European sorts, with the hope of producing hardy seedlings, bearing fruit of increased size and better quality. Some of the grapes just enumerated, have been produced in that way, for example, the Othello and Canada, by Mr. Charles Arnold, of Paris, Ontario, and the Salem and Wilder, by Mr. Rogers, of Massachusetts, showing that a measure of success has attended these efforts; and it is believed that with the increased number of labourers now actively engaged in this experimental field, many more good results will shortly be obtained.

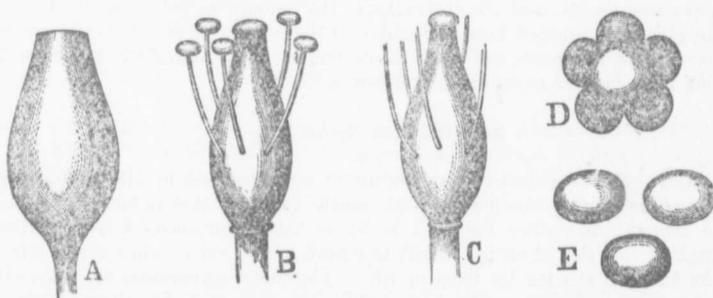
It might, perhaps, be well here to enter a little into detail, in explaining this interesting method of producing new varieties. Linnæus was the first to promulgate the doctrine of the sexual characters of plants. This created quite a revolution in Botany, and no doubt attracted the attention of Lord Bacon, whose great mind seemed to have had glimpses into every dark corner of human knowledge, for he ventured to predict that there might be such a thing as crossing the breeds of plants, when he said, "the compounding or mixture of kinds in plants is not found out, which, if it were, is more at command than that of living creatures, wherefore it were one of the most notable discoveries touching plants to find it out, for so you may have great variety of new fruits and flowers yet unknown." About a century later, in 1718, Bradley wrote, and he is believed to be the first author who speaks of the accomplishment of cross-breeding; which he describes as having been effected, by bringing together the branches of different trees when in blossom. This was an exceedingly crude and rough manner of

proceeding, which the gardeners of Holland and the Netherlands, soon improved upon, and they were the first to produce results of practical value, from this method of experimenting.

Within later times, the names of Mr. Knight and Mr. Rivers of England; Professor Van Mons, of Belgium, and Professor Kirtland of Cleveland, Ohio, stand out conspicuously among those who have done most to foster and advance this valuable art in its relation to fruit culture; while many others have been actively engaged in producing new flowers and vegetables by the same process.

Since the grape offers one of the most promising fields for the labours of the hybridizer, we shall proceed to describe the process as carried on in working on that fruit. The blossoms of the grape appear in long clusters, and are not at all conspicuous. The corolla or leafy portion of the flower, which in many plants is painted in such gorgeous hues, is here of a pale green, and instead of opening at the top, and expanding as in most other flowers, this opens at the sides below, and its several petals remain united at the top, and as the stamens lengthen, the whole corolla is pushed off in one piece, resembling in shape a little cap, which falls to the ground. Then the sexual organs are exposed to view, and were it not that the anthers which crown the stamens are of a bright yellow color, and much protruded, it would be difficult without a close examination to note the flowering process at all. The unexpanded flower is much like a little bud, and the whole bunch a large cluster of such.

FIG. 1.



In the accompanying figure, A represents one of the unopened flowers on an enlarged scale. As it approaches maturity, its covering is gradually ruptured and turns a little upwards. In a short time the cap is raised higher until it sits loosely over the tops of the stamens, and then soon falls to the ground, and appears as represented at D, when the stamens released from the bond which kept them together, separate with an elastic spring, and appear as shown at B. The body of B is the female organ of the plant, and is called the pistil; the lower portion is called the ovary, and contains the ovules, or bodies destined to become seeds, the summit, or crowning top, is called the stigma. The stamens springing from and surrounding the pistil, are the male organs and number five; the knobs on their tops are called anthers, and contain the fertilizing pollen. This pollen, when mature, causes the anthers to open, and their contents consisting of almost innumerable grains, are shed gradually. The pollen grains are shown at E immensely enlarged. When the stigma is fit for fertilization, it exudes a gummy fluid, to which the pollen grains readily adhere, and the stamens with their anthers so encircle it, that no matter how the flower may be situated on the bunch, one or more of the anthers will be placed directly over it, so that it can scarcely fail to become fertilized, when pollen grains are continually falling from above and around it; and while insects are ever busy in travelling from flower to flower, and knocking the anthers about the stigma with their legs and wings. After the pollen grain has become attached to the stigma, it begins to absorb some of the moisture it finds there; and a process of growth or germination begins. The pollen sends out a minute fibre or thread, which penetrates the substance of the stigma, and then goes on lengthening downwards, until it reaches the embryo seed contained in the ovarian cavity which it enters and fertilizes.

This is what occurs in the ordinary course of nature, but when it is desired to produce an artificial cross, the male organs of the flower must be removed before the pollen is ready to be shed, and to do this we must begin early. A pair of fine pointed forceps, a magnifying

lens, a steady hand, and a little patience, comprise all that is necessary to be ready to open; and the main ones to be taken into consideration are the points of view, and the manner of doing this, great care must be taken, and with the appearance shown thus prepared, the application of the dust used on account of the grains which will be used. If the buds are second one a day, the bunch is left until some insect has its legs or wings on it, the results are

Suppose it is a tender, Black Heart, the Clinton, and for the female; for constitution, mainly more influenced perhaps before the time the expanded flower part of the vine is charged, which will be appreciable quantity of light. It will be French operators of camel hair pencil chances of success, about a fortnight, pollen. Then the sunshine and air; vent its being dem

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lens, a steady hand, a camel-hair pencil, and a few paper bags, with suitable string for tying, comprise all the requisites in the way of tools. Selecting then a bunch of flower buds nearly ready to open; first pull off all the immature specimens, and reduce the number of the remaining ones to two or three dozen, leaving the plumpest looking on the bunch. Then, with the points of the forceps, seize the covering eap by its side and carefully remove it; and in doing this, great care is necessary to avoid bruising the pistil, which would cause it to turn black and wither. The anthers must then be taken off, when the flower will present the appearance shown at C in the figure. As soon as the whole of the flower buds have been thus prepared, the bunch should be tied up in a thin paper bag; and left until fit for the application of the pollen, say from one to two days, depending on the weather. Paper is used on account of the closeness of its texture, for the finest muslin would allow the pollen grains which might be blowing about in the surrounding atmosphere, to pass freely through. If the buds are very mature, an application of the pollen may be made immediately, and a second one a day, or two after, so as to increase the chances of success, but, in no case, must the bunch be left for a moment without being covered by the bag, for fear that in the interval some insect may pay a visit and leave behind it a deposit of pollen, carried unwittingly on its legs or wings from some other expanded grape flowers; such an accident would render all the results uncertain.

Suppose it is desired to cross the hardy but acid Clinton with the rich and sweet, but tender, Black Hamburgh, so as to endeavour to raise seedlings, having the hardy character of the Clinton, and bearing fruit of a higher quality. We should in such a case take the Clinton for the female; for it is believed by experimentalists that the seedling in plants, inherits its constitution, mainly from the mother, while in such matters as quality and flavour of fruit, it is more influenced by the other parent. The Black Hamburgh will flower as soon as or perhaps before the time the Clinton flower buds are ready, then the pollen may be collected from the expanded flowers, by holding a piece of blue paper close under the bunch and giving that part of the vine a sudden jar with the hand. A small cloud of pollen will at once be discharged, which will settle on the paper below, and by repeating the operation a few times, an appreciable quantity may be obtained, which should be carefully folded up and excluded from the light. It will now be ready for use at any time, and may be kept for weeks; indeed some French operators claim that they have succeeded in fertilizing with pollen kept over a year. When it is wished to apply the powder, remove the paper bag and touch the stigmas with a camel hair pencil dipped into it. In a day or so repeat the application so as to increase the chances of success, after which cover again with the paper bag, which should be kept on for about a fortnight, when, if successful, the fruit will be set and out of danger from extraneous pollen. Then the paper bag may be exchanged for a muslin one, as the growing fruit needs sunshine and air; but the muslin bag should remain over the cluster until it ripens; to prevent its being demolished by birds or thoughtless bipeds.

#### SOWING THE SEED.

When the berries are fully ripe, collect the seeds, and sow them in the fall. The winter will soften the hard shelly covering, and the young plants will appear in spring, and make a good growth of from six to eighteen inches the first year; the second and third years' growth will be much greater, and on the fourth fruit may be expected, the growth and perfection of which the experimenter will watch with great interest, till he knows whether his labours have been crowned with success or otherwise. When operating on the apple or the pear, a much longer time must elapse, generally from eight to fifteen years, before the result is known.

#### ON SELECTION.

Scarcely any of our better varieties of fruit will reproduce themselves from seed, and advantage is taken of this fact by fruit growers when they wish to obtain improved fruit by selection, which is the other method before referred to. Take, for example, a quantity of seeds of the Delaware grape, grown without man's interference to influence them in any way; plant them, and the fruit of the resulting seedlings will vary much, some may be white, others black or purple, or with the rosy hue of the parent, and the differences in quality will be as striking as those of colour. Many will be worthless, others of middle quality, while perhaps one in

twenty, fifty, or a hundred, will in some points be as good, sometimes better, than the parent. The seeds of such latter are sown in turn, and the next generation of plants submitted to the same weeding process, when, if successful, another step in advance is secured, by the production of a variety with additional points of excellence; and thus the work goes on, not by any means with uniform success, but associated often with failures and disappointments.

#### SMALL FRUITS.

So much space has already been occupied, that we shall have to hasten over the small fruits, by grouping them. All our varieties of strawberry, raspberry, and blackberry, have sprung from a few wild sorts, either European or American; these also have been improved by selection and crossing.

#### THE STRAWBERRY.

Of strawberries, which is the first fruit of the season, and most wholesome and delicious, we have many varieties. In old times, the gardeners were supplied with wild vines from the woods. *Tusser*, in his "500 Points of Good Husbandry," points out where the best plants of his time were to be had, and passes the cultivation of them over to feminine hands, as if they were too small a matter for a *man* to employ his time with. He says:

"Wife, into the garden and set me a plot,  
With strawberry roots of the best to be got;  
Such growing abroad, among thorns in the woods,  
Well chosen and picked, prove excellent good."

Things have altered since this was written, and many men now devote their whole energies to strawberry culture, and receive large returns for their labour.

The most productive and profitable among strawberries, is, without doubt, the *Wilson's Albany*, which originated with the late *James Wilson*, of Albany, New York. The plant is very hardy and vigorous, and exceedingly productive. The *Triomphe de Gand* is probably the next best known; it is a Belgian variety, which stands our climate well, and although it is not nearly so productive as the *Wilson*, the fruit is larger and sweeter, and higher flavoured. The *Agriculturist* is a very good strawberry; it was raised by *Seth Boyden*, of Newark, New Jersey, U. S.; it also is productive and hardy. The *Jucunda* is a foreign sort, which has been prominently brought forward by *Mr. Knox*, of Pittsburg, Penn. It does well in some localities, with good soil and high culture, and has a very rich colour and fine flavour; but it is not very generally cultivated. Many more good varieties might be mentioned, for their name is legion. The stimulus which the introduction of these new strawberries has given to the culture of this fruit is astonishing; many tons are now yearly brought to the larger cities and readily disposed of.

#### THE RASPBERRY.

Of all the raspberries in cultivation, the *Brinckle's Orange* stands at the head for flavour. It is an orange yellow berry, of good size, a seedling raised by *Dr. W. D. Brinckle*, of Philadelphia; the canes are rather tender in our climate, and require protection in winter. The *Philadelphia* is among the hardiest of the cultivated sorts, and is immensely productive. It is a red berry, of fair size and flavour, and will probably be for many years the variety for the million, since it flourishes with little care, and needs no winter protection. As our woods and fields become better cultivated, and the supply of wild fruit in a measure cut off, these in all probability will supply their place. There are several other varieties of red and white raspberries which deserve notice, such as the *Franconia*, *Hornet*, *Clarke*, *Red Antwerp*, *Fastolf*, and *Arnold's Orange King*.

#### BLACK CAPS.

The *Black Cap* raspberries are different in their character and mode of propagation from the red and white ones; the fruit is also firmer, with a distinct flavour, of a deep black colour, very juicy, and with a silvery bloom on the surface. The other raspberries are propagated by

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suckers, of which they usually throw up an abundance from about their spreading roots; but these do not sucker at all, but late in the autumn the tips of the canes and their branches become very drooping, and finally reach the ground, and then from the surface of the tip there springs a cluster of rootlets, which strike into the soil and soon form a well rooted plant. The Doolittle and the Mammoth Cluster are the chief varieties grown.

#### THE BLACKBERRY.

The blackberry is as yet but very little cultivated; the most promising varieties at present known are the Kittatinny, Sable Queen, and Wilson's Early. The Lawton is too tender for most sections of our Province.

#### THE SOIL AND ITS PREPARATION.

In the selection of a suitable spot for a fruit garden, the soil is a matter of importance, for if favourable conditions in this respect are not provided, the labour will be greatly increased, and disappointment more frequent. The first requisite is dryness. None of the plants or trees we cultivate for fruit will grow with their roots continually immersed in water, so if the soil is wet it must be drained. It often happens that these retentive soils when drained are the very best for the purpose, and as the labour and expense connected with draining an ordinary sized garden plot is small, a location otherwise suitable need not be rejected on this account. Many fruits thrive well on a light sandy soil, even with little care or manuring, but the growth is usually poor, both in wood and fruit, as compared with similar trees in a richer and stronger soil. A rich deep loam, partly of clay and partly of a sandy character, with an underlying stratum of gravel, or gravelly clay, is perhaps the most desirable for the purpose. The pear and the plum, especially, delight in a strong rich soil, but the apple will grow and thrive on almost any sort of soil. A suitable spot being provided, the next thing is the preparation of the ground, which should be well stirred as deeply as possible. A small piece can be trenched with the spade, to the depth of eighteen or twenty inches, but on a large scale this method is too expensive, and the plough must be relied on. If a good deep furrow, say eight inches, is turned over with an ordinary plough, and a second team follows in the same line, with a subsoil plough, the surface may be thoroughly loosened to the depth of fourteen or fifteen inches, and thus leave it in very good condition for planting.

#### PLANTING AND MULCHING.

Ordinary standard apple trees should be planted about thirty feet apart each way; standard pears and cherries from twenty to twenty-five feet; dwarf pears about ten feet, and plums, peaches, and apricots from sixteen to twenty feet. After planting, trees should be thoroughly mulched, that is, the surface of the ground around them covered with some material which will retain the moisture in the soil, such as manure, chip rubbish, saw-dust, chaff, or litter of any sort, or small stones. These all operate beneficially, by preventing the surface of the ground from becoming dry to any depth, which would cause the young and tender rootlets near the surface to wither; and such material as will decay slowly and enrich the soil would be a benefit in that way also.

Simple as the operation may seem to be, there are many people who do not know how to plant a tree properly; a deep hole is often dug, scarcely large enough to crowd the roots into, and these, when stuffed into this small aperture, have the soil well packed down on them above, and then they are let alone to struggle on as best they can; and where the trees fail to grow, as is very commonly the case, the nurseryman who furnished them gets all the blame. Before planting a tree, its roots should be examined, and if there are any among them injured, or partly broken, they should be cut off back to a sound part, with a sharp knife. A hole should be dug always somewhat larger than the entire circumference of the roots when laid out in a natural position; the roots should then be well spread, and fine soil worked in among the smaller fibres with the hand, so as to prevent their being crowded together. If proper care be taken in this way, the roots will occupy after planting much the same relative position as they did in the nursery rows from which the tree was taken. It should not be planted too deep; it is safe in this respect to give it about the same position in the soil as it has occupied while

growing, or perhaps a little deeper. The hole should be filled with nice surface soil, no manure or any rich compost being allowed to come in contact with the roots; if any such is used it is best placed on the surface after planting. It is not uncommon when planting trees or vines to look up the richest and strongest manure that can be got, and to put plenty of it into the holes around the roots to stimulate their growth; blood and other animal matters are often thus used to the great detriment of the future health and vigour of the plant. The young rootlets do not thrive on such over-feeding, but oftener decay, and the plant or tree is killed by kindness; plainer fare is better, rather place the roots in the poorest kind of sandy soil than immerse them in any such rich material.

#### STAKING.

It is a good idea to stake such trees as are tall or have a heavy top, so as to prevent them swaying too much with the wind, which would disturb their roots.

#### INSECT ENEMIES.

From the commencement of the growth of the tree, and for all time to come, a close watch should be kept for insect enemies; for their name is legion. Often, when a young tree has become nicely established, and made a fair growth, some wandering moth, flits around it, and deposits on the leaves or twigs a hundred or two of eggs, which in a few days become greedy caterpillars, devouring all before them, and if not noticed in time, and destroyed, will make a clean sweep of everything green, which comes in their way. Or, again, a boring beetle, alights on the base of a thrifty tree, and deposits its eggs on the bark, near the ground, where they soon hatch into small grubs, which eat their way through the outer bark, and burrow and excavate, in the living under-bark, stunting the growth, and often destroying the life of the affected tree. Then when fruit begins to come we have the curculio, which destroys our plums, apricots and cherries; and the codling moth, whose progeny burrow into the apple and pear, and arresting the natural growth of the fruit, producing premature ripeness, when it falls untimely to the ground almost worthless.

We have no intention of detailing the various remedies, which have been suggested to combat these foes. Much of interest in this way, has already been given in the reports of the Fruit Growers' Association, and Entomological Society of Ontario; to which we would refer those, who desire further information on such points.

#### UTILITY AND BENEFITS OF FRUIT CULTURE.

The utility of a fruit garden cannot be denied. There is no exercise more healthful and invigorating, or that will give purer pleasure to the mind, than the work there to be engaged in, and the close observer, will continually find objects of interest and beauty, to excite his admiration during the whole period of growth; and what is there more necessary to the healthy action of the mind, as well as the body, than agreeable relaxation of this sort. With what interest the cultivator watches the gradual growth of the objects under his care. What can be more beautiful than the tender budding of the grape, as it unfolds its young and roseate leaves, and to watch the growth from day to day, till the sweet-smelling blossom appears! Can anything be more charming than the apple bloom, with its richly blended tints, and so pure and fragrant; or the waxy bloom on the plum, or grape as these approach maturity; and their tempting fruits hang in bunches, or clusters on the tree, or vine; and here the element of enjoyment is reached, when the fresh fruit is brought upon the table, its beauty delighting the eye, and cultivating the taste, by the fine display of form and colour, as well as furnishing a healthy, refreshing, and delicious dessert. By a wise selection of varieties, even a small garden may be made to yield almost a daily supply, from the middle of June, till November, beginning with strawberries, and ending with the later grapes and pears. There are few, even among the most devoted slaves to business, who have not had day dreams of some distant period, when the seclusion of the office, or the hum of the busy mart, shall be exchanged for the pure free air, and quiet calm of a country home, where under a clear blue sky, and amidst the singing of birds, their last days shall glide pleasantly away. But, alas, these dreams are seldom realized, or if the goal is reached, the end is disappointment, for the mind so long and incessantly

corroded by the care and after a brief Still there is no doubt ever since man came in holy writ, we read various forms of sea, and their inn to the teeming host the microscopic plants forms on the stage in his own image garden, "so the Lord distinct from creation food," and man in and keeping this commandments, and the Devil occupation now, and

The prizes offered for plum curculio, during the year have competed for

Mr. Samuel C. 1320. There being Directors, who decided 2000.

These 1320 certificates, on the 30th of time, with the following

May 30th.  
" 31st.  
June 1st.  
" 2nd.  
" 3rd.  
" 5th.  
" 6th.  
" 7th.  
" 8th.  
" 9th.  
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Where the space account of bad weather made their appearance part of the season, till 56 the first time of Smith's Orleans and Lombard and Prince young trees in Mr. C. entirely, having no space

corroded by the cares of life, is unfitted for the purer joys which converse with nature affords; and after a brief period the merchant frequently returns again to business, and dies in harness. Still there is no doubt, but that the taste for horticulture is almost universal, and has been so ever since man came fresh from the Creator's hands. In the sublime account of creation given in holy writ, we read of the Creator, in the infinitude of His power, *speaking*, into existence, the various forms of matter,—the firmament above with the orbs which adorn it,—the earth and sea, and their innumerable forms of animal and vegetable life, from the Leviathan of the deep, to the teeming hosts, which people a drop of water; and from the stately tree of the forest, to the microscopic plant, which is visible to us in an aggregated form in the green scum which forms on the stagnant pool. But God *made* man the crowning work of the creative period, in his own image and likeness, and could find him no fitter sphere in which to labour than a garden, "so the Lord God *planted* a garden eastward in Eden," (an act of divine arrangement distinct from creative power), "in which was every tree pleasant to the sight, and good for food," and man in his purity found fitting occupation for both body and mind, in dressing and keeping this divinely planted spot. If in man's purer state, when he held converse with angels, and the Deity, this employment was so congenial to his sinless nature; surely a like occupation now, must tend to purify and elevate, all that is noble and God-like in us.

### REPORT FOR 1871 ON THE PLUM CURCULIO.

BY W. SAUNDERS, LONDON, ONT.

The prizes offered by the Fruit Growers' Association of Ontario, for the capture of the plum curculio, during the past season, being much less than those for 1870, fewer persons have competed for them.

Mr. Samuel Cowherd, of Newport, Ontario, who last year sent in 1046, sends this year 1320. There being no prize offered for less than 2000, the matter was brought before the Directors, who decided to award Mr. Cowherd one-half the sum which had been offered for 2000.

These 1320 curculios were taken from 35 plum trees, which were jarred for the first time, on the 30th of May, and the jarring continued till June 10th, morning and evening, with the following results:—

May 30th.	Morning	-	not jarred	-	Evening	556
" 31st.	"	-	325	-	"	110
June 1st.	"	-	97	-	"	30
" 2nd.	"	-	68	-	"	—
" 3rd.	"	-	—	-	"	15
" 5th.	"	-	56	-	"	—
" 6th.	"	-	23	-	"	—
" 7th.	"	-	—	-	"	14
" 8th.	"	-	16	-	"	—
" 9th.	"	-	8	-	"	—
" 10th.	"	-	6	-	"	—

Where the spaces are left blank it indicates that no jarring was attempted, either on account of bad weather, or from some other cause. Mr. Cowherd remarks, that the curculios made their appearance this year, earlier than usual, and in greater numbers during the first part of the season, than he ever remembers before. From one tree of Duane's Purple, he got 56 the first time of jarring, and he thinks that variety of plum the worst to save of any. Smith's Orleans and Pond's Seedling, he ranks next in their liability to attack, while the Lombard and Prince's Yellow Gage, are much less subject to curculio. There were a few young trees in Mr. Cowherd's orchard, which fruited for the first time this year, which escaped entirely, having no stung fruit on them.

Mr. George Peacock, of Mount Salem, Elgin, Ont., who sent 506 last year, sends 2200 now. He says, "last year I jarred my plum trees—10 in all—once a day only, but this year I jarred three times a day. The insects I send this year were taken from 30 trees in all, plum, cherry, and peach." The greatest number caught in one day was 328, which was on the 30th of May. On the 29th May, 75 were taken, 1st June 107,—2nd 154, and after that less were taken every day, till the last of June, when the jarring was discontinued. There were splendid crops of plums and peaches, now on the trees which promised well; but unfortunately about the middle of July, a second brood of curculios set upon them, and had stung many plums and peaches before they were discovered. After all, there was still half a crop of fruit left, but Mr. Peacock feels assured, that had he jarred but once a day this season, he should have lost his entire crop.

Mr. John Rae, of Port Stanley, sent a package containing the largest number ever received from one person, numbering about 3,500. He began jarring on the 28th of May, but did not count the proceeds of the first day's work.

May 29th. Morning	-	50	-	Evening	98
" 30th. "	-	88	-	"	105
" 31st. "	-	173	-	"	134
June 1st. "	-	203	-	"	108
" 2nd. "	-	134	-	"	85
" 3rd. "	-	141	-	"	183
" 4th. "	-	110	-	"	71
" 5th. "	-	87	-	"	36
" 6th. "	-	160	-	"	5
" 7th. "	-	24	-	"	33
" 8th. "	-	17	-	"	19
" 9th. "	-	22	-	"	71
" 10th. "	-	42	-	"	47
" 11th. "	-	15	-	"	12
" 12th. "	-	14	-	"	10
" 13th. "	-	10	-	"	10
" 14th. "	-	10	-	"	8

Those that were taken after the 14th of June were but few at a time and were not counted. Nearly the whole of these curculios were taken from ten plum trees, notwithstanding which, they matured fair crops of fruit. Later in the season, I received from Mr. Rae a small branch from one of his plum trees, (Lombard) with fruit on it; they were growing about as closely packed as I ever remember to have seen them.

Although the reports sent by these gentlemen, would seem to indicate an increase of the curculio trouble, I do not think that this is generally the case. In my own garden, I have found but very few, and judging from the quantities of plums brought to market, by parties who take little or no pains to preserve their fruit, they surely must have been less numerous this year than usual.

London

#### SYNOPSIS OF THE ADDRESS OF THE HON. MARSHALL P. WILDER, PRESIDENT OF THE AMERICAN POMOLOGICAL SOCIETY.

This able address, delivered before the Society at its last meeting held in Richmond, Virginia, is well worthy the attentive perusal of every lover and grower of fruit. We condense from it a few of the more prominent thoughts which are specially valuable as well in our own Dominion as elsewhere. Speaking of the lessons of experience, he says the observations of the last few years, under the influence of warm, dry seasons, would appear to have established the principle that such weather, without excessive drought, especially in the earlier part of the summer, is more favourable to the perfection and ripening of fruits, particularly of grapes, than cold, wet seasons. These conditions are also peculiarly advantageous for the formation of fruit buds, and the storing up of the necessary perfected food for a future crop, and for the ripening of the wood, so necessary that it may endure the winter with safety.

We see also the soils, not naturally poor earth in these respects secured a thorough a from the atmosphere, Thus, paradoxical as also to supply moisture

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We see also the importance of thorough draining of our fruit lands, which produces in soils, not naturally possessing them, the conditions of warmth and dryness, thus rendering the earth in these respects analogous to the condition of the air. Besides this advantage there is secured a thorough aeration of the soil, whereby it is enabled to absorb fertilizing matter from the atmosphere, rain and snow, and from the moisture drawn up from the springs below. Thus, paradoxical as it may seem, the same means which guard against excessive wet serve also to supply moisture in excessive droughts.

Another lesson, most impressively taught, is that the cultivation of our orchards should be shallow, so as not to injure the roots, but to preserve them near the surface; and that manure applied to fruit trees should be either in the form of a top dressing, or as near the surface as is consistent with the composition of the soil and the preservation of its fertilizing elements. Also, it may now be considered as fixed that mulching for dry seasons and soils, whereby the temperature and moisture of the soils are kept uniform, and the fertilizing elements maintained in a soluble state, is of great advantage, inasmuch as these conditions are essential for the production of perfect fruit.

We have also learned that large fruit will sell better than small—that even the Seckel pear, which once commanded in Boston market the highest price, will not now sell, unless of extra size, for any more, if as much, as common varieties of a larger size. Hence, to meet this demand, the fruit must not only have good cultivation, but must be thinned.

The importance of shelter is year by year becoming more generally appreciated. The fact is established that the removal of forests diminishes the quantity of rain, increases the evaporation of moisture, reduces the temperature, and subjects our fruit to greater vicissitudes. We may find varieties, and probably shall, adapted to exposed situations; but at present the large majority of our finer fruits will be benefited by the shelter of belts of forest trees.

The venerable President commends again the important and benevolent work of originating new varieties of fruit, both as a means of improvement and as a substitute for those which have experienced the decline incident to all things of human origin. The acquisitions already made give promise of still richer rewards. Much has already been done, but this branch of science is yet in its infancy. It may require time and patience and care to produce a superior variety, but we have the most cheering assurance of the time when every section of our country shall possess fruits adapted to its own locality. We have learned many of the laws which govern hybridization; and the more we become acquainted with this most interesting art, the more we work with nature in these efforts for her improvement, the more shall we admire this most perfect and beautiful illustration of the great fundamental law, which has been established from the beginning of time, for the improvement of men, animals and plants. Well did Linnæus exclaim, when overwhelmed by the discovery of an unknown principle in this most interesting study, "I have seen God passing by." Let us go on, then, developing the wonderful resources of this art.

He speaks also of the importance and value of this calling in developing the resources of our country, in the occupation of unimproved lands, adorning our homesteads, enhancing the value of real estate, multiplying the blessings and comforts of life, and promoting a great source of national wealth; and refers to the benign influence which this employment has upon the moral and religious instincts of the heart, the refinement of taste and the welfare of society.

Then glancing at the necrology of the year, and briefly alluding to the labours of those associates who have gone to their reward, he concludes his very able address with the expression of his hope that the Society may go on conferring blessings on the country until every hearthstone and fireside shall be gladdened with the golden fruits of summer and autumn, until thanksgiving and the perfume of the orchard shall ascend together like incense from the altar of every family, and the whole world realize, as in the beginning, the blissful fruition of dwelling in the "Garden of the Lord." And when, at last, the chain of friendship which has bound so many of us together in labour and love shall be broken; when the last link shall be sundered, and the fruits of this world shall delight us no more; when the culture, training and sorrows of earth shall culminate in the purity, perfection, and bliss of heaven, may we all sit down together at that feast of immortal fruits,

"Where life fills the wine cup, and love makes it clear.  
Where Gilead's balm in its freshness shall flow  
O'er the wounds which the pruning knife gave us below."