REPORT

OF THE

FRUIT GROWERS' ASSOCIATION

OF THE

PROVINCE OF ONTARIO,

FOR THE YEAR

1880.

Printed by Order of the Legislative Assembly.

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ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION

OF THE

PROVINCE OF ONTARIO,

FOR THE YEAR 1880.

To the Honourable the Commissioner of Agriculture.

SIR,—In submitting the Report of the Fruit Growers' Association of Ontario for the year 1880, I have the pleasure of stating that the meetings of this Association have been very interesting and instructive, and that the members continue to take a deep interest in its proceedings. The publications of the Association are much sought after, not only at home, but abroad, by the leading horticulturists. A copy of the *Canadian Horticulturist* for the current year is also submitted herewith. The Association has been able to make a beginning in the way of calling attention to the subject of forestry, the importance of which can hardly be over estimated. Trusting that the present report will be found to be a very useful contribution to our knowledge of fruit-growing and both ornamental and economic forestry,

I have the honour to be

Your most obedient servant,

D. W. BEADLE, *Secretary.*

PROCEEDINGS AT THE ANNUAL MEETING.

The Annual Meeting of the Fruit Growers' Association of Ontario, was held in the City Hall, Hamilton, on Tuesday evening, 21st day of September, 1880.

The President, Rev. R. Burnet, was not able to be present, having removed to Pictou, Nova Scotia, and the meeting was called to order by the Vice-President, Wm. Roy, Esq., of Owen Sound, who stated that a telegram had been received from the President, saying that he would not be present, and that the usual able annual address would not be forthcoming at this time, the President not having sent any to be read. After the usual routine business the meeting proceeded to the election of officers for the year, with the following result, viz.:—

President—P. C. Dempsey, Esq., Albury, Prince Edward Co. Vice-President—Wm. Saunders, Esq., London, Middlesex Co.

Directors—Electoral Division No. 1, John Croil, Aultsville, Stormont Co.; No. 2, P. E. Bucke, Ottawa; No. 3, W. Fitzsimmons, Brockville; No. 4, Henry Young, Trenton, Hastings Co.; No. 5, Thomas Beall, Lindsay, Victoria Co.; No. 6, George Leslie, Jr., Leslie, York Co.; No. 7, S. Woodley, Hamilton; No. 8, A. H. Pettit, Grimsby, Lincoln, Co; No. 9, C. Arnold, Paris, Brant, Co.; No. 10, A. McD. Allan, Goderich, Huron, Co.; No. 11, P. R. Jarvis, Stratford, Perth Co.; No. 12, Stephen White, Charing Cross, Kent Co.; No. 13, Chas Drury, Crown Hill, Simcoe Co.

Auditors—John A. Bruce, Hamilton; Angus Sutherland, Hamilton.

Subsequently, at a meeting of the newly elected Board of Directors, Mr. D. W. Beadle, St. Catharines, was appointed Secretary-Treasurer.

DIRECTORS' REPORT.

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

GENTLEMEN,—In closing another year of the history of this Association, we desire to congratulate the members upon the continued interest manifested in the objects which it is our aim to foster and advance. The past season has been very favourable to fruit interests generally, the crops of the several fruits in their season having been very good, and those of peaches and grapes unusually abundant. Such displays of fruit as are being made this year at the several exhibitions throughout the Province will tend to convince the most sceptical that this country cannot be surpassed in the production of fruits, which will not only amply supply our own population with an abundance, but will contribute largely to meet the foreign demand. The apples and pears grown in Ontario cannot be surpassed in excellence of flavour, nor in those qualities requisite for shipping to long distances.

In the section of the Province extending from Kincardine to Collingwood, the crop of plums had been very abundant, and many thousands of bushels have been shipped with profit to the growers. Nor can we believe that the labours of this Association have been without effect in stimulating the production of these choice varieties of fruit.

The last winter meeting, which continued for two days, was one of more than usual interest, and was both well attended and well sustained. Interesting and valuable papers were read, which will appear in full in the Annual Report, embracing a wide range of subjects, and giving to that of ornamental and economic shade and forest tree planting a greater prominence than it has hitherto enjoyed. The summer meeting, which was held at Guelph, was not very largely attended, but the discussions were interesting and profitable. An opportunity was given to the members to visit the model farm, where they were kindly received and most hospitably entertained.

In consideration of the enlarged operations of the Society, whereby the subjects of tree planting for shade, ornament, and economic purposes, and general horticulture, have been added to that of fruit-growing, the Government have made an addition to the annual grant, raising it to eighteen hundred dollars. There has also been placed under the supervision of your Board of Directors several acres of the Government Farm at Guelph, for the purpose of testing new fruits, trees, and plants, and of illustrating the value and methods of culture not only of fruit-bearing trees and plants, but of forest trees and other trees and shrubs that may be valuable in our climate either for purposes of ornamentation or of economic industry. Your Directors have entered upon this new branch of the work of the Association, and have made a commencement in a small way, which we trust will prove to be the first steps in the direction of great and valuable results.

The reports received from those of our members who have participated in the yearly distribution of new fruits have thus far been comparatively few. The object of this distribution is to ascertain the adaptability of these fruits to the several localities into which they are sent, and, unless members are more careful to report results, the ends we aim at cannot be attained. We are aware that a measure of success has been achieved from the fact that fruits grown from the trees and vines distributed have been shown at exhibitions and received prizes, and we trust that in future we shall receive a report from every locality into which they have been sent.

The *Canadian Horticulturist* has been regularly issued during the year, and it is very gratifying to your Directors to be able to say that the expressions of appreciation and satisfaction with the journal and its contents, which have been received from many of our members, convince us that its publication is an important part of the work of the Association.

We are happy to state that there has been an increase of membership over the number in the previous year, which, though not large, is a gratifying assurance that the Association is gaining ground in the interest and appreciation of the public. Notwithstanding this, however, we hope that all of our members will increase their efforts to extend the benefits of the Association by obtaining each at least one new member.

On behalf of the Directors,

WM. ROY, *Vice-President.*
D. W. BEADLE, *Secretary.*

To the President and Members of the Fruit Growers' Association.

TREASURER'S REPORT.

The Treasurer of the Fruit Growers' Association.

Dr.	$ cts.
To Members' fees	1,136 00
" Sale of back vols. of *Horticulturist*	1 50
" Advertising	24 50
" To Government grant	1,800 00
Total	2,962 00

Contra.	$ cts.
By Postage and telegrams	35 87
" Expenses—Directors and Committees	717 25
" Freight and express	7 24
" Duties	6 51
" Printing and advertising	185 09
" Secretary's salary	200 00
" Tree distribution—1879	540 33

Contra.	$ cts.	$ cts.
By Commissions	22 33	
" Guarantee premium	20 00	
" Rooms—holding meetings	7 00	
" Paper	197 59	
" Audit—1879	20 00	
" Clerk	50 00	
" Editor's salary	300 00	
" Balance due Treasurer—1879	134 55	
		2,443 76
Balance in Treasurer's hands		518 24

We certify the above to be a correct abstract.

JNO. A. BRUCE,
ANGUS SUTHERLAND, } *Auditors.*

AUDITORS' REPORT.

HAMILTON, 30th Sept., 1880.

To the President and Directors of the Fruit Growers' Association of Ontario.

GENTLEMEN,—We have much pleasure to inform you that the Books, Vouchers, etc., of your Association are kept in a neat and correct manner by your Secretary-Treasurer, Mr. D. W. Beadle, and that he rendered us every assistance in the performance of our duties.

We also desire to congratulate the Association upon the favourable balance-sheet to be presented by him to you.

We are yours very respectfully,

ANGUS SUTHERLAND,
JNO. A. BRUCE, } *Auditors.*

WINTER MEETING.

Held in the City Hall, City of Hamilton, on Wednesday and Thursday, February 18th and 19th.

The winter meeting of the Fruit Growers' Association of Ontario opened this forenoon at ten o'clock, in the Council Chamber, at the City Hall, the President, Rev. Dr. Burnet, of Hamilton, presiding. There were also present Messrs. D. W. Beadle, Secretary; Wm. Roy, Vice-President, Owen Sound; W. Smith, Drummondville; P. E. Bucke, Ottawa; John Croil, Aultsville; P. C. Dempsey, Albury, P. E. Co.; A. McD. Allan, Goderich; Murray Pettit, G. W. Cline, Winona; Thomas Beall, Lindsay; Charles Arnold, Paris; W. Saunders, London; Dr. Watt, Niagara; J. S. Woodard, Lockport, N. Y.; H. M. Switzer, Palermo; John Buchan, Stratford; Chief J. H. N. Johnson, Tuscarora; Jesse Moyer, Jordan Station; John McGill, Oshawa; J. D. Pringle, Hamilton; W. Holton, Barton; Judge Darnell, Whitby; B. Gott, Arkona; Jos. Cline, Ancaster; Jas. Hinchcliffe, Hamilton; J. Bowman, West Flamboro'; Dr. Bell, Walkerton, and others.

Mr. Beadle read the minutes of previous meeting, which were, on motion, adopted.

The President said that it gave him great pleasure to welcome to the meeting, Mr. Woodard, from the other side of the line—Lockport, New York. The Association would join him (the President) in extending the gentleman a hearty welcome.

On being reminded by the Vice-President,

The President announced that the Ontario Government had increased the annual grant to $1,800. This was most encouraging. He was glad to inform them that Mr.

Wood, in speaking of the grant to this Association, had stated that it was more beneficially expended than that given to any other organization in the Province.

Dr. Burnet said that he had communicated with some eminent pomologists with a view of obtaining papers on subjects interesting to the Association. His friend, Dr. John A. Warder, President of the American Forestry Association, of North Bend, Ohio, U. S., had responded and sent in a paper on "Planting Trees along our Roadsides for Shelter, Shade and Ornamentation; What to Plant and Benefits of such Planting." The President then read the paper, which is a very lengthy but intensely interesting one. It was received with marks of approval.

While the Rev. Dr. Burnet was reading, the chair was occupied by the Vice-President.

The Vice-President said that the paper was a most appropriate one. There was nothing which should take the attention of the people more than the planting of shade trees.

A vote of thanks to Dr. Warder, moved by Mr. Saunders, of London, and seconded by Mr. Gott, of Arkona, was unanimously passed.

The mover made some very interesting remarks on the paper, pointing out what were and what were not desirable specimens to be planted.

Messrs. Arnold, Holton, Darnell, Bucke, Smith, Johnson, Gott, Burnet, Woodard, Beadle, Roy, Croil, the President and others, spoke on the matter contained in the paper, each paying a high compliment to its excellence, and giving their own experience.

Mr. Woodard said that the maple was the principal shade tree in Western New York. He favoured the black walnut. It had many advantages, not the least being its splendid timber.

Mr. Beall informed the Association that he had been absent a portion of the time from the chamber, finishing a paper to be read, and had now made the discovery that it was on the same subject as what the doctor had selected. Maybe it would be as well for him to read it now.

The President told him that it would be heard in the afternoon. There were no less than four papers on the subject, and the discussion of these would take up all afternoon,

The meeting then adjourned until two o'clock.

The session resumed at two o'clock, and the President introduced Mr. Page, editor of the *Canadian Farmer and Grange Record*, who took a seat with the members.

Mr. Beadle spoke of Mr Page's paper as a most acceptable exchange, containing a great deal of information for the agriculturist and horticulurist as well.

Yellows in Peaches.

The Secretary read the following notice of motion: That Dr. Watt will call the attention of the Society to the disease called yellows in peaches, and will ask for some action to be taken in representing the same to the Local Legislature for some power to be given to municipalities for the proper destruction of the infected trees.

The Secretary said there were a good many of the members who wished to hear "the yellows" discussed, and he thought it would be well to digress and discuss this question.

On motion, it was decided to take up this subject.

Mr. Orr, of Stony Creek, was called upon by the President, and said that he was not posted on the matter, but was about to set out an orchard between here and Grimsby, and would like to gain information. The yellows were spreading in the locality where he resided, and something should be done.

Mr. Beadle read from the law of the State of Michigan, wherein it was enacted that all peach, nectarine and other fruit trees infected with the yellows shall be destroyed, and that none of the fruit of such trees be sold or shipped under pain of severe penalties.

Dr. Watt, Niagara, said that the subject was thoroughly discussed, but since then his attention has been called to them by a neighbour of his, General Lansing, who suffered the loss of some trees. He (Dr. Watt) was called in professionally, and ordered the limbs to

be cut off and the roots dug out and burned. This is the only way to get rid of the yellows.

Dr. Watt went on to give some interesting facts about the yellows. He claimed that the consumption of fruit infected with this disease was dangerous as human food. A family at Drummondville had sickened from partaking of such fruit. The law of the State of Michigan was too voluminous for this country. He thought that a law, as simply constructed as possible, should be recommended, and urged the appointment of a delegation from the Association to visit Toronto and see the Government about the matter. A commissioner should be appointed.

Mr. Pettit looked on it as one of great importance, and all fruit growers should do all they could to prevent the spread of the disease. The trees should be cut down. The yellows spread from tree to tree; he knew this of his own personal experience. On an examination of his trees last year four were found to be affected; now some twenty-five in the neighbourhood of these infected trees are very bad.

Mr. Pettit was asked why he didn't cut down the trees that had the yellows.

Mr. Pettit said he purposed using the axe on the infected trees.

Mr. Arnold said it was always a mystery to him why people who knew their trees had the yellows didn't destroy them at once. Why wait for the Legislature to pass a law to compel them to do so? The fact was, very few people knew when a tree had the yellows.

Mr. Cline, Grimsby, gave his experience of the disease. He had no difficulty in telling the yellows in the tree, or fruit either. He had cut back the trees and manured well, but this did not effect a cure. He believed in cutting down the trees infected.

Mr. Roy asked how Mr. Pettit would renew the trees when all were cut down.

Mr. Pettit said he would not plant in the same ground. He had heard that an application of lime and salt to the land would be beneficial. His trees were procured from Mr. Wolverton, Mr. Smith, and from Canandaigua. The disease commenced in one he had procured from Mr. Wolverton. He believed there was something deficient in the soil.

Mr. Smith, Drummondville, said there was some difficulty in distinguishing the disease on trees. They may get yellows from other causes. The Association had had his experience before in the matter. The yellows were spreading in Drummondville. Not a single tree had escaped. He gave instances where he had spared one tree, and it communicated to twelve trees that year.

Mr. Arnold asked how the disease spread.

Mr. Smith answered, that it was accepted as a theory, that the disease was carried by insects from tree to tree. He thought it might be spread by using a saw on good trees which had been used in pruning diseased trees.

Col. Brooks, of Wyoming, N.Y., an eminent fruit grower and entomologist, then entered the chamber, and was heartily welcomed by the President.

Mr. Woodard, of Lockport, N.Y., was then called on to speak on the yellows, and said that the disease was giving a good deal of trouble in Western New York. They had no laws in regard to it. The people of Michigan, whom he had recently visited, were sanguine that under their law, which was being vigorously carried out, the yellows would be stamped out. He didn't know how the disease originated. His idea was, that the disease should be stamped out by the axe and fire.

Mr. Page (Fonthill) said he had given the matter some attention. He did not favour the idea that the disease was carried by insects. It was lack of something in the soil or atmosphere.

Mr. Woodard said that he had a conversation with Prof. Beal, of New York, who declared that in ninety-nine cases in a hundred it was communicated by insects.

The President gave his experience. Was not inclined to think it was a deficiency in the soil. Were it so the whole fruit would be diseased. It is in the fruit the disease is developed, but whether in the limb or fruit is not yet determined. His idea was that it commenced in the branch.

Mr. Orr asked whether any gentleman had discovered the yellows on trees before bearing.

The President said he had never been able to discover the disease until the fruit appeared.

Mr. Smith thought that it could not be definitely distinguished unless bearing fruit.

Mr. Haskins was asked to give his opinion, but said he didn't know enough about it.

Col. Brooks said that suffering came from sin—some transgression of the law. They possibly had been careless; hence the breaking out of this disease. He believed in the primitive soil, and thought that no such productions as potatoes, pumpkins, etc., should be put in to rob the delicate fruit trees of the elements of the soil which they required to bring them to perfection.

The further discussion of the subject was deferred, and the regular programme of business proceeded with. In the meantime Dr. Watt will prepare a draft of a Bill to be submitted first to the Association, and subsequently to the Local Legislature.

The Planting of Shade Trees.

Mr. Beall, of Lindsay, read the following paper on "The Advisability and Feasibility of using the Canadian Walnut Tree as a Shade and Ornamental Tree throughout Canada:"

Forty years ago, when probably there was not more than one-fifth as much cleared land in Ontario as there is to-day, the idea seemed generally to have prevailed that the woods must be utterly destroyed before the country would be suited for the operations of the husbandman; but thousands of persons throughout this fair land see that the wanton destruction of our noble forest by the early settler was far too general, and are now endeavouring to remedy the evil in some degree by planting various kinds of trees in places where most required. The inhabitants of our cities, towns and villages seem generally to have taken the lead in this good work; but many of our rural settlements are already giving evidence, in the long lines of stately maples and other deciduous trees along some of our country roads, that the landowners have become aware of the necessity of planting largely of trees for the protection of their lands from the evil effects of high winds, as well as for shade and shelter for their live stock; and where this has been accomplished to any considerable extent, the owners find that they have added much to the beauty of the landscape, and thereby greatly enhanced the value of their real estate. Now that the good work of tree planting in the rural sections so largely prevails, the question very naturally suggests itself, what is the best kind to plant? My answer is, that no tree indigenous to this Province has so many and such strong claims for consideration at the present time as the black walnut tree (*Juglans Nigra*). It is easily propagated—requiring little or no skill in its cultivation; grows rapidly, has a fine appearance even while comparatively young, and when old is one of the most magnificent trees to be found in this or any other country, and, in addition to this, it is at maturity the most valuable of all our trees for its timber. It is easily propagated; for all that is required to produce the most satisfactory results is to plant the nuts about the latter part of October, about two inches deep, in the spots where the trees are needed, in a deep, rich clay soil that has been thoroughly subsoiled; and its after cultivation is simply to let it alone; to permit nothing to touch the young trees. I am not aware that any other hardwood tree grows so rapidly as the black walnut tree. A growth of from three to five feet in height during the first summer is not infrequent, and when the soil is suitable its growth is proportionately rapid for many years. I have twenty-five or thirty trees now on my grounds from fifteen to twenty feet high, with fine heads from ten to fifteen feet in diameter, all grown from nuts planted eight or nine years ago. No other trees have given me so much satisfaction as these. They have a fine appearance, and when in leaf make an excellent shade tree. The foliage emits a strong aromatic odor, very agreeable to most persons, and the tree when in a healthy state is always free from caterpillars and other noxious insects. Downing, writing of this tree, says, "When full grown it is scarcely inferior in the boldness of its ramification or the amplitude of its head to the oak or chestnut; and what it lacks in spirited outline, when compared with those trees, is fully compensated, in our estimation, by its superb and heavy masses of foliage, which catch and throw off the broad lights and shadows in the finest manner."

Its commercial value:—It is a well known fact that our black walnut lumber at the present time has a market value five or six times greater than any other produced in Ontario, with every probability—on account of its beauty of colour, the hardness and closeness of its grain, the exquisite polish which is so easily given to its surface, and above all, the peculiarity of its nature, which when thoroughly seasoned makes it less liable than any other of our native woods, or, indeed, of almost any other known wood, to contraction and expansion by change of air and temperature—of its being held for generations to come in the highest esteem for cabinet-ware purposes. What a fine field for speculation is here opened; a speculation in which every owner of land, whether the quantity be great or small, can engage, for while the owner of a quarter-acre lot may plant his one or two trees for the mere pleasure of doing a good deed, the owners of larger properties may plant their thousands of trees with a certainty of present gain, by providing, almost at once, shade for their live stock from our burning summer sun, and shelter for their growing crops during the stormy seasons of the year, thereby adding, as before stated, somewhat to the productiveness of their farms, and very materially to the beauty of the general landscape. While thus labouring for present pleasure and profit in the near future, let us see what they are doing for the future of from fifty to one hundred years hence. Every owner of 100 acres of land, supposing his farm to be divided into fields of about ten acres each, will have thereon about 1,000 rods of fence. Now suppose a tree is planted every thirty feet along this fence, it will be seen that he may have about 500 trees on his farm, without occupying a single foot of land available for agricultural purposes, and which, as before shown, will, in a few years much more than repay him for all labour and money expended thereon. I have estimated that the owner of such a farm as I have mentioned may commence selling the timber in fifty years, and that from that time forth he may safely sell one-fiftieth for each year thereafter by simply planting one nut or tree for each tree taken. Then, supposing each tree at seventy-five years of age (the average age of the first lot planted) to be worth $50 (and I think this is a low estimate) it will at once be seen that the sum of $500 per annum for the timber alone may be realized off every such farm of 100 acres for all time to come.

Much may be, and indeed I think ought to be, written upon the effects which would ensue from such a general planting of trees as I have here proposed, upon the commercial, agricultural and climatological state of our fair Province, and I venture to hope that some abler pen than mine may undertake the task at an early day.

Mr. Bucke moved a vote of thanks to Mr. Beall for his admirable paper, which was carried unanimously.

Some discussion took place on the paper, those taking part chiefly confining their attention to the cause of the opening of the seed; some considered that it was frost that caused this, and others held the opinion that it was moisture which caused the seed to burst.

Mr. D. W. Beadle said there was one objection to the walnut—nothing would grow beneath its shade.

Mr. Roy knew differently. He had visited the fine walnut grove at Chief Johnson's, in Tuscarora, and saw luxuriant grass beneath the shade of the trees.

Col. Brooks thought that the cultivation of the walnut was sufficiently profitable without expecting another crop off the same ground upon which it was planted.

Chief Johnson said that the shade of the walnut did not prevent vegetation, and this idea was endorsed by Mr. Arnold.

"What Shall We Cultivate?"

Mr. Arnold was then called upon to read a paper he had prepared bearing the above title. It was written in a very pleasant strain, and contained many valuable hints concerning the adornment of private grounds.

Mr. Allan moved, seconded by Mr. Beall, that the thanks of the Association be granted Mr. Arnold for his excellent paper.—Carried.

The cultivation of the apple tree was referred to by Dr. Watt, who threw out some practical suggestions on the subject.

"Forest Tree Seeds and Seedlings."

Mr. Gott read a paper on the subject of "Forest Tree Seeds and Seedlings," which exhibited considerable research.

The paper was received with marks of approbation by the Association, who passed a flattering vote of thanks to the writer.

The meeting then adjourned till seven o'clock.

Evening Session.

The Association resumed at a few minutes after seven, the President presiding.

Tree Culture.

The consideration of forest and shade trees was resumed.

Mr. Saunders, of London, read a paper "On some deciduous trees and shrubs desirable for more extended cultivation."

On motion of Mr. Smith a unanimous vote of thanks was tendered to Mr. Saunders.

Mr. Woodard called attention to the ironwood, a beautiful and hardy tree, of which no mention had been made.

Mr. Bucke also drew attention to the cutleaf birch and the cutleaf maple, which had not before been mentioned.

Mr. Saunders said that his paper included principally those trees and shrubs not generally cultivated.

Dr. Bell (Walkerton) objected to the ironwood on account of its slow growth.

A number of the members took part in the discussion, valuable hints as to the best kind of shade trees and shrubbery being given by Messrs. Arnold, Beall, Beadle, Col. Brooks and others.

Two of the Six Nations tribe of Indians who had entered the room while the discussion was going on, were then introduced by Chief Johnson, and cordially welcomed by the President. They were heartily cheered on taking their seats at the Board.

Mr. Beadle informed the meeting that the Indians on the reservation took a deep interest in the welfare of the Association. There were no less than sixteen of the Six Nation Indians on the membership roll.

REPORTS OF COMMITTEES.

The Committee on Cultivated Fruits presented the following report :—

Apples, shown by P. C. Dempsey, of Albury—"Lord Burghley," from imported trees; of medium size, dark reddish colour and attractive in appearance; of fine flavour, though a little over ripe; fruited for the first time this autumn; appears to be very desirable as a winter market fruit. "Ben Davis," a very handsome specimen, bright high colour, well grown and an excellent keeper. "Pomme d'Or," a yellow spotted apple, makes a good table decoration, and is well esteemed as a dessert fruit. Several important varieties were shown of various qualities, but were not named. "Ord's" apple tree imported from Ireland; apple of fine size, russety red colour, of good flavour.

Pears.—Mr. Dempsey also showed the following varieties of pears :—"Doyenné de Hiver," "Vicar," "Duchess de Bordeaux," "Lawrence," "Mount Vernon," and "Beurre d'Anjou."

Mr. A. M. Smith showed a specimen of the "Lawrence" pear.

The Committee appointed to examine seedling apples reported as follows :—

Sweet seedling apple, shown by John H. Ramer, of Markham: a large apple resembling Sweetbough, but out of season now, and we are unable to report on merits. Sweet apple, shown by Mr. A. M. Smith, of Drummondville: the flavour is good, colour

green, with flushed cheek and deep eye. We cannot decide that this is really a seedling. It is in season now, and is a pleasant apple to eat, and evidently a good cooker. Two seedlings, very similar in appearance, shown by Mr. H. J. Lott, of Sydney township, county of Hastings: somewhat resembling St. Lawrence; flesh yellowish; slightly sub-acid, but with nothing special in merit. A tart seedling, shown by Mr. George Cox, of Goderich township, county of Huron: a handsome bright yellow, with blushed cheek; flesh firm. This apple will keep well into July. Dessert russet, supposed to be a seedling, shown by Dr. Watt, of Niagara: being past its season we cannot speak clearly as to merit; flavour seems pleasant; grain firm. Another dessert russet, shown by Dr. Watt: resembles the S. P. Grise in appearance in some points; lacks in character; sweet and mild in flavour. Seedling, shown by Messrs. Day and Dempsey, of Albury, large greenish splashed cheeks; flesh firm; very slightly sub-acid and pleasant; possessing more merit than a majority of seedlings of this class. Another seedling, shown by the same firm: smaller; similar in appearance to the last, but inferior in flavour.

The reports were, on motion, adopted.

Cattle at Large, and Fencing.

An hour or so was then devoted to the consideration of the above subjects, and the practice of allowing cattle to roam at large on the highways in the country was strongly condemned, as well as the present mode of fencing, which is a source of great expense to the farmer and gardener.

Mr. Quinn, of Port Dover, considered that it was no use looking to our municipal councils for redress with respect to the cattle invasion nuisance. Legislation from a higher source was absolutely necessary.

The gentlemen present from the other side the line dwelt on the advantages of a law compelling every one to see that his cattle are kept in; if this were done every one could dispense with fences.

Col. Brooks favoured the barbed wire fence, attached to shade trees along the thoroughfares. This style is in vogue where he comes from, and works well.

Mr. Woodard condemned it as a barbarous fence. The barbed wire injured the cattle that might be abroad.

A member from Oshawa said that a gentleman tried this style of fence in that town, and that it was not the cattle that objected, but a certain class of the townspeople who stayed out a little late taking observations through inverted glasses.

A Stormont man gave a description of how they suffered in that county from deep snows and blocked up roadways (all through the snake fences), and said he would hail with pleasure the day when they could with safety to the crops be abandoned. There was nothing to hinder the coming about of this period if a law was passed that no one should allow his cattle at large at any time.

The President informed the Association that the discussion was not strictly in order, at least not according to the prepared programme, but it was of so much importance and so interesting that he could not find it in his heart to stop it.

The following resolution was carried: That in the opinion of this meeting every man should be compelled to look after his own animals, and that the President appoint a committee to investigate and report on the subject of fences at the next winter meeting.

The President named the following gentlemen as members of the committee:—Messrs. Beall, Bucke and Dr. Watt.

On motion the meeting was adjourned till 10 a.m. next day.

Second Day—February 19.

The Association resumed at 10.30 this forenoon, the President presiding.

There was a full attendance of members.

The President said that the Association had yesterday welcomed amongst them Col.

Brooks, of Wyoming, N.Y., and he would now ask that gentleman to step forward and take a seat on the platform. Col. Brooks thanked the President for the compliment, and took a seat as requested.

Raspberries.

Mr. Smith, of Drummondville, read an excellent paper on "Raspberries," which was very well received. The closing sentence or two are:—It seems to me that here is a field not only for our hybridist, but for the enterprising sons of fruit growers and farmers. All of our fine fruits originated from seeds, and the raspberry is very easily grown. Then why not, by a judicious selection of seeds from good varieties grown near each other, or by a careful hybridizing, produce something as good and hardy and lasting among raspberries as there is among other fruits? and if we would enjoy this fruit at all we have got to work for it, and attend to its cultivation, for as the country gets cleared up the wild berries disappear. Besides, it pays; not only as market fruit, but it will pay any man who has a family and an acre of ground to grow it for his family, for he cannot find, in its season, a more delicious or beautiful fruit than the raspberry.

A vote of thanks was passed to Mr. Smith for his paper, and some discussion took place thereon.

Messrs. Saunders, Roy, Switzer, Arnold, Smith, Bell, Burnet, Brooks and others took part in the discussion, which soon swayed from raspberries to grafting apples, pears, etc.

About half-past eleven o'clock Mr. Dempsey called attention to the fact that the Association was getting away from their text, and made a few interesting remarks on raspberries. He endorsed what Mr. Smith had written about certain varieties.

Vegetables.

It was moved by Dr. Watt, seconded by Mr. D. W. Beadle, That the President appoint a committee on vegetables of recent introduction, to make observations during the summer, and report at next winter meeting.

Mr. Beadle thought it was important that more interest should be taken in the production of vegetables. He urged the appointment of a committee as suggested in the motion.

Dr. Watt favoured the appointment of such a committee, who should prepare a critical report upon the best varieties.

The resolution was carried, and the President appointed Messrs. Page, Taylor, Hood, Bucke, Biggar and Dempsey as the Committee.

New Fruit.

Mr. Smith suggested the appointment of a committee on new fruits, and the idea was favourably received.

The following were selected as the Committee:—Messrs. Allan (Chairman), Dempsey, Smith, Arnold, Gott, Saunders, Holton, Morris and Beadle.

It is understood that the several members shall write their observations to the Chairman, who will prepare the report.

Yellows in Peaches.

Dr. Watt moved, seconded by Mr. Pettit, That a committee be appointed to draft a bill, to be presented to the Legislative Assembly of Ontario, on the best method of eradicating the disease called yellows in peaches, and further, that a deputation of this Association be named to present the same, and urge the necessity of Government aid to help the orchardist to stamp it out.

A discussion followed. The cause of the disease, and the remedy, were again fully considered.

Mr. A. H. Pettit, President of the Grimsby Fruit Growers' Association, was requested to speak, and he responded with a few remarks.

The resolution was carried.

The President named the following as a committee:—The President and Messrs. A. H. Pettit, Roy and Saunders.

Nurserymen and Amateurs.

Mr. Saunders moved, seconded by Mr. Bucke, That in the opinion of this meeting it is desirable that the professional fruit list in the prize list of the Provincial Association be abolished, and that there be one general fruit list, open alike to professional and amateur fruit growers.

Considerable discussion followed, the opinion being expressed that the nurseryman was now at a disadvantage in competing with amateurs. It was demonstrated that many amateur fruit growers (so called) were in the habit of going through the country and obtaining varieties of fruit by whatever means they could, and exhibiting them as their own growth.

Dr. Watt of Niagara, Mr. Biggar of Winona, Mr. Pettit of Grimsby, Dr. Burnet, and several others, gave expression to their opinions, and advanced some clever suggestions.

Mr. Saunders stated that he was prerfectly willing to withdraw his resolution. There appeared to be a diversity of opinion on the subject.

The matter was dropped for the time, and the meeting adjourned till 2 p.m.

Afternoon Session.

The Association resumed its session at 2 p.m.

Mr. Anderson brought up the subject of apple pullers, packers and parers, and thought the matter should be discussed and the best practical means made generally known. In reply to a question, he stated that he always pressed his apples well into the barrels, and, though the sides might be a little bit bruised, they never rotted. The object was to have them solid in the barrel so that they would not be injured by the barrel being rolled.

Mr. Beadle referred to the apple picker introduced by Mr. Anderson, and said he did not approve of it at all. He thought the only practical method was the old one of doing it by hand. He went on to speak of packing. He agreed in a measure with the method mentioned by Mr. Anderson, but was more in favour of a plan adopted by an American friend, of wrapping the apples in tissue paper and packing them in layers of bran or other similar substance. Packed in this way they would bring a price in the proper market which would fully compensate for the additional trouble.

Mr. Wright, of Renfrew, urged upon sellers the importance of honesty in packing, so that none but good apples should be put in the barrels.

Several gentlemen addressed the meeting on the subject, and it was shown that though, unfortunately, some people were in the habit of putting bad apples in the middle of barrels, yet it was an undoubted fact that the apples this season were almost all of a bad keeping quality, and the shippers could not be accused of any dishonesty. The idea of "sweating" in apples was opposed by some. Some of the members spoke against the plan of packing in chaff, as the moisture would affect the apple. Different varieties of apples were mentioned, and the effect upon them of the method of packing now used.

Mr. Wright said, in reference to the Rhode Island Greening, which had been noticed to assume a brown colour after the 1st February, that he would next season experiment on two barrels and submit a report of the result to the Association.

After further discussion,

Mr. F. Anderson moved, seconded by Mr. Thos. Beall, That the Provincial Association be requested to give prizes for the best apple-puller, apple-packer, apple-parer and apple-dryer, and that the Directors of this Association see that the above be carried out and tested. Carried.

Apples.

Mr. P. C. Dempsey presented a paper on summer varieties of apples, giving their appearance, quality of soil required, nature of tree, size and other particulars. Among others he mentioned the Early Harvest, Red Astrachan, Benoni, Primate, Colvert, Duchess of Oldenburg, Gravenstein, St. Lawrence, Beauty of Kent, Norton's Melon, Fallawater, Baldwin, Hubbardston's Non-such, King of Tomkins County, Northern Spy, R. I. Greening, Golden Russet, Westfield Seek-no-Further, Ben Davis, and some others. The paper was listened to with great interest.

On motion of Mr. Roy, seconded by Mr. Gott, a hearty vote of thanks was tendered to Mr. Dempsey.

Mr. Gott, of Arkona, Lambton County, referred to the statement (in Mr. Dempsey's paper) that the Northern Spy tree was tender, and the bark liable to crack and canker. That was something unknown in this section of the country.

Mr. Dempsey said this statement was made from experience gathered in Prince Edward County.

It was suggested by some of the members that too much care was taken of the orchards, and that the trees were spoiled in many instances by being too freely manured.

Fruit Committee.

On motion, Mr. Allan was placed on the Committee on New Fruits.

Shorthand Reporter.

Mr. Bucke moved, seconded by Mr. Beall, that the Directors be requested to engage the services of a first-class shorthand reporter to take down the discussions at the next winter meeting, to be submitted to a press committee before publication.

Moved by Mr. Anderson, seconded by Mr. Switzer, that this Society does not need a special reporter to report the proceedings. Lost.

The original motion was then carried.

Niagara Grape.

Mr. Woodard requested permission to speak. He cautioned the Association and all its members against buying from any person the Niagara grape, as no one but the Niagara Grape Company, of Lockport, had that grape, and he would be glad to welcome all the members of this Association to the Company's grounds. On behalf of the Western New York Horticultural Association he extended a hearty invitation to come over to the next meeting of that Association. His remarks were hailed with applause.

Dr. Watt moved, seconded by Dr. Bell, that a vote of thanks be tendered to our visitors from the United States for their valuable assistance at our meeting.

The motion was carried by a unanimous standing vote.

Mr. F. Anderson referred to the very great interest taken by Chief Johnson of the Six Nation Indians, and he took pleasure in presenting the Chief with the apple-puller he had shown to the Association.

Chief Johnson made a suitable reply, in the course of his remarks referring to his present pleasant relations with the people of the neighbouring Republic.

Mr. Woodard gave Chief Johnson a special invitation to go over to the next meeting of his Council on the fourth Wednesday of next January. (Cheers.)

Mr. Allen moved, seconded by Mr. Beall, That the thanks of the Association be tendered to the reporters of the city press for the very excellent and accurate reports they had given of the proceedings and discussions of this meeting. Carried.

The motion was acknowledged by Messrs. J. G. Buchanan, of the *Times*, and A. B. Wood of the *Spectator*.

Mr. Roy moved, seconded by Mr. Dempsey, That the thanks of the Association be

tendered to the Mayor and City Council for the use of the commodious Council Chamber for this meeting. Carried.

Dr. Bell said he did not know whether it was customary, but he would move a vote of thanks to the Railway Companies for their kindness in granting reduced fares to members attending this meeting.

Dr. Watt seconded the motion, which was carried.

On motion the meeting then adjourned.

REPORT OF COMMITTEE ON CULTIVATED FRUITS.

Apples shown by P. C. Dempsey, Albury.

Lord Burghley.

From imported trees, of medium size, dark reddish colour and attractive in appearance, of fine flavour, though a little over-ripe ; fruited for the first time this autumn, and appears to be very desirable as a winter market fruit.

Ben Davis.

Very handsome specimen, bright high colour, well grown, and an excellent keeper.

Pomme D'or.

A yellow spotted apple, makes a good table decoration, and is well esteemed as a dessert fruit.

Margil.

Over-ripe at the present season.

Also several imported varieties were shown of various qualities, but were not named.

Ords Apple.

Tree imported from Ireland, apple of fine size, russety red colour, of good flavour.

Pears.

Mr. P. C. Dempsey also showed the following varieties of pears :—"Diana de Hiver," "Vicker," "Duchess de Bordeaux," "Lawrence," "Mount Vernon," "Beurre d'Anjou."

Mr. A. M. Smith showed a specimen of the "Lawrence" pear.

P. E. Bucke,
J. S. Woodward,
H. M. Switzer.

REPORT OF THE COMMITTEE APPOINTED TO EXAMINE SEEDLING APPLES.

Sweet seedling winter apple shown by John H. Ramer, of Markham ; a large apple resembling Sweet Bough, but out of season now, and we are unable to report on merits.

Sweet apple shown by Mr. A. M. Smith, of Drummondville ; the flavour is good, colour green, with blushed cheek and deep eye. We cannot decide that this is really a seedling. It is in season now, and is a pleasant apple to eat, and evidently a good cooker.

Two seedlings, very similar in appearance, shown by Mr H. J. Lott, of Sidney Township, County of Hastings, somewhat resembling St. Lawrence, flesh yellowish, slightly sub-acid but with nothing special in merit.

A tart seedling, shown by Mr. George Cox, of Goderich Township, County of Huron. It is handsome, bright yellow, with blushed cheek, flesh firm. This apple will keep well into July.

Dessert Russet, supposed to be a seedling, shown by Dr. Watt, of Niagara. Being past its season, we cannot speak clearly as to merit. Flavour seems pleasant, grain fine.

Another Desert Russet, shown by Dr. Watt, resembling the S. P. Grise in appearance in some points. It lacks in character ; sweet and mild in flavour.

Seedling shown by Messrs. Day and Dempsey, of Albury, large greenish splashed cheeks, flesh firm, very slightly sub-acid and pleasant, possessing more merit than a majority of seedlings of this class.

Another seedling shown by the same firm, smaller, similar in appearance to the last, but inferior in flavour.

ALEX. MCD. ALLAN,
A. M. SMITH,
W. HOLTON,
B. GOTT.

INTERESTING PAPER BY MR. JOHN A. WARDER, OF NORTH BEND, OHIO.

"ON PLANTING TREES ALONG OUR ROADSIDES FOR SHELTER, SHADE AND ORNAMENTATION—WHAT TO PLANT, AND BENEFITS OF SUCH PLANTING."

The following interesting paper on the above subject, by Mr. John A. Warder, President of the American Forestry Association, North Bend, Ohio, was read by Rev. Dr. Burnet :—

MY DEAR MR. PRESIDENT,—At your earnest request, backed by that of your worthy "Directorate," but with great diffidence and hesitation on the part of one who is so much of a stranger to your surroundings, is this effort undertaken.

The crowd of duties, too, devolving upon him toward those who are nearer to him, who may, perhaps, claim to have rights pertaining to the members of his own household, would naturally prevent him from transcending the limits of his special bailiwick ; but, fortunately, all this was provided for anticipatively by those who applied the title American to the Society for the Promotion of Forestry in our Country—they desired to gain the advantages to be derived from your co-operation ; they wanted to be free from the "pent up Utica" of their own more limited area ; they wished to gather information from the length and breadth of the continent—hence their officer is your servitor as well as theirs.

Allow him, therefore, to come among you and address you under the broad ægis of an American, and as one who is ready to judge you all by the specimen members you have so willingly sent over to our side upon various occasions, and who have always so nobly represented their fellow-citizens of the Dominion, that the names of Burnet, Dougall, Beadle, Arnold, Saunders, and those of your neighbours, Jas. Brown, Chas. Gibb, Henry Evans, and others in the Provinces, are familiar as household words.

Yes, my friends, the scope of Forestry opens a problem of continental proportions, and hence, in the various countries of Europe, though each State and Kingdom enacts its own laws and establishes its own customs and usages for the management of its woodlands, and though these may differ materially, as do the results, in better or worse condition of the forests, even there the great questions are admitted to be continental, and these are referred to the famous meetings of the International Congress of Foresters.

But, after all, why should we address our friends as "over the way"—what is in the way, but an imaginary line, a mere politico-geographical line that is no broader than the spider's slender thread, which is supposed to separate those of us, here at home, who reside in the several commonwealths of our broad Union ! You and we boast of a common ancestry ; to great extent we use the same language ; in our customs and religion, in our pursuits, studies and interests, we have much in common, and in the question of forestry, we should certainly be united, since this involves the consideration of problems that are continental in their scope and import.

In coming over the border to discuss what is so essentially a home question, another and serious impediment arises, and this is a want of familiarity with your necessities and knowledge of your resources. The trees that may be best adapted to your soil, climate and tastes may be very different from those af another country that is differently situated, so that any indications that may be made must be based upon general principles, and the scanty observations that have been afforded by some very limited and hasty journeys through the Dominion.

And now, then, after having disposed of one difficulty to our satisfaction, having opened the gate, as it were, to your country, let your courteous invitation be graciously accepted, while we proceed to discuss the topic before us, "The planting of trees by the waysides, for shelter, shade, and ornamentation." This is a question which can hardly be considered debatable by any one who loves trees, and yet we not unfrequently meet those who oppose the proposition, nor are their objections to the practice altogether devoid of reason.

No one can have seen the long miles of avenues of various trees that are found beside the public highways of many parts of Europe without expressing his admiration for the forethought of those who planted these trees in the time long ago. To the pedestrian, sauntering at his leisure in the survey of those lands, if a stranger, or to the native citizen intent upon his errands from place to place, and especially to the masses of soldiers, heavily encumbered with their accoutrements, while making forced marches, the refreshing shelter furnished by these continuous *allees* of umbrageous shade must indeed be most grateful.

In planting avenues there is room for the exercise of taste, and here we need the experience of others to guide us; nor have the exemplars just now referred to, always proved entirely satisfactory, and many of the long *allees* become monotonous, and perhaps tiresome by their sameness, and by the stiff formality of the trees employed, or by their peculiar treatment. This is particularly apparent when the Lombardy poplar is used, as it is in some countries almost exclusively used, for many continuous miles, and especially when, to keep it within bounds and at the same time to make it furnish successive crops of fuel, it is cut as a pollard and chopped off every few years. Another favourite tree, the horse-chestnut, has a very different habit of growth, being umbrageous and more grand, and when in blossom very beautiful, almost gorgeous, indeed.

In some parts of the country, particularly in the more retired roads of the agricultural regions, the wayside trees are almost exclusively such as produce eatable fruits—apples, pears, cherries or plums, especially the prunes in some parts of Germany. In this case, the rights of property are rigidly observed; their growing in the public highway does not make them public—they do not become public plunder. Where the fee of the land remains with the adjoining proprietor (as is almost universally the case in the United States, and perhaps also in Canada), the trees are planted by the owner of the land, and the wood as well as the fruit belongs to him. Where the land has been condemned by the Government, and taken for a sort of *King's Highway*, the authorities plant the trees, and their products are usually farmed out to contractors, who look after their own interests. In some provinces the income thus derived is applied to educating the children of the parishes, which is no mean incentive to the people to aid in their preservation, since it redounds to their own advantage. The moral effect is good, and seems to aid in producing a high-toned appreciation of the ethics of *meum* and *tuum*, worthy of imitation.

In northern regions, and especially in the northern portions of our continent, with its climate of extremes, we need shade in the summer from the fiery rays of the sun, and in the other solstice we also need shelter from the rude blasts of winter, and not unfrequently we require a barrier against the drifting snows. This condition of affairs may need some modification in the plans and in the selection of the trees to be planted for avenues.

The protection afforded by a single row of trees standing across the direction of the wind has been found to be very perceptible in our western prairies. This effect is greatly heightened by a shelter-belt of several rows, even while the plants are yet comparatively small, but a thick belt, or even a single row of evergreens, seems really to modify the climate by checking the winds.

One of the railroads traversing the broad open plain of Nebraska has devised a style of snow-shelters that promises to be very efficacious. This consists of a double or triple row of trees, set on the windward side of the cuts. It may be that the highways and railroads of other parts of the country will find it to their advantage to adopt this plan.

Even in the mild climate of Southern Ohio, the shelter of evergreens is found to be very acceptable by all who have an opportunity of enjoying them. In laying out and planting avenues it is well to select evergreens for the north and windward side of exposed situations, while deciduous trees are planted on the opposite margin. And just here it

may be well to consider the arguments which have been raised by the practical road masters, who object to the planting of trees on the highways. The shade even of the naked boughs of deciduous trees is sufficient to keep the winter's sun from melting the accumulations of ice as quickly as would be desirable, and at any season of the year the very shelter which trees furnish to ourselves from the cutting blasts of wind will also check the evaporation of the superabundant moisture that is so injurious to our common dirt roads.

Until we can have more perfect roads, constructed upon scientific principles, and made of some better material than that furnished by rich humose soils and tenacious, unctuous clays, such as are common in extensive regions, it may be well to keep the road-bed well thrown up for proper drainage and thoroughly exposed to the natural road masters, the sun and the wind.

But this may be considered a digression from the strict line indicated in the request of your Directors, who have asked for a paper on road-side trees and their planting for shelter, shade and ornament. An attempt has been made to respond to your first query, and as to the last there can be but one mind as to the æsthetic effect of trees anywhere, whether planted on the grassy slopes of the lawn, either in groups or singly, in groves sheltering and forming a background to the dwelling, even the most humble, in the broad o'erarching avenue of approach, and also on the wayside of the public highway, trees are and always must be ornamental, if properly handled and well managed.

Referring to your commission, Mr. President (whose expressed wish is accepted as a command), it appears that you further ask, what to plant. Now you are coming to the point that must tax the practical knowledge of your respondent; no glittering generalities as to deciduous trees or evergreens, nor as to the broad-leaved or the needle trees, no æsthetic remarks as to the beautiful, in form or colour, tint and shade, strict or spreading, pyramidal or weeping, will now be in order. You ask the broad question: What shall we plant to shelter, to shade and to ornament the highways of the Dominion? And, unfortunately, you have proposed this question to one who must confess his ignorance of the kinds that are best adapted to your peculiar soils and climate, and to one who fortunately does not know what species are to be found in your nurseries, so, at least, you cannot bring the charge against him that he is puffing anybody.

Your respondent, therefore, is necessarily thrown back upon his personal acquaintance with these vegetables themselves and their greater or less ability to withstand a rigorous climate and the abuse to which they may be exposed.

Beginning with the evergreens, so admirably adapted to furnish shelter, which is your first requisite, the hardy native evergreens of our continent are to be preferred for all large planting to those which, at great expense and pains, have been brought from foreign lands, too many of which, after trial, have proved unsatisfactory, and have to be cast aside with the ignominy attaching to that which is "far-fetched, dear-bought and little worth."

Spruces.—The white and black, *Picea* (Link), *alba* and *nigra*, are sturdy northrons, having a beauty all their own, and often assuming quaint forms of great attractiveness and putting on tints of peculiar colours.

The Norway spruce, *Picea excelsa*, though and imported species, has proved itself a good immigrant in all parts of our continent where it has been planted. It is a noble tree, of very erect habit and conical form, that rapidly assumes large proportions. This tree is entitled to a front rank in avenue, wind-break or grove, and furnishes fine timbers for architectural and naval construction. The young trees are now so abundantly furnished in America that it is no longer necessary to import them from the nurseries of Europe.

The spruces of the Rocky Mountains, though still comparatively rare, deserve a share of your attention, especially the *Picea pungens* (*Engelm*), formerly called the *P. Menziesii*, the silver spruce of those mountains; the *Picea Engelmani* and the *Pseudo-Tsuga Douglasii*, formerly the *Abies Douglasii*. All these trees are very beautiful; but you must be warned not to import them from Europe. Look to the Rocky Mountains themselves and not to the Pacific coast, as the original source of supply of these trees; nor need you look beyond the United states. (Messrs. R. Douglass & Sons, Waukegan, Ill., have grown

these plants in quantities.) This matter has been thoroughly tested in the valley of the Mississippi, considerably to the south of your valley of the St. Lawrence, and the western coast trees have failed.

While considering this section, the hemlock spruce must not be overlooked. The *Tsuga Canadensis*, formerly *Abies*, is one of your most beautiful native conifers, and will probably succeed nearly everywhere. Though not so valuable a timber tree as many others, it is one of the most beautiful when well exposed upon a grassy lawn or springing from a mass of native rocks. Its colour is supremely lovely and holds well. Planted thickly it makes a perfect screen and shelter hedge, that bears the shears admirably, and when it attains full size as an avenue it furnishes the perfection of a "dark walk."

The balsam fir, *Abies balsamea*, is very abundant in many parts of your country. Its deep green foliage, and its compact, upright habit, are much admired, especially when young, and it is a universal favourite with those who purchase evergreens to plant about their homes. This species would be useful for shelter in exposed portions of the roads through your country.

The European silver fir, *Abies pectinata*, is a more beautiful and a nobler tree, but it is no favourite with the nurseryman, especially in America, because it requires a long period of "schooling" before it can be induced to produce a strong leading shoot, after which it grows rapidly enough, The beautiful arrangement of the deep green foliage of this fir, which is very persistent, lasting several years, makes it dense and very desirable, and yet it occasionally suffers in the winter, and should have a sheltered situation.

The firs of the Rocky Mountains are particularly desirable, but perhaps they are not yet sufficiently tested for general planting. They should be tested with you, however, and at once. Who will undertake the good work?

Among foreign firs that known as Nordman's has been most satisfactory here, and bore our last trying winter better even than the native hemlock spruce.

The arbor vitæ, *Thuja occidentalis*, though it has merits as a timber tree of the second class as to size, is very ornamental, and is especially useful as a shelter. Bearing the shears or knife well, its especial value is for making a dense screen and hedge.

The white cedar, with which the above plant is often confounded, is the *Cupressus thuyoides*, a valuable tree, but one which has its range so much farther to the southward, it can hardly be recommended for Canada, unless you know it to be indigenous to your region. It is known to exist upon the northern lakes.

The red cedar, *Juniperus Virginiana*, is a most hardy tree of very wide range by the meridian as well as by the parallels of latitude, crossing the continent in both directions. Though so common as to be considered vulgar, and certainly less beautiful than many others, it is exceedingly valuable to the planter, and has well been called the poor man's evergreen. Its great value as a timber tree is only attained with age, for though it grows rapidly, there is a large preponderance of the white or sap wood in young trees. It is useful to plant for shelter screens, and will subsist on very poor and rocky soils.

PINES.—The pines, however, furnish our great supplies of lumber, in the northern forests especially, and among them you have some of the very best for your planting, which should be largely propagated for their perpetuation to supply the future necessities of the country.

Queen among these is the white pine, *Pinus strobus*, doubtless too well known among you to require a single letter of introduction, and yet it cannot be passed without remark as to its extreme grace and beauty, either singly or in groups upon the lawn, with its horizontal limbs clothed with soft and yielding leaves of glaucous hue resting upon the grass. In the forest or ancient avenue its tall shafts always arrest the attention of the traveller. This tree was taken to Europe in 1705. It is there known as the Weymouth pine, and noble specimens are to be seen in many parts of Europe, that were distributed by Lord Weymouth. In Bavaria it has become so nearly naturalized that it is reproducing itself by self-sown seeds as in its native forests.

By all means plant the white pine, and you will be much better rewarded than by its more beautiful cousin from the Himalayas, the *Pinus excelsa*, which is so grand a tree in Asia, but has not proved entirely satisfactory upon this continent; perhaps its Aryan countrymen might prove equally unsuccessful if brought here and placed in competition

with the Anglo-Saxon race born on the soil. The Norway pine, or red pine, *Pinus resinosa*, is another of your noble northern trees, producing a more resinous timber than the preceding. How it ever received the cognomen Norway is a mystery in nomenclature, as it is a veritable American, with no analogue in the great northern peninsula of Europe. Indeed, it more closely resembles the Austrian pine of the southern portions of that continent. To this, however, the red pine is a very superior tree for us and for you, whether planted for shelter and for ornament, or for its ulterior use as timber; indeed, the foreigner is fast losing its prestige among planters, and even in its home among the Styrian Alps it is very capricious in its choice of soils and aspects; it may be found on one slope of an elevation and not a tree of this species is to be seen when you cross the apex of the same ridge.

You are advised to plant the red pine largely without fear of disappointment. The growth of young trees is very satisfactory, and excels that of the Scotch and Austrian, though perhaps less rapidly aspiring than the white pine.

The grey pine, *P. Banksiana*, is another of your natives, and as such ought to have a place in your collections, but like the *P. Rigida* and *Mitis* further south, and the *P. Inops* of New Jersey, they are surpassed in excellence by the two first named, the red and the white.

The famous pines of the Southern States of the Union cannot be recommended for your plantations, nor, indeed, for ours, in latitude 40 degrees, nor can we expect to succeed to our satisfaction with those from the Pacific slope, nor from Mexico, any more than with the pines of Southern Europe, much less so with the conifers from Australia, Africa or South America, so far as known.

The Scotch pine, *Pinus sylvestris*, and the Austrian, *Pinus Austriaca*, have already been alluded to. They have their merits, and will be more largely planted in America for timber than for ornament. The former is largely grown in Germany, especially for its fuel, on the sandy plains and foot-hills of moderate elevation. Its rotation or period is from sixty to ninety years.

The writer is well aware that in this very brief sketch he has omitted all mention of a host of evergreens, conifers and others that crowd the catalogues and nurseries, which require volumes for their description, and which deserve, for their merits, the commendations that have been bestowed upon them. Many of these are shrubs, and though very appropriate for the lawn and even for the garden, as some of these may be, especially the new class of *Retinisporas*, *Biotas*, *Junipers* and many others, your queries were particularly launched at trees, and those adapted for planting on the road sides.

The consideration of all others, the possible and the impossible, may, therefore, well be handed over to the discussions that will naturally follow the reading of this paper, and be carried on by your very intelligent fellow-members, who are doubtless *au fait* in such matters.

This brief analysis of the class of evergreens thus presented to you gives but a few trees that can be heartily recommended, but that small selection may be double-starred, as we say in pomological lists.

Let us now turn, in this very hasty sketch, to the deciduous trees, which are crowding around for notice, and it is feared your patience will yield to the strain upon it, and, therefore the pen must be started on a double-quick to accomplish the march through the dense sylva before us, touching only upon those of the most hardy and most valuable characters for the purposes indicated in your query of what to plant, and leaving entirely out of sight the corollary suggested respecting the benefits of such planting, supposing them to be self-apparent.

Deciduous Trees.

Poplars.—Among the most hardy and the most rapidly growing trees are the poplars and willows, all of which may be multiplied by cuttings that anybody can prepare and plant. The native cottonwood is one of the largest, and will very quickly produce a shaded avenue. In some situations it may prove desirable. Of this tree the species *Populus Canadensis* will be perfectly hardy.

Populus grandidentata, the Michigan poplar, grows rapidly and makes a fine shade, blooms very early and holds its leaves of dark green until late in the autumn. It is objected to this and all the aspen tribe, next to be mentioned, that they sucker profusely, and are thus unsuitable for planting on the lawn, near a garden, or on the roadside next to cultivated lands.

The Abele, or silver poplar, the *Populus alba* of Europe, with its many garden varieties, are much admired on account of their green and white foliage. They grow very fast and make a good shade. They attain a large size very soon, and, for certain purposes in the arts, where soft wood is needed, the timber has its value. The trees will endure any amount of abuse, and are therefore adapted for planting in school lots and other public places.

The quaking aspen, *Populus tremuloides*, is a hardy northern plant, and forms a small or middle-sized tree, with little claim upon our attention. It must be familiar to you in every part of the Dominion. Scarcely worthy of cultivation for our purpose, and yet in low grounds it might be adapted for a street tree.

The Canada balsam, *Populus balsamifera*, is one of the hardiest of the tribe, growing in the extreme north, and everywhere within your borders. Like all its fellows, it is readily propagated by cuttings, and has thus been disseminated to a considerable extent southward. It cannot be admired, however, for any special grace or charm, beyond its hardiness, facility of propagation, and that it is a tree. In the valleys of the Rocky Mountains this species is represented by the willow-leafed balsam, the *P. angustifolia*, (James).

The Lombardy poplar, introduced from Europe, has been widely planted in America, and for a street tree it has some merit in its tall strict habit, so that it does not offend the road master by its shade. Though a striking object in the landscape, whether in formal rows of avenues, or as the spring centre of a group, it is not a favourite when largely planted, but is interesting botanically and horticulturally, and perhaps historically and mythologically also. Though long considered a species and called *Populus dilatata*, it is now believed to be only a sport, of peculiarly erect form, from the *Populus nigra* of Europe. In a horticultural aspect this tree is very interesting as bringing evidence of the possibility of multiplying plants indefinitely by cuttings, for this was common in Italy before the days of Ovid, the Latin poet, and it still prevails in all that region as the favourite avenue tree. Botanically it is the staminate form, the male of a dicœcious plant, and has never been known to seed. Mythologically Ovid makes it the memorial of the unwise and unfortunate Phæton, whose ambition exceeded his skill and ability to drive old Phœbus' chariot of the sun, and whose temerity was punished by Jupiter's thunderbolts, that hurled him headlong into the river Po, beside which he was allowed to rise as the poplar of Lombardy.

Maples.—The maples are all of them worthy of more consideration for our purpose. On low grounds, and beside water-courses particularly, the common silver maple, *Acer dasycarpum*, may be recommended, especially for its thriftiness, its rapid growth, and broad shade; though not so fine a tree as some of its family, the qualities above named, and its cheapness, ever make it a favourite.

The red or scarlet maple, *Acer rubrum*, like the above is also called soft maple. This tree is very ornamental both in spring and fall, on account of its brilliant colour of flower, seed, and autumnal foliage. The wood of old trees often furnishes the curled and bird's-eye maple. This tree is well adapted by its size for the street and for the roadway, but it is beautiful in the lawn also.

Another maple, very common in the Western States, and extending far to the northward, is the box-elder, or ash-leaved maple, the *Acer Negundo*, of which there are two forms; that of the Ohio River has bright green bark on the young twigs, while the northwestern form has the shoots of a purple hue and covered with a thick white bloom. The latter box-elder is much the better tree, and quite a favourite on account of its hardiness and rapid growth. For street trees it is commendable, for road sides it will serve a good purpose, but its timber has comparatively little value. It is dicœcious, and the female tree has the better habit, being more snug and compact, and therefore to be preferred for planting.

The sugar maples are the best of this group, making majestic trees of great beauty, and putting on, in the autumn, the most gorgeous colouring. The rock maple, *Acer Saccharinum*, is so familiar as the tree of the "sugar bush" (or "camp" on our side), that it need only to be named, as its value is duly appreciated. There is another tree, however, and recognized as a different species, which must be noted, the black sugar tree, the *Acer Nigrum*, which is not so prevalent in the Eastern States nor in Canada as in the valley of the Ohio. This is noted for its broader foliage, and it usually has a more majestic form in the forest. The timber of both trees is equally valuable.

With such a wealth of maples it is hardly worth while to import the European forms.

Elms.—Elms will, of course, assert their claims upon our attention, and indeed they are worthy of a place in the grand avenue, as well as in the extended sweeps of the park and lawn. For this purpose the American white elm, *Ulmus Americana*, has the highest claim, though perhaps it is too large and wide-spreading at maturity for a road-side tree, except as an occasional object, serving thus as a landmark. This tree, however, varies wonderfully in its habit; it was a great favourite with Michaux, who introduced it to his fellow-countrymen of France, as the "most magnificent vegetable in America."

The red elm, *Ulmus fulva*, is not so noble and wide-spreading an object, but on that very account it is better suited to our purpose. It grows rapidly and furnishes a more valuable timber, which is more durable also, and much used for railway sleepers.

The rock elm, cork elm or hickory elm, *Ulmus racemosa*, is perhaps more beautiful as a tree than either of those named. It is also capable of yielding timber of great value and both of the last two are worthy of a prominent place in our timber plantations. They are both, presumably, in your native forests.

You, Mr. President, and some of your compatriots, will desire to plant the elms of Europe. Do so, by all means, as pleasant mementos. The common form of *Ulmus campestris*, long ago brought over to Boston Common, is perhaps better adapted to the road-side than any of our American species just now presented. The garden varieties of the European species have no especial merit or adaptation to the road side, but may be introduced into your parks.

Oaks.—The oaks of our country are quite varied, and have been too much overlooked by tree-planters, and yet wherever they have been introduced into village streets they have given great satisfaction. The European, particularly the *Quercus robur*, *pedunculata*, succeeds admirably in the temperate latitudes of our land.

The Holm-oak, *Quercus ilex*, of Europe, and grown in the south of England for its evergreen leaves, has not succeeded here and would not be likely to endure your winters. But you have a wealth of natives that are well worthy of your care, and it is to be hoped they will be extensively propagated and planted.

Among these the white oak, *Quercus alba*, the yellow oak, *Quercus castanea*, the swamp white oak, *Quercus prinos palustris*, and the burr oak, *Quercus Macrocarpa*, all furnish white oak lumber, and all are worthy of trial, first in your parks and lawns, perhaps also on the road-sides, and, if successful, largely in your forests.

While upon the oaks, let the opportunity be improved to urge you to adopt the old German custom of gathering acorns year by year, or whenever there is a crop. If not convenient to grow them in nurseries for future planting, still save the acorns and plant them anywhere in the woods. They need to be put into the ground at once, quite shallow, and they vegetate and continue to struggle on, even in the shade of other trees for an indefinite period, until at length, when the original forest is removed, they are ready to spring up, and soon make a valuable succession of woodland.

The red oaks constitute another class, characterized by the pointed lobes of the leaves, terminating in a bristle, and some with entire leaves, but all furnish an inferior kind of lumber.

Some of these are remarkable for their beautiful forms when grown singly, and for their exquisite colouring in the autumn. On this account the scarlet oak, *Quercus coccinnea*, and the pin-oak, *Quercus palustris*, are specially note-worthy, ay, and place-worthy too, by whomsoever has a vacant space on his grounds where he may desire to place a beautiful object. The former prefers a dry, the latter a damp, situation, and both may

be planted on the road side with a certainty that in a few years they will furnish a most gorgeous fringing to the highway during an autumnal drive; after the frosts have destroyed all your flowering plants the parterre in all its brilliancy will be replaced by these lovely oaks.

Ash.—The ash trees should not be ignored even in this hasty glance at our arboreal wealth. Here, again, the American trees will be found superior to the foreign. The white ash, *Fraxinus Americana*, is pre-eminent, though it may become at last too large for the road; still it should be planted, and then its valuable timber is available at any age, and trees grown thus exposed to the air furnish the very best lumber.

The green ash, *Fraxinus viridis*, on account of its smaller size aud its clean, bright, shining and dark green leaves, will be a better subject for road-side planting. This tree is of rapid growth when young, is very hardy, being found far out on the exposed prairies of the northwestern plains, the outside tree, and one of the first to contend with the grasses for a sylvan supremacy; it may be safely recommended for your road and village planting.

Birch.—Your own native birches, and those introduced from Europe, should have their place secured to them on the road-side, where they will lend a charm by their graceful forms and peculiar spray and foliage.

Beech.—Of the glorious beech, *Fagus ferruginea*, not a word has been said. The "wide-spreading," so well named by Virgil in his opening line, describing the shady retreat of Tityrus, gives this tree a classical and a very attractive appearance wherever this character may be developed, but the broad sweep of the park is much better suited to its style than the narrow limits of the road side.

In European forests the beech, *Fagus sylvatica*, is largely cultivated, particularly on the lower lands devoted to forestry, and it is often introduced into oak plantations for the sake of filling up the interspaces, and thus forcing the oaks to produce tall shafts.

Two other trees have been jotted down upon the paper before me, as too valuable to be overlooked or omitted, and yet they have not been brought to the front, because of some uncertainty respecting their adaptation to your conditions. They represent two families which have not been included in the catalogue already given.

Cherry.—The roses may be now placed before you in the person of the wild black cherry, *Prunus Serotina*, a rapidly growing tree, probably hardy enough, which cannot fail to give you pleasure by its graceful form, its light and open foliage, its racemes of white flowers followed by abundant fruit for the birds. This tree would be very appropriate on gravels, if planted by the sides of your highways. The timber of this species has great value, and is highly prized for the inside finish of houses and for flooring, and is much more agreeable in its hue than the sombre walnut so universally employed for our furniture.

Magnolia.—The magnolias may be represented among you by the tulip tree, the white-wood of some parts of our conntry, and also, unfortunately, sometimes called poplar. The *Liriodendron tulipifera* is a magnificent tree of the largest size in its native forests. When standing alone or in avenues it rises majestically and clothes itself with abundant branches that are disposed in a regular conical form, and in early summer, after the broad and showy foliage is well developed, the points of twigs are bedecked with the large, bright coloured, tulip-shaped flowers, that make a grand show. Especially adapted for a lawn or for avenues, the tulip-tree is also well suited to the road side.

Walnuts and hickories have been purposely omitted because of their ill-adaptation to the purpose in view. In their proper place they are exceedingly valuable—so of many other trees of our own and other lands—which would require too much space, and their recital would try your patience, if, indeed, that has not already been exhausted.

APPLES—SUMMER VARIETIES.

Read at the Winter Meeting by P. C. Dempsey, Albury, P. E. County.

Early Harvest.—Tree grows slowly. When given good garden culture, on a loamy

soil, it will produce good crops of flat, yellow, acid apples, full medium size. It is one of the best amateur varieties.

Red Astrachan.—Tree, a strong, good grower on almost any soil. Fruit, large; colour, green, covered with red; very pretty; too acid for dessert; best of its season for market.

Benoni.—A good medium sized striped apple; succeeds in almost every soil. Good for amateur culture.

Primate.—A very good early amateur variety. Tree, apparently hardy; good growers; fruit full medium size; slightly conic in form; colour yellow, with a slight brown blush on the exposed side.

Colvert.—Tree, a good grower; perfectly hardy; succeeds in almost every soil. Fruit, large; liable to be blown off if left to mature on the tree.

Duchess of Oldenburg.—Tree, a good grower; succeeds in almost every soil. Fruit, one of the best of its season for marketing, on account of its attractive appearance.

Gravenstein.—Tree, tender, except when grown on a well-drained gravel or sandy soil. Fruit, one of the best for amateur or market.

St. Lawrence.—Tree, always healthy; very rapid in growth; produces an abundant crop each alternate year of large, conic, striped apples, that will attract the attention of any one passing it when on the fruit stand.

Fameuse.—Tree, always good in every variety of soil in which I have ever seen it growing. It makes one of the best stocks to graft tender varieties on. Fruit, very attractive when fair, but liable to spot in almost every variety of soil. Where it can be well grown it is one of the best for amateur or market.

Beauty of Kent.—Tree, rapid in growth; does well in every soil where I have had the privilege of seeing it; produces large crops of enormously large apples. Colour, yellow, striped with red; one of the best for cooking and market. This variety has been overlooked.

Norton's Melon.—Tree, a slow grower, but seems to succeed in every place in which I have seen it. Fruit, good size; very attractive in colour and form. Any person once getting them is sure to want them again. John P. Williams, Esq., of Bloomfield, writes me that he intended to top-graft all of his Fameuse with this variety.

Fallawater.—Tree, a good, strong grower; always appears healthy. Productive of large green-coloured fruit, with a beautiful brown cheek.

Baldwin.—Tree, very tender; will only succeed in some few favoured spots. It must have a dry, light soil, and then it is better top-grafted on varieties that are more hardy; it is one of the best for market.

Hubardson's Non-such.—Tree, a good grower, and appears to be hardy. Fruit, resembles Ribston Pippin so much that we often find it competing in that class at our county exhibitions. I have seen only one plate of Ribstons in their class at a large exhibition and they got no prize.

King of Tompkins County.—Tree, a good grower; form, spreading and irregular, sometimes one-sided. Fruit, one of the best and most attractive of any of our winter apples, but in some localities I have seen it grown for years and not produce one specimen. It is very shy. I have experimented some with this variety. I grafted it in the top of another variety, having the two with branches mixed. In that tree it has fruited well for four successive years. Would it not be improved by planting in alternate rows with varieties that bloom at the same time?

Northern Spy.—Tree, tender. The trunk of the tree often cracks in the bark, and cankers. Frequently fails after producing two or three crops. Fruit, very fine in some localities, but I have seen in an orchard more culls than perfect specimens; often only fit for cider.

Rhode Island Greening.—Tree, a good grower; not always hardy; should have a well drained, light soil. In suitable soil and in favoured locality, it is one of the best for market.

Golden Russet—Is one of the best and most hardy trees we have. Succeeds in almost any soil, but only productive in favoured spots or localities, otherwise very shy.

Westfield Seek-no-Further.—Tree, not very rapid in growth, but fair. Will succeed

in most localities. Fruit, always fair and attractive. John Graham, Esq., of Walbridge, places this variety at the head of the list for market or amateur.

Talman Sweet.—Tree succeeds where an apple tree can be grown of any variety recommended for home use.

Bailey's Sweet.—Tree grows well until it commences to produce fruit, then it should have good cultivation, like all other varieties that bear every year, otherwise they will exhaust themselves.

Ben Davis.—Tree, hardy ; good even grower ; commences to bear when three or four years from graft or bud. Succeeds best on a strong loamy or gravelly and deep soil. The roots seem to run straight down. Fruit, large, conic ; colour, green, striped and splashed with two colours of red. It will save until July with ordinary care, and command a better price that the Golden Russet. I would recommend parties to try this variety sparingly at first. In some localities the fruit is small and almost worthless. Mr. R. H. Potter, of Napanee, places this at the head of his list. There are many varieties that I have not placed on this list, either on account of not succeeding in many localities, or not sufficiently tested: Porter, Minister, Chenango Strawberry, Twenty Ounce, Yellow Bellflower, Red Canada, Roxbury Russets, Wagener.

I would recommend parties to try all of the new varieties that are being introduced, some of which, no doubt, will supersede some that I have placed on this list.

FOREST TREE SEEDS AND SEEDLINGS.

Read at the Winter Meeting by B. Gott, Arkona, Ont.

Gentlemen of the Fruit Growers' Association of Ontario :—

It was with much satisfaction that I learned, a short time ago, in a report of a meeting of this Society held in an important city of this Province, that notice was given to change the name of your Association from the one by which it has been long and favourably known, to "*The Ontario Fruit Growing and Forestry Association.*" I therefore introduce the subject of my caption without any further apology than this, that I firmly believe it to be a subject of immense importance to us and the people of this country at large. I may be allowed to state, however, in the beginning, that I do not intend to deal with this complex and tedious subject in minutiæ, but rather hurriedly glance at some few of the more practical aspects of it for our mutual edification and instruction. The extent and varied character of the subject, you will readily see, will at once forbid detail in the prescribed limits of these papers, which are intended merely to be brief and suggestive. We are undoubtedly laid under a heavy debt of gratitude to indefatigable and noble Dr. John A. Warder, of Ohio, for the friendly and patriotic spirit which has prompted the masterly and excellent paper on Forestry, which has just been read in our hearing by our President. Probably no nation with whose works we are at present familiar, has expended so much solid means or so much of the brain and muscle force of her people in the investigation and practical working of interests connected with her national forestry, as have the people of the United States. In witness of this I would merely refer you to the late elaborate and interesting

Report upon Forestry.

of 650 pages, issued in the year 1878, by the Department of Agriculture, at Washington, and edited by the Commissioner, Franklin B. Hough, of New York. This report is an everlasting boon to their people, and a monumental credit to the Government which caused it to be issued and distributed among a rising people, "unto whom we do well if we take heed," in these matters. The relationship and influence of forestry to our national fruit growing and our all important agricultural interests, are doubtless intimate and very precious, and are being daily scientifically and practically demonstrated, and better understood. It is now easily conceded among cultivators, that in the neighbourhood of only small blocks of forestry the fruit grower's chances of suc-

cess are comparatively certain and greatly improved; also that climatic aerial changes are less disastrous, the force of winds greatly modified, and the effects of intense heat or cold considerably and sensibly softened. The most regular and best possible amount of rainfall is best secured in such choice spots, these brightening to the largest possible extent the prospects of the patient fruit grower, and the laborious and painstaking agriculturist. Who will now plant an orchard or a vineyard without first pausing to secure a screen or shelter belt for his plantation? If these things are found to be so in the experience of men, with what scrupulous care and patriotic interest should we be found guarding our natural forests from destruction and death, and how intensely important should we regard any information relating to the propagation, renewal or preservation of forest growth. That the earth is so generally and so plentifully supplied in its utmost extent and its every recess with a profuse forest growth, for usefulness and beauty, is undoubtedly one of the richest of Divine legacies to ungrateful mankind. Conceive, if you please, the idea of a habitable world of the nature and dimensions of our earth, that is but a vast treeless plain. How utterly repulsive and forbidding! How devoid of gracefulness and beauty! How comfortless and wearying! and how totally unfit is such an earth as the residence of creatures such as we are.

On the contrary, how different is the scenery that greets us all around, as though the great Creator of all things had amply foreseen our greatest needs. Every country and island of which we have definite knowledge, if we except merely the great sandy plain in the centre of the "Dark Continent," and not inhabited by man, is more or less profusely covered by a rich and luxurious growth of natural forestry, just suited to the conditions of climate and soil, and to the urgent demands of the inhabitants frequenting those climates. How admirably is the earth furnished as the habitation of man! Perhaps no country in any climate on the broad surface of this beautiful earth has a native forest growth at once so extensive, so varied, so grand and so useful for the various and urgent needs of man, as on the extensive and inviting continent of America or the new world. Ontario, and even the whole

DOMINION OF CANADA,

very largely shares in the inherited wealth of these primeval and majestic forests. This is a coveted wealth that European countries wistfully look to in vain, and which they would doubtless prize even above the inexhaustible wealth of their fathomless mines. Yet, with what unexampled recklessness and slaughter, are we, as a people, treating those noble relics of the olden times that we never can replace. How inconsiderately are they fired and felled, and otherwise villanously destroyed. What sad and merciless havoc is annually made upon them for the base and meagre considerations of the present hour! How far from our serious thoughts of the future are the considerations of preservation, economical use, culture and propagation as applied to our forests! Even now in many open and wide sections of this fair and promising country the landscape is fast becoming stripped and treeless, and affording but little beauty to the eye or comfort to the home. The parching drouths of summer scorch the sparse vegetation, and the merciless, fierce and piercing winds of winter sweep perishingly over those denuded spots.

The serious consideration of this whole subject is to us, as well as to others, a matter of immense importance, and very soon we shall find ourselves compelled by merest need, to entertain it in detail. If something is not speedily and effectually done in the interests of our forests either in the shape of preservation or propagation and culture, we shall, before many years have swept their onward course over us, find ourselves compelled to forever inhabit

A DISMAL TREELESS WASTE,

and an unfruitful region. But to come closer and more immediately to the subject matter of my caption, allow me to remark, that by the words "Tree Seeds," I may also understand *slips or cuttings* used for purposes of propagation, as well as seeds properly containing the vital principle of vegetable action and growth. This you will at once clearly discern will open to us an immense and interesting field of investigation and inquiry,

that, treated in detail, would far outstrip the narrow limits of our present prescribed plan. We shall therefore, as we have before said, strive to be rather suggestive than profuse. The seeds of forest trees, although in many cases very inconspicuous and apparently unimportant, are nevertheless the ostensible and positive receptacles of tree life, and for their perfection and development the parent tree lives and blooms and dies. We must therefore regard the seeds as of the very first importance in the history of tree life, and as containing in themselves, in embryo, the essential parts of the future plant, exactly resembling in all essential respects those of the parent. Their nature and capabilities must be carefully studied, and in the management of them whatever would injure or destroy their vitality must be positively avoided, and whatever conditions will most readily and surely hasten and ensure their progress and development in life must be assiduously maintained. The seeds of different trees mature at different seasons of the year, when they must be immediately gathered.

This is done largely by persons well acquainted with the forests and who give much of their time and attention to them. It is therefore required of the forester, that he be a man of extensive and accurate knowledge, of large and well developed experience in the proper management of tree seeds, and that he maintain a sharp lookout for them at their natural time of dropping. Some tree seeds are very relishable and valuable as food to man, and also to many of the lower animals, birds, etc., and unless the forester maintains a constant and sharp look out for them, and is wide awake in his business, he will find to his disappointment that his chances are merely second-rate. Again, most tree seeds are found to germinate best immediately after maturity if properly disposed of in their homes in the earth. If this point is neglected and their coverings are suffered to become dry and hard, and their vitality impaired, their germination is sometimes prolonged and sometimes destroyed altogether. In the orders *Aceraceæ*, *Ulmaceæ*, etc., the seeds ripen in very early summer, and require immediate attention, and, as a rule, their seeds do the best if disposed of at once in the seed bed. The particulars relating to the keeping of the tree seeds are not generally well defined or understood. It is, however, evident that different seeds require different treatment, and the practice is frequently attended with considerable risk and danger to the life of the seeds. Large and correct experience is required to superintend this department, and nothing else can be well substituted for it. In a general way most of our hardy forest tree seeds are best preserved for short times in moderately fine sand, either dry or moist, in some cases one and in some cases the other, and out of the way of frost. This sand is to protect them from the disastrous effects of the atmosphere when allowed free access to them, as they are not at home in the air but rather in the earth. Although it is a good rule that tree seeds should be sown as soon as possible after maturity, yet it is sometimes impracticable to do so, and it is quite possible to keep them during the winter, and sometimes even for longer periods of time, by judicious management in preservation. The seeds are then sown as early in the spring as possible, as soon as the ground will permit of freedom of working and the weather has a promise of early growth. The ground selected for the purpose should be high, dry and thoroughly loosened and pulverized by frequent and deep stirring. If poverty of nutriment should be suspected in the soil of the seed bed it must receive, previous to seed sowing, heavy dressings of rich fertilizers, thoroughly incorporated with it. The best possible fertilizer for all general purposes is well decomposed and thoroughly mixed barn-yard manure, applied to the surface and thoroughly worked and mixed up into the soil, so that it may be rich and well stirred to the depth of at least eighteen inches or two feet. In our experience in locations for tree seeds, we have found a regular and somewhat steep northern slope, of say 25 to 30 degrees of inclination, to be a very favourable and beneficial exposure, and especially so if moisture is pretty liberally and naturally provided there. This we have found to be so for two especial reasons: first, the young and tender seedlings, as they are coming up, are in this way very much protected from the scorching and disastrous influence of our peculiar and intense summer sunshine; and, second, in our region of country the most of those exposures are found to possess a mild and very favourable coolness and dampness in the soil, that is very desirable, especially in the intenseness of summer drouth. If the beds are to be made on a small scale, they may be made in any convenient form, and of sizes to suit the convenience of the operator.

The seeds may then be carefully and thinly deposited in the well-prepared earth, and in rows twelve or eighteen inches apart, or, in field culture, two or three feet apart, and at a depth proportionate to their proper dimensions. After sowing and thinly covering the seeds, the ground should be thoroughly rolled, or carefully firmed by means of the spade or the feet. Without any delay it will be found advantageous as near as possible to imitate nature in the matter of shade for the young seedlings, and the whole surface of the seed bed may at once be shaded or protected from the influence of the sun. This is best done by means of fresh white cedar branches laid on frame work, and raised some three or four feet above the surface of the bed; the branches placed on just thick enough to admit only a portion of the radiant light. It is reported to be very interesting and instructive to witness the arrangements for shade over acres and acres of tree seedlings in the grounds of one of the largest tree seedling growers on the continent. I refer just now to those of Messrs. Robert Douglass & Sons, forest tree nurserymen, Waukegan, Ill., U. S. Their annual tree seed products amount to millions upon millions, and are liberally distributed over the entire country. It is not well to place those shades too high above the seed beds, neither must they be placed too low to ensure complete and free circulation of fresh air and to facilitate ready weeding and culture of the soil. Protection and shade are more especially necessary in the case of evergreen tree and shrub seeds, and many others are greatly benefited by it. Birds must also be closely watched, as they are very fond of tree seeds, and especially evergreens, and will readily dig them up and devour them, and if neglected all will be frustrated. Shading greatly helps them in their thievish work. During the whole time of the active growth of the young seedlings the frequent stirring of the soil must not be neglected, and the weeds must be carefully kept out, and in spots in the rows, where they are standing too thickly, judicious thinning would be a great advantage. If they are intended to remain where they grew during the winter, and should the ground contain surface moisture, they must be well covered down during this trying season, or they will heave out and be left high and dry on the surface. It is not well, however, to leave them in the seed bed more than one, or, at the most, two years, as their top roots lengthen and they are injured for future transplanting thereby. They will be ready at these ages if growth has been good, and satisfactory for permanent transplanting in nursery rows, three feet apart and two or more feet in the rows. Here further attention to pruning and culture must be kept up for a period of from two to five years, as the case may be, before permanently locating them in their final homes. The pruning necessary is simply the encouragement of a strong stem and a thrifty leader, and the formation of a good head according to the known habits of the tree. This pruning must be attended to annually as the circumstances of the case may demand. Sometimes frequent or annual transplantings are resorted to among nurserymen for the encouragement of an abundance of small fibrous or feeding roots. The practice is a very good one, and such trees so treated are usually more valuable, and finally transplant with the greatest ease and surety. The last and permanent planting may be done either in the fall or spring of the year, and on ground well and carefully prepared for the purpose. The plan of the planting must be carefully arranged before hand, and must be in accordance with the purpose which the trees are intended to serve, either for lawn decoration, fruitfulness, shelter or wind-break, or for extended forest culture and growth. The best results in transplanting for forest tree culture and growth will undoubtedly be obtained on well drained, rich and thoroughly cultivated soil, and the trees set at a distance of not greater than four feet apart, or at the rate of 2,700 trees to the acre. They may be here still thoroughly cultivated, either by hand or horse power, and during a period of time until they perfectly overshadow the whole ground; moderate pruning may also be kept up, and the trees will make a most surprising and satisfactory growth. In relation to the question of sorts, kinds, or varieties of trees to grow, tastes, requirements and circumstances greatly differ, but a sharp and intelligent view should be keenly had to ultimate usefulness and profit. For these purposes nothing can be better than our native, common Canadian forest trees, either for usefulness or beauty, though many admirable foreign varieties are successfully cultivated among us. The requirements of the cultivator once ascertained, the sorts of tree to gratify them are almost endless. I am afraid, however, that I am already greatly over-stepping the limited bounds assigned me in this paper

as my subject is now no longer seeds and seedlings, but trees of magnificent proportions, of stateliness and beauty. As will at once be perceived, I have not so much as glanced at the philosophical or scientific aspects of the subject, as these were beyond my control, but have contented myself with a simple practical statement of the question. The importance of the subject alone is sought to be placed in conspicuousness, as no glare of masterly ability is even attempted. I humbly trust I may hope that the importance of the project that I feel deeply interested in, viz., *Canadian Forestry*, may at once commend itself to the earnest attention and good judgment of the people of this beautiful and prosperous country, and that before many years shall pass we shall see many plantations of forest trees dotting the fair surface of our Canadian landscape.

Arkona Nurseries, February 18, 1880.

WHAT SHALL WE PLANT?

Perhaps there is no question that cultivators of the soil more frequently ask themselves, and no question more difficult to answer satisfactorily, than what will be most profitable and pleasurable for us to plant.

The person who has but a short lease of the land he occupies will give quite a different answer to this question from the person who owns the land himself and hopes to cultivate it so long as health and strength will permit, and looks forward to the time when, through the infirmities of age, he shall give up the old homestead to some promising son who will hand down his father's name to posterity. I shall not attempt to answer the question for the person who is a yearly tenant, but proceed to make a few suggestions to the owner of the soil.

In the first place, permit me to express my belief that there is a tide in the affairs of the cultivators of the soil; and the question of what to plant must be answered by Canadians of to-day quite different to forty years ago.

> Yes, forty years ago, I ween, through July's burning sun,
> Our shining rivers filled their banks for raftsmen's speedy run,
> And sloping hillsides, clothed with trees, invited August showers;
> Thus dale and hill, and plain and rill, were crowned with fragrant flowers.

Looking, then, at our position to-day as cultivators of Ontario soil, and comparing our position with other portions of the earth, I would say plant apple trees for profit, and still continue to plant until at least one-eighth of this portion of Ontario shall be covered with apple-trees.

This conclusion has been arrived at from the following considerations:

1. No portion of the earth can grow better apples than we can, and but a very small portion of the earth can grow apples to compare with ours.

2. Because a considerable portion of Ontario soil has, in the past, been devoted to the growth of wheat, and that this soil is now quite inferior for the growth of wheat to what it was when first brought under cultivation.

Then, looking at the prospects of the immense crops of wheat that will in the immediate future be grown in the North-West, and to the fact that a great portion of the North-West cannot grow apples, coupling these facts, with our promised railway facilities for shipping to our North-Western neighbours, has led to the above conclusions.

But let no one think of confining himself solely to planting apple trees, lest by so doing our orchards should be deprived of the summer showers. By all means let us plant our steep, sloping banks, and every piece of poor waste land, with some valuable and rapid-growing trees suitable for the soil and climate, not forgetting to plant a good row of evergreens of some kind around our orchards (Norway spruce would be my choice).

On some of our hill-sides and valleys the black walnut and hickory can be grown, and it would add much to the value and appearance of the farm if a few of these trees were dotted over it in different parts.

Thus far the question has been answered from a dollar-and-cent stand-point, but the question is equally interesting when planting for ornamentation and for the real pleasure to be afforded. Let me say a few words about planting for ornament. In passing through the outskirts of our cities, towns and villages, we often see large, and, in some respects elegant, mansions, that have cost the owners many thousands of dollars, but upon the grounds there is scarcely a tree of any kind to break the ostentatious glare from the road, or to protect it from the winter storm. Near by stands a small and unpretending cottage, with its quarter or half acre of land. In the front of the house stand three or four Norway spruce, or, if the cottage be very small and low, a couple of Austrian pine trees instead; a little dwarf mountain pine stands opposite the front window; a beautiful *Clematis Jackmani* climbs up a slight wire trellis on one side of the door, loaded for several weeks in the summer with beautiful purple flowers. On the other side of the door stands a luxurious Pipe vine, its dark green twining stem bidding defiance to twenty degrees below zero in the winter, and all summer clothed with dense foliage, each leaf measuring nearly a foot in diameter, and in July loaded with an abundance of perfect meerschaum pipes, sufficient in number to satisfy the most inveterate of smokers, and each pipe large enough (in the writer's opinion) to hold all the tobacco that any dozen persons should consume during the year. But few persons, one would suppose, could pass such a home without thinking of the words of Tom Moore:

"And I said, if there's peace to be found in the world,
The heart that is humble might hope for it there."

But let us go back for a few minutes to our expensive, naked mansion, that looks as though it had strayed from some stiff city block into the country, and got lost. But here it is, and in order to make the best of it let us put in a few clumps of Norway spruce, the number of the clumps, and the number of trees in a clump, depending upon the size of the grounds; a row of evergreen and deciduous trees along the front, consisting of mountain ash, horse chestnut, weeping birch, black spruce, white spruce, Austrian pine, etc., and a few hardy shrubs between the trees. The change for the better that will be effected by this simple, and at the same time the cheapest of all ornamentation, must be aparent in a few years to every person of taste.

The pleasure afforded by watching the progress of healthy growing trees, planted by our own hands aided by some loved ones, is very great, and it is questionable if any person with a particle of music or poetry in his soul can stand alone for only a few minutes beneath the branches of some lovely evergreen that he, with the aid of some dear departed one, had planted some thirty years ago, and listen to the strains of Æolian music in its branches, without being the better for it. And where, I would ask, is the son, worthy the name of a son, who would not under such circumstances exclaim:

"Woodman, spare that tree!
By my dear father's hand
'Twas planted in that spot;
Then, woodman, let it stand,
Thy axe shall harm it not."

And, as there is a desire implanted in the breast of most of us to be remembered after we are gone for some good that we have done, I do not know of anything so easy and so well calculated to accomplish this object as the planting of trees, and thus, as Longfellow says,

. . . "make our lives sublime,
And departing leave behind us,
Footprints on the sands of time."

CHARLES ARNOLD.

Paris, February 17, 1880.

RASPBERRIES.

By A. M. Smith.

Mr. President and Gentlemen:

It has been said that every man has some hobby to ride, and I believe it is just as true of fruit growers as of any other class of men. Take a Grimsby man, for instance, and his hobby would be peaches and peach growing; an Owen Sound man's would be plums; while an Oakville or Jordan man would ride strawberries, and some from other sections would prefer pears or apples, and a great many of our Yankee friends are just now astride of grapes. But my particular hobby is raspberries, and with your permission I will trot out my steed and endeavour to show some of his good points. My favourite colour for raspberries (as well as horses) is red or bay, though I do not dislike a good black, and I might endure a chestnut (say a cross between the two, like Saunders' Hybrids); but a cream (like Arnold's Diadem) is too tricky for me, and whites are too tender to stand the climate—but an explanation of this hereafter. I believe that the cultivation of this fruit, in this country at least, is but in its infancy, and that we are destined to see as great an advance in varieties, and in its cultivation, in the next ten years as we have in strawberries during the last. The main reason why so little attention has been paid to its cultivation heretofore in Canada is because of its abundance in its wild state. From the earliest settlement of the country to the present, and from the shores of Ontario to the remotest settlements of our Province, it has sprung up as it were spontaneously around the clearings and fences, and has been emphatically *the fruit* of the pioneer settlers; and even now the majority of our farmers, and many dwellers in our large towns and cities know little or nothing about it except in its wild state. Such people know as much about raspberries as a man does about Spitzenberg apples who has never seen or tasted anything but crab apples. I do not say the wild raspberry is not quite palatable when cleanly picked and fresh from the bushes. But the wild raspberries of our markets, picked by Indians and others, and brought in in pails—Well! they may do for syrups or raspberry vinegar, if one can do as the boys do when they drink new cider—forget all about the worms, decayed fruit, dirt, etc.—but compared with the Clark or Herstine, or even the Philadelphia, they would be like our wild plums beside the Bradshaw, Victoria, or Washington. I know not why it is so, but the majority of our farmers seem to have an antipathy to the culture of small fruits. They think it does not pay; they do not like to be bothered with them, and if they tolerate them at all they are generally left to the care of the boys or "women folks." But when they are on the table, covered with cream and sugar, or surrounded with the delicious pastry—which their wives know so well how to prepare—mind you, they are no way backward in disposing of their share of them. I have known them even to assist in gathering wild berries, travelling miles to get them. I have a vivid recollection of spending a day with my employer in the bush, the last season I worked on a farm, gathering black raspberries. It was so rainy we couldn't work out doors so we went berrying. I thought then, as I ever have since, that if there was as much time and trouble spent in cultivating a few choice varieties in the garden as there is in tramping through brush and wet after wild ones, farmers' tables would be better and easier supplied with these luxuries than they are now. As I remarked at first, my favourites among the raspberries are the red. My experience in the cultivation of them extends over a period of about twenty years—for the last ten years I have cultivated for market, and during that time I have tried quite a number of varieties, but have found very few that were profitable. Some are too tender to stand the winter; some too soft for shipping, others poor bearers, etc. Still a great many that are not profitable for market, on account of the labour it would require to lay them down for winter protection and tie them up again in summer, or on account of their propensity to sucker, or their being too soft to ship, would be very desirable for amateur cultivation, and would well repay a little extra labour. Among these I might mention the Franconia, Brinkle's Orange, Belle de Fontenay and some others. As a berry for general culture, the Philadelphia would, in my estimation, rank among raspberries where the Wilson's Albany does among

strawberries. It would be *the* berry for the million on account of its hardiness and great productiveness. Still it does not sell as readily or command as good a price in market as many others, on account of its dull, mouldy colour which gives it the appearance of having been picked a long time, and its quality is not up to some others. Size and colour are two great requisites in marketing any kind of fruit, and in most markets rank higher than flavour, but when all of these are wanting, it takes great productiveness to make a variety profitable, which quality, fortunately, the Philadelphia has. I think it will bear a third more than any variety I ever tested. The Highland Hardy is another hardy variety—a good berry, very productive, with a good colour, but unfortunately small, but with good cultivation pays well on account of its earliness. The Clark is one of my favourite berries, combining as many good qualities as any variety I am acquainted with. It is hardy, productive, large, bright coloured, and fine flavoured. Its only serious defect is it is too soft to ship far, but it is an excellent variety for a home market. The Herstine fully equals it in many respects, and, I think, exceeds it in productiveness, but the plants are not quite so hardy. If I was asked to recommend a variety for shipping a long distance I should say Brandywine, but it is small, and suckers so profusely, that I would not recommend it for anything else. For hardiness I should recommend the Turner, it is a medium sized berry, of fair quality, but it also suckers badly and requires a vigorous use of the hoe to make it bear well. The Naomi is another hardy variety, of good size and quality, somewhat resembling the Franconia, but with me many of the berries are imperfect, and are inclined to crumble to pieces when picked. In regard to new varieties, I am disappointed with many of them, and with a few well pleased. The Pride of the Hudson, which was introduced with such a flourish of trumpets on the other side, has not done well with me. I was also unfortunate with the Delaware. The Amazon is a second edition of the old Belle de Fontenay, and if any one wants berries in the fall, and has plenty of time to keep down the suckers, this is a good variety for them. It is quite hardy, of good size, and, with constant pruning, will produce a good crop early in the season also. With our home productions I am not quite satisfied. I had long been looking for, and hoping to find, a light coloured raspberry, of the character and quality of Brinkle's Orange, that was hardy enough to stand our climate, and when I first saw Arnold's Diadem in bearing, I exclaimed, "Eureka! I have found it!" I had seen the plants exposed, the previous winter, on the western slope of a hill, and knew they must be hardy, and here they were now, loaded down with delicious, cream-coloured fruit as luscious as Brinkle's Orange. I thought they were just the thing we wanted, and when I got a plant from the Fruit Growers' Association I prized it highly, and I took great pains in selecting and preparing a place for it, far enough from every other variety, so that I could be sure to keep it pure. Well, I planted it, and awaited results. The first season it did not make as much growth as I expected it would, still it threw up two or three pretty fair canes, from which I expected to get some fruit the next season. But I was disappointed—there were only a few straggling berries, and the most of them imperfect; but it made quite a number of good strong canes, and I consoled myself with the hope that it would do better next time. Well, the next season came, and there was some fruit set, and I watched it with a great deal of interest till it matured, when, to my utter amazement and disgust, it was about one-third red berries, the balance nothing like what I saw on Mr. Arnold's grounds. Do you wonder I call it tricky? I suppose it is some freak of nature, but I should like to have Mr. Arnold, or some one else, kindly inform me how to account for it. But I have not wholly given up my hopes of this variety yet; last spring I procured some more plants of Mr. Arnold, and am determined to test it thoroughly. And, by the way, the first time I saw the Diadem on the grounds of Mr. Arnold, I saw several varieties of red hybrids of his, which I thought were very promising; I hope Mr. Arnold will inform us if they continue so. In the fall of 1877 Mr. Wm. Saunders, of London, kindly sent me two plants of his hybrids—a cross between the red and black—which have been noticed in our Annual Report, and which the Society intend to send out to members next spring. I fruited them last season and was much pleased with them, although I do not think they will ever become a popular market fruit—their colour is against them; but for family use, particularly for canning and cooking, they are very fine, and they are enormously productive and very hardy. Mr. Bucke, of Ottawa, exhibited

canes at our last summer meeting, which had stood the severe winters of that section, and were loaded with fruit to the very tips ; and this is what we want—something that will stand the winter without covering. I have a pet of my own, which, though not a hybrid, I think is a cross between the Clark and Philadelphia (it was noticed in No. 8 of of the *Canadian Horticulturist* for 1878). It has the shape and habit of the Clark, the colour of the Philadelphia, and the flavour is about a mixture of the two, but it is larger and later than either, and fully as productive as the Clark. I have sent out plants to different parts of the country to have it tested, and if it proves superior in any respect to other good varieties I shall offer it for sale, if not, I shall throw it away. I do not believe in multiplying varieties unless you can make some improvement thereby.

In regard to black raspberries, I grow mainly for market the Davison's Thornless and the Mammoth Cluster—the former for its earliness, and because it does not scratch and tear your clothes, and the latter for its productiveness and lateness, which prolongs the season. The Doolittle and Seneca are also both good varieties. The "white caps," as they are called, such as the Golden Thornless and some others, are not worth growing.

I might remark, in regard to soil and cultivation, that almost any land that will raise corn will grow raspberries, providing the water does not stand around them in winter, though a sandy loam is considered the best for the finer varieties. The best crop I ever raised was on a clay loam, rather inclined to be heavy ; and I should plant those varieties that were inclined to sucker badly on a heavy soil, if I had it. I generally plant in rows, six feet apart, put the plants three feet apart in the row, and only allow four or five plants to each hill, keeping the other suckers hoed down. I pinch back the growing shoots when from two to three feet high, which makes them branch out and grow stocky, and saves the trouble of staking. I cultivate as early as possible in the spring, and get all the growth I can in the early part of the season, and cultivate as little as possible in the later part, and the wood will ripen up and stand the winter better than when a late growth is kept up by cultivation. I usually remove all the old wood as soon as the fruit is gathered.

It is unfortunate that some of our finest varieties, not only of raspberries, but other fruits (as well as other things), do not succeed in the northern portions of our Province without a great deal of trouble in the way of protection. But I see no reason why good varieties of raspberries cannot be produced that will thrive wherever the wild ones will, as well, at least, as the Fameuse, St. Lawrence, Pomme Grise, and other fine varieties of apples do.

It seems to me that here is a field, not only for our hybridists, but for the enterprising sons of our fruit growers and farmers. All of our fine fruits originated from seeds, and the raspberry is very easily grown. Then why not, by a judicious selection of seeds from good varieties grown near each other, or by a careful hybridizing, produce something as good, and hardy, and lasting among raspberries as there is among other fruits? And if we would enjoy this fruit at all, we have got to work for it and attend to its cultivation, for as the country gets cleared up the wild berries disappear. Besides, it pays, not only as market fruit, but it will pay any man who has a family, and an acre of ground, to grow it for his family ; for he cannot find, in its season, a more delicious or healthful fruit than the raspberry.

ON SOME DECIDUOUS TREES AND SHRUBS DESIRABLE FOR MORE EXTENDED CULTIVATION.

By Wm. Saunders, London.

There are quite a number of handsome and valuable deciduous trees and shrubs which endure our climate well, and which, if more generally known, would be added to the choice selections of many an amateur. The writer's intention, in the present contribution, is to refer to a few of these with the object of bringing them into more general notice. The statements as to hardiness are in some instances based on observations ex-

tending over many years, in others on the experience of the last three or four winters, with examples grown in the immediate neighbourhood of London.

The Flowering Dogwood, *Cornus florida.*—This is without doubt the handsomest species of the genus to which it belongs, and, while the other members of the family are shrubs, this aspires to the dimensions of a tree. When full grown it is a pretty little tree, from 16 to 25 feet in height, with large, ovate, pointed leaves, of a light green colour in spring, changing to a dark red in the autumn. The flowers, or to speak more correctly the involucres, which are perhaps the most attractive feature in this instance, expand early in May, before the tree is in full leaf; they are white, measure from two to three inches across, and sometimes cover the whole tree giving it a very gay appearance. The true flowers are grouped in little clusters in the centre, the surrounding involucrum producing all the effects of a large white blossom. Later in the season brilliant red berries appear, making it almost as showy in fruit as in flower. This desirable tree is a native of America, is found from Carolina to Canada, and abounds in all sections of the middle States. Along the Hudson River it is one of the gayest native ornaments in the flowering season. I had never met with it native in our woods until last year, when I was surprised to find in May a nearly full grown tree, covered with flowers, in the midst of a wood within three miles of London. I am not aware that it has been recorded before as native to this section. Young trees, from nurseries in the United States, have been growing on my grounds for three or four years, and have proved quite hardy. This species was introduced into Europe in 1731, and is much cultivated and highly prized in many localities there. Its profusion of white flowers in spring, and brilliant red berries and dark red foliage in autumn, show out well against a background of evergreens.

The Tulip tree, or whitewood, *Liriodendron tulipifera.*—In a paper read before this Association a year ago, I called your attention to the value of this tree for ornamental purposes. Its importance is such that I feel justified in bringing it again to your notice in this connection. This tree is a native of North America, belongs to the same natural order as the magnolias, and is fairly entitled to rank among our stateliest trees. In the eastern, and some of the western, States it frequently attains a height of from 70 to 100 feet or more. Whoever has once seen a well formed tulip tree, with its clean trunk, straight as a column, surmounted by a fine ample head of rich green foliage, will scarcely soon forget it. The leaves are large, rich, and glossy, often measure from four to eight inches across, appearing as if cut off squarely at the extremities, slightly notched, and divided into lobes. The flowers, which are borne singly on the terminal twigs, resemble a large tulip in form, which has given the tree its common name. They are composed of six thick yellow petals, about two inches long, mottled inside with red and green, and have a slight agreeable perfume. As an ornament for the lawn or park the tulip tree is well adapted, its handsome stately contour contrasting finely with the spreading forms of most other deciduous trees; it also has a great advantage in that its leaves are bitter, and hence are seldom eaten by insects. It has been cultivated in Europe for more than two hundred years past, and is highly esteemed. In this species the roots are thick and fleshy, and on this account the tree does not bear transplanting well, unless the roots have been specially prepared by trimming the previous season, or it be moved while young It is easily raised from seed, which should be sown in the autumn. Occasionally a full grown specimen may be met with in open woods in some of the western portions of Ontario, but it is by no means common. So hardy and beautiful a tree deserves to be much more generally disseminated for planting. Young trees of three or four feet in height should be selected, as they suffer much less from removal than larger trees, and grow rapidly when once established.

The Cucumber Magnolia, *Magnolia acuminata.*—The cucumber magnolia, so called from the appearance of the green fruit, which resembles a small cucumber, is a near relative of the tulip tree, but, although hardy with us, does not occur native so far north, its northern limit being the southern shore of Lake Erie. It is common along the range of the Alleghanies, where, in favourable situations, it sometimes attains a height of 70 or 80 feet. It is a very stately tree, upright and regular in form, and almost entirely free from insects The leaves are large, from six to seven inches long and from three to four inches wide; oblong, pointed, and of a bluish-green colour on the upper side. The

flowers, which resemble those of the tulip tree, are from four to six inches in diameter, of a pale, greenish yellow colour, and slightly fragrant. The fruit is about three inches long, changing from green to rose coloured when fully ripe. This handsome tree is also furnished with thick fleshy roots, which makes it difficult to transplant. These roots should be trimmed in by cutting with a sharp spade all around the tree during the summer previous to transplanting, and, while out of the ground, the roots—which are of a spongy texture—must not be exposed to sunshine, nor to cold, drying winds, either of which will greatly injure them. Fine young specimens of this tree may be seen on the grounds of our fellow members, Mr. Jarvis, of Stratford, and Mr. Chas. Arnold, of Paris.

The American deciduous Cypress, *Taxodium distichum.*—This useful and beautiful tree is found native in swamps in Delaware and southern Illinois and southward. The cypress swamps of the southern States, and especially of Florida, are of enormous extent, and there the tree attains its utmost development, attaining a height of from 80 to 120 feet. In the south, on account of its great abundance, its beauty is often disregarded, but in the middle States, where it is only met with in cultivation, as an ornamental tree, its charming character is fully appreciated. South of latitude 43 this tree will attain a good size, and north of that it will succeed in many localities. The foliage of the cypress is of peculiar lightness and elegance, differing from all other trees, with a cheerful, bright green tint. The leaves are narrow, linear, arranged in double rows on slender leafy branchlets, four or five inches long, which are also partially deciduous in autumn. Late in the season the leaves change to a dull red, soon after which they are shed. The deciduous cypress thrives best in a moist, rich soil, and is admirably adapted for grouping with hemlock and firs, its soft, light green foliage beautifully contrasting with the richer, deeper tints of these evergreens ; it is also a beautiful object standing alone.

The Kentucky Coffee Tree, *Gymnocladus Canadensis.*—This tree, when in foliage, is very beautiful, the leaves are large and compound, made up of a great number of bluish green leaflets, forming a handsome head, which is lightened in appearance by the loose, tufted character of each individual leaf. The tree blossoms early in the summer, producing loose spikes of white flowers, succeeded by brown pods containing the seeds imbedded in a pulpy substance. Downing states that it is found native in the western part of the State of New York and as far north as Montreal in Canada ; Loudon also speaks of it as a Canadian tree. I have never met with it native in the west, but in cultivation it proves very hardy. It is seen in its greatest perfection in the fertile bottom lands of Kentucky and Tennessee, where it frequently attains the height of sixty feet. When Kentucky was first settled the hardy pioneers for a time used the seeds of this tree as a substitute for coffee, from which it has derived its common name ; at present no such use is made of it. During the winter this tree has a very singular appearance ; it is quite destitute of small twigs, and its thick, blunt terminal branches have no perceptible buds, its whole appearance indicating a dry and dead thing rather than a living, thrifty tree.

The Ginko tree, *Salisburia adiantifolia.*—This singular and beautiful tree, sometimes known also as the maiden hair tree, has shown itself to be perfecly hardy in our climate. It is a native of Japan, was introduced into Europe about the year 1750, and into America in 1784. The foliage is singularly attractive and of a fern-like character, quite unlike any other known tree. The leaves are wedge shaped, or somewhat triangular, of a pale, yellowish green colour, with parallel veins ; they are thickened at the edges and cut or notched on the margin, and very closely resemble those of our common maiden hair fern, *adiantum pedatum*, but are much larger in size. In the autumn they assume a yellow tint. The fruit is about an inch in length, enclosing a nut, which, when roasted or boiled, is used as an article of food by the Chinese and Japanese. This tree has fruited in the south of France, but I have been unable to find any record of its having fruited in America. It generally forms a neat, regular, open, conical head, grows in time to a large size, and harmonizes well with buildings, near which it should be located, as its peculiar foliage must be closely examined to be fully appreciated.

The Judas tree, *Cercis Canadensis.*—This is a small but very pretty little tree, or perhaps may be more correctly designated a large shrub, growing from ten to fifteen and

sometimes twenty feet high, valuable for ornamental purposes on account of its pretty pink blossoms in early spring, and also for its very neat foliage throughout the season. It is a native of the northern portions of America, being found from New York to Illinois and southward, and is particularly abundant in sheltered valleys along the Hudson and Ohio rivers. Before the leaves have expanded in spring there is produced from the bare limbs little clusters of pink, pea-shaped flowers, often spread over the branches in great profusion, giving the tree a very attractive appearance. Subsequently its beautifully regular, heart-shaped leaves appear, of a pleasing bluish green tint above and light sea green below. It is well worthy of a place in every garden.

The White Fringe, *Chionanthus virginicus.*—This is a large deciduous shrub, which delights in boggy woods, and is found native in such situations from Pennsylvania to North Carolina. It is a fine object for the lawn, where its large, glossy leaves, and drooping clusters of pure white flowers show to advantage. The flowers appear from May to June, are white, with narrow, fringe-like petals in graceful, drooping racemes; the leaves are large, oval, lanceolate, with a glossy, smooth surface.

The variegated Hibiscus, *Hybiscus syriacus var. flore pleno fol. variegatus.*—This is without doubt one of the finest variegated shrubs in cultivation, its foliage, beautifully marked with light yellow, retains its charming character throughout the season. It has proved quite hardy with me, is of good habit of growth, making a neat, compact bush, which will prove an attractive ornament anywhere, in garden or lawn. The flowers are double, of a dull purple colour, and are produced in great abundance but are not particularly handsome.

The large panicle-flowered Hydrangea, *Hydrangea paniculata grandiflora.*—Of all the later introductions from Japan this valuable, hardy, flowering shrub is, perhaps, one of the best. When full grown it attains a height of from eight to ten feet, and during the summer there are produced, from the top of each branch, large, dense, pyramidal clusters of white flowers, from six inches to a foot in length. These remain in full bloom for several weeks, gradually fading to a dull flesh colour. During the whole flowering season it is a very striking object.

Did time permit I should like to refer to Weir's cut-leaved maple, a variety of *Acer dasycarpum*, which is an object of great beauty. The Norway maple, *Acer platanoides*, and *Acer pseudoplatanus*, the European sycamore maple, are both quite hardy in our locality. The cut-leaved weeping birch, *Betula alba var. pendula laciniata*, is a thing of great beauty, but little known. *Catalpa syringifolia* succeeds very well with us; its beautiful clusters of pale, blueish flowers are very ornamental in early summer, while its large, soft foliage renders it an attractive object at all times. The dwarf weeping cherry, *Cerasus pumila pendula*, makes a lovely little round-headed tree, esteemed as a gem by every fortunate possessor. The *Kolreutrea paniculata* with its large panicles of showy yellow flowers in July; the sweet gum tree, *Liquid-amber styraciflua*, with its curious rough bark and pretty, bright red foliage in autumn. The oak-leaved mountain ash, *Sorbus acuparia var. quercifolia*, and the Rosemary willow are all desirable deciduous, hardy trees, and deserve to be referred to at length.

In shrubs the field is almost, if not quite, as large. The *Forsythias*, with their bright, golden, bell-shaped flowers, are tolerably hardy, and usually bloom with me. *Viburnum plicatum* is a lovely thing, so also is *Azalea amœna*, which, although usually cultivated in green-houses, will, I believe, prove quite hardy in gardens in most parts of Ontario. Among many desirable things, the number of which is almost perplexing, I would mention the Carolina allspice, *Calicanthus floridus*; *Aralia japonica* and *Spinosa*; the variegated cornus, *Cornus mascula variegata*; the Missouri silver tree, *Eleagnus argentea*; the Japan corchorus, *Kerria Japonica*; the dwarf white horse-chestnut, *Pavia macrostachya*; the double-flowering plum, *Prunus triloba*; the cut-leaved sumach, *Rhus glabra var. laciniata*, and some of the newer Spireas.

I have thus but touched here and there on this important subject, but have, I trust, said enough to show that a most inviting field is open for all to experiment in.

THE HARDY CATALPA—BIGNONIOIDES—VAR. SPECIOSA.

By Dr. John A. Warder.

This remarkably beautiful flowering tree has recently occupied so important a place in the lists of our sylva, since Mr. E. E. Barney, of Dayton, Ohio, has presented its claims to the people of the United States, that everything connected with it is possessed of interest. Hence no apology is offered for the following observations respecting its behaviour in Illinois, Iowa, and Nebraska.

It may be premised that this variety was first noticed at Dayton, Ohio, on account of its beautiful flowers and the upright habit of the tree, and described with its variety name in 1853. The origin of the tree was then and still continues to be unknown, but since it has been found elsewhere it is considered an original or native form.

In company with a dear friend and a true lover of trees, a little pilgrimage was made in September to certain spots where the catalpa is cultivated. The first point, our Mecca, indeed, was the home and grounds of that very interesting patriarch among western tree planters, and their biographer, Arthur Bryant. Here were catalpas grown from seed he had gathered at New Madrid, in 1839. One of these stands on a lawn near the house, rearing its symmetrical head fifty feet or more, and supported by a noble stem that is three feet in diameter, stump-high. This is a veritable *speciosa*, and has proved perfectly hardy, though the trees of the common variety have again and again been cut off by severe winters in different parts of the vicinity of Princeton, Ill.

The next point of interest was reached by retracing our steps to the Illinois Central, down which we proceeded to the south line of La Salle county. From station New Rutland, we drove six miles westwardly to the residence of John Litchfield, an old settler from southern Indiana, where we found a small grove of trees grown from seed sown twenty-two years ago. Though crowded, neglected, closely tramped by hogs and other stock in a feeding yard, some of these trees had made a good growth and seemed perfectly hardy. The wonder was that they had survived so much hard usage, but there they stand, and furnish seed from which other plantations have been produced. These are manifestly trees of the variety *speciosa*, as are all their progeny seen in the neighbourhood. The original seeds were sent at Mr. Litchfield's request from the trees growing at his old home in Vanderberg Co., Ind., presumably natives there. So here is another group distinct from those of Dayton origin, while that is the source of all the trees distributed by the brothers J. and E. Y. Teas, Indiana nurserymen, who were among the first to cultivate and distribute them from that focus. Mr. Litchfield has a grove at some distance from his house, occupying one and a half acres on a clayey rise in the midst of a forty-acre prairie pasture lot. The trees stand 6x8 feet apart, are fourteen years old, tall and straight, about forty feet high, and perfectly healthy, shewing no injury from frost. The cattle have spent much of their time rubbing and tramping among these trees, and the seats of a camp meeting shew that the place has been occupied by human tenants at times for the shelter afforded by the leafy canopy, but nothing seems to have damaged the plants. Indeed this is a pattern grove, altogether the most perfect of any of the many plantations examined on this extended tour of forest visitation. Smaller groves were seen in the neighbourhood, and we were told of others near by, all grown from seeds produced by Mr. Litchfield's original trees.

Our good friend, Suel Foster, of Muscatine, Ia., disclaims the credit of discovering the hardiness of the *speciosa* variety of which he has one specimen, saying that it was due to the observation of his partner Morris, who told him one spring that there were certainly two kinds in the nursery, as all of one sort were dead, while the other had withstood the rigours of the winter. Many trees were seen in the streets and gardens of Muscatine, all seeming to be the *speciosa* variety, which, under the name of Hardy Catalpa, is said to be considerably cultivated all through that portion of the State—in latitude 42 and perhaps further north.

At Omaha, Neb., several trees of catalpa were found. They appeared to be of both forms, and some of them seemed to have suffered from the winter or other cause. In one dooryard were two trees, one of which was a *speciosa*. Without admitting our recognition,

the owner was questioned in regard to the trees, and though leading questions were avoided it became immediately apparent that the difference had been observed and was fully appreciated by the proprietor. Afterwards, when visiting the groves of J. T. Griffin, near the city, some of which had been planted among the first west of the Missouri river, it was discovered that he had both kinds of catalpa, but that the tender variety had suffered from the cold on the high rolling prairies while the *speciosa* had escaped injury.

At Nebraska City, and at Brownville, fine trees of *speciosa* were seen, and the same variety was reported at Plattsmouth. The farthest point westward at which the catalpa was observed on this tour, was Lincoln, the capital of Nebraska. The trees in the capitol grounds were two young to be diagnosed with certainty, but the impression received upon their inspection was that they were *not* of the *speciosa* variety.

The great merits of the catalpa, the beauty of the flowers of the *speciosa* kind, the tint and surface of the timber for joiner work, the wonderful lasting quality of the lumber, now fully attested, and the rapid growth of the trees, make this species worthy of being extensively planted by those who would clothe the prairies with trees.—*Western Nebraska Horticultural Society.*

THE MOUNTAIN FORESTS AND WATER SUPPLY OF THE CONTINENT.

By Dr. John A. Warder.

The mountains were intended to be perpetually clothed with forest growths, at least to the *timber line*, at a varying elevation depending upon latitude, where aboreal vegetation is restricted by the low temperature that approaches the conditions of perpetual congelation. The traveller, to be of any use to himself or to others, should keep his eyes open, and observe every phenomenon as he passes through the country.

Limited observations, when among the Rocky Mountains a few years since in Colorado, and more recently in a journey on the Medicine-Bow Mountains of Wyoming Territory, have given the writer still firmer convictions of the truth of the first proposition, which had already been accepted, as truly set forth by forest writers of Europe, and read in the open book of nature, as it was unfolded before his eyes in the Alpine regions of that continent. But these journeys among the Cordilleras of our country, exposed as they are and have been to the ruthless and wanton destructiveness of ignorant and thoughtless man, have filled him with serious apprehensions respecting the future water supply of our western rivers.

The destruction of these mountain forests by fire is indeed a most fearful and melancholy subject to contemplate. An inspection of portions of the public domain by one who has studied the subject, and who has either read of or witnessed the disastrous effects of the spoliation of the forests in elevated mountain heights, cannot fail to fill the mind with the most serious apprehensions.

The efforts of the Secretary of the Interior on behalf of the forests are highly appreciated by those who have made a study of the influence of the woods upon the country's water supply. The mountains (up to a certain elevation, close to the limit of perpetual congelation) were designed for the forests, nor should they ever be stripped of their aboreal covering, for, as the Secretary has well said in his annual report of 1877, if the forests in such regions be once destroyed, they will never be restored. The rationale of the action of the forests as receivers, reservoirs, and fountains of waters, is perfectly simple and familiar to all students of forest science, and may be understood by any one of common powers of observation, who may have had his attention directed to the conditions of the earth's surface in a wood that is in a state of nature. The fallen trees and branches, the undergrowth, the mosses and other herbage, among the decaying leaves, the accumulations of years—all these, and the leafy canopy above—break the force of the falling rains, which come quietly to the earth, and are there arrested, and instead of rushing tumultuously down to lower levels, they are absorbed as by a sponge, until, although gradually percolating into the soil, they reach internal cavities or porous strata, from which they are

gradually distilled through perennial springs, that keep up a constant and regular supply for the streams and rivers.

But to return to Wyoming, to scenes so recently visited—while traversing a broad plateau of the range, and passing through a glorious forest primeval, the traveller closely scrutinized the trees. These were chiefly pines, and almost exclusively of our species, (*pinus contorta*)but among them, in the lower and damper spots, the most lovely firs and spruces reared their tall shafts, clothed with a mystic drapery of depending boughs, bearing the silvery green foliage of the *Menzies*, *Douglas*, and *Englemann's* spruces, and of the *Grandis* firs.

While contemplating these noble trees, we suddenly came upon a scene of *appalling desolation*. Upon a tract of many square miles in extent, as far as the eye could reach in every direction, over many thousands of acres, there was not a living tree to be seen. All, all, were standing bare, stark, and stiff in death; their tall dead trunks blackened by fire, except where time had kindly come to their relief and stripped off the bark, leaving the bare poles that stood by the way like shivering ghosts, waiting in purgatory until storms of years should prostrate them to the earth that bore them, when they would at length gradually crumble into mould to renovate the soil, which had been deprived of all vegetable humus by the fierce flames of the conflagration.

The forest is destroyed, the noble trees are dead and gone, too often never in our time to return, to be a kindly covering and a befitting garniture to the sad wastes, and to clothe these mountain sides with verdure. *Continued* and *continuous* desolation is their sad doom.

Practically speaking, this is and must be so. Whence can come the seed germs for the future aforesting of such extensive tracts? Man, the improvident destructive, will not do it. The kindly winds can transport the winged seeds but a short distance from the parent trees. The cunning and provident rodents have a still more limited range within which to carry the seeds they may gather, and with wise instinct store up for their hyemal repasts, from which a few might escape to germinate and form nuclei, producing at length seeds for further distribution in the future.

Ages must be required to restore these forests in the slow course of nature, and, meanwhile, the degrading agencies of every storm will be carrying away the soil, and scarring the mountain sides with frightful gullies and chasms, occupied at times with violent torrents, for there is no longer any herbage, no moss nor bush, nor any debris to cover the surface, and, spongelike, to absorb and retain the precipitated moisture.

Yes, our worthy Secretary was perfectly right in his assertion that in these bared mountains the forests would never be restored, when thus ruthlessly destroyed. In certain situations and over such vast areas, practically speaking, in reference to any period of time that it is worth our while to calculate upon, any time that we or our progeny for many generations need take any account of, this is sadly true.

But, it may be asked, cannot these terribly destructive fires be prevented? Cannot these calamitous results that must inevitably follow be avoided? Yes! yes! they may, and they *must* be prevented, and that at once, lest our fair continent become a desert, unfitted for the many millions it is capable of happily sustaining upon the broad territory of its beautiful bosom.

This is indeed a great question, and one requiring the exercise of a high order of statesmanship. It is truly a difficult question, but the interests at stake are enormous, and are of infinitely greater importance to this NATION than deciding who of all the great army of office-seekers shall be gratified by an appointment to this or that petty office under the Government; and yet there are those who were sent to guard the great concerns of the State who cannot spare time from the scramble after offices to listen, to study, nor to advocate matters of such great import as this. Oh, that we could be blessed with a race of *statesmen* something better than politicians, and capable of grasping and of solving such questions as this!

Yes! the interests at stake are truly enormous; they involve the welfare of the country, since they concern the permanence and the very existence of our rivers. If their consideration be neglected will not some future explorer of the vast *Sahara*, that may extend eastward from the base of these mountains, find, amid the shifting sands of

that wide desert, only depressions of the surface to mark the ancient beds of our great rivers and their tributaries in that American Sahara, as Champollion has observed them in the wastes of northern Africa, of which he said: "And so the astonishing truth dawns upon us that this desert may once have been a region of groves and fountains, and the abode of happy millions. Is there any crime against Nature which draws down a more terrible curse than that of stripping mother earth of her sylvan covering? The hand of *man* has produced this desert, and, I verily believe, every other desert upon the face of this earth. Earth was Eden once, and our misery is the punishment of our sins against the world of plants. The burning sun of the desert is the angel with the flaming sword, who stands between us and Paradise."*

But how shall this great work, the preservation of the mountain forests, be accomplished? How shall we preserve these treasure-houses of the snow and rain that they shall steadily distil the streams which are to fill our rivers?

It may be effected by wise legislation after we have enlightened the public upon the subject of an advanced forest science, and educated them up to a proper and just appreciation of the importance and of the especial functions of the forests on these mountain heights, as *condensers of moisture*, as *receivers* and as *reservoirs* of the water supplies of a large portion of the continent.

When so educated, and fully informed upon these important truths, with an enlightened public sentiment, the people will become more careful in the use of this dangerous agent; they will be more watchful of their camp fires, they will compel others to be more careful, and they will stamp out the first beginning of a conflagration.

In addition to this enlightened public sentiment, and complementary to it, legislation will be needed to operate on those who may wickedly or ignorantly transgress. Some of the excellent suggestions of Mr. Schurz were incorporated in the bill of Senator Plumb, of Kansas, last winter (S. 609). They might prove valuable as preventive measures, especially the appointment of forest guards, as proposed in the 3rd section. Section 13 is intended to prevent fires on the public domain, whether in prairie or timber. Such a provision has never existed in the case of Government lands, though provided for by some of the states.

The losses by fires are enormous, and should be prevented.

Some of us know by sad and painful experience how difficult it is for the philanthropist, who presents a simple proposition for the public good, however great its importance, to arrest the attention of the public. We have also learned how almost impossible it is to reach the ear of the law-making powers, and to excite in their minds an active interest in such questions as are here presented; in a word, how herculean an undertaking is presented, when we attempt to educate the people, and those who represent them in the Halls of Congress, up to a proper and full appreciation of such a subject as this of *Forestry*, which so deeply concerns the public weal.

More especially unpromising does such an effort appear, when an attempt is made to impress upon their minds the absolute necessity of keeping these extensive ranges of mountain heights in a condition best adapted to attract and condense the atmospheric moisture, to receive the precipitation, to retain it for a time, and then gradually and quietly to give it off through perennial springs, as limpid fluid, to supply the fertilizing streams that shall fill the rivers which are so happily and extensively distributed over our great continent.

You who are engaged in forest studies, you who are engaged in planting trees, will unite in presenting our thanks to Secretary Schurz for the noble stand he has taken in defence of the forests on the public domain, and for the part he has taken to call public attention to the vast and wide-spreading influence exerted by them on the present and future welfare of the country. Long may he be permitted to prosecute these noble efforts in behalf of the protection, preservation, and extension of our woodland heritage!

Mr. President, the above paper is but a repetition of an open letter addressed to the Secretary of the Interior, which may never have fallen under the notice of any of your

* Quoted by Dr. Oswald, and from him by Eli K. Price, in "Sylviculture," an essay read before the American Philosophical Society, Philadelphia, 1877.

members. No apology will be offered, however, for presenting it to men like yourselves, even thus at second-hand, because you are known to be interested, as western tree-planters ever are and should be, in everything that relates to this great question of trees. Situated as you are, on the great open plains, this is to you especially a vital question, and this aspect of the infinite value to you of the mountain forests cannot be devoid of interest, even in the imperfect manner of its presentation by such a tyro in forest science as your friend W.—*Western Nebraska Horticultural Society.*

POPLARS, ABELES OR ASPENS, AND COTTONWOODS.

By Dr. John A. Warder, of Ohio, President of the American Forestry Association.

In the *Gardener's Monthly* for November, 1877, are some strictures upon the name *Populus angulata*, used by my friend, Dr. Furnas, of Danville, Indiana, as applied to the Carolina Poplar. His stock was received from Mr. Parry, New Jersey, and through him it came under my notice in some cuttings received last spring, which have made a growth of three to four feet. For the suggestion of the name *angulata*, as applied to these plants, I must assume the responsibility, and it may be an error. The conclusion may have been reached too hastily. It was given on the authority of Michaux' Sylva Americana.

Having been induced to look up the authorities within reach, the following analysis of the genus, the result of this investigation, is presented for the benefit of the members.

COTTONWOODS.

1st. *Populus angulata*—Michaux' Carolina Poplar. Michaux says this species, which he met under the name of Carolinian Poplar, was found southward, in Virginia, and on the Mississipp and Missouri Rivers growing with the cottonwood *Canadensis*. He describes it as tall-growing and upright, which is the character of the Carolina. The buds are short, dark green, and destitute of the resin found on those of the cottonwood and other poplars. This is believed to be the tree so prevalent in parts of Belgium, where it is planted along the canals, for which purpose it is especially adapted by its upright habit.

2nd. *Populus Canadensis*, of Michaux. The cottonwood is considered by Dr. Gray* to be the *monilifera* of Aiton, and the *lævigata* of Willdenow. Wood's No. 5 *monilifera* of Aiton, seems to be different, with habitat "on the Hudson near Troy, N.Y., apparently native." "Fide Beck."†

Michaux found this species as far northward as forty-three degrees. It is abundant in the Black Swamp, in North-western Ohio, and fine trees may be seen on the banks of the river below Detroit, Mich. Michaux describes the tree as larger than the *angulata*, and the bark as thicker and more deeply furrowed, having a wider head and with the boughs more thickly branched. This character of the outer bark has attracted the attention of the fishermen on the lakes, who utilize it as a substitute for the more costly bark *Quercus suber*, or cork. Sections of this substance, often three inches thick, are turned into oval form and perforated, so as to be used as floats to their gill-nets.

Michaux reports this species rare on the Atlantic slope, but very common on the Mississippi above the Arkansas. At the mouth of the last named river it grows abundantly around the town of Napoleon. It is the chief source of the steamboat fuel on our southern streams.

3rd. The Virginian or Swiss Poplar, *P. monilifera* of Michaux, supposed by Gray to be *P. monilifera* of Aiton, does not appear to have been found in this country by the Michaux, father or son, but they say it is extensively cultivated in Europe, especially in Switzerland. In France the males only are found. The young shoots are angular. Comparing it with cottonwood, Mr. Fancourt, director of forests and water-courses, says

* Manual of Botany, Asa Gray, 2nd Edition, 1856, His. No. 4, page 419.
† Class Book, Alphonso Wood, 41st Edition, 1855, page 507.

the leaves are smaller and less distinctly heart-shaped; the young shoots and twigs are smaller and less angular, becoming cylindrical in the third year, and the limbs are less divergent than the cottonwood. It also grows faster, and succeeds in drier soils, hence its popularity in France.* The wood is said to be softer than cottonwood, or *P. Canadensis*, of Michaux. Dr. Torrey found it in Western New York, on Lake Oneida and Genesee River.†

4th. The Cotton Tree, *Populus argentea*, Michaux, and according to Gray, *P. heterophylla*, L., is found in the Middle, Western, and Southern States; and Michaux, especially, refers to a large swamp in southern Illinois, and to Fort Massac, on the Ohio River, as habitats.

The tree is large, with thick bark, the shoots are round, the young leaves very downy, becoming large, and having the lobes at the base overlapping each other.

The wood is described as inferior, becoming yellowish at the heart.

All of these would probably receive the name of cottonwood among our western wood-choppers; and, indeed, they bear very near resemblance, and have close analogies. The fine botanical descriptions have been purposely omitted in this resume.

Poplars.

Populus balsamifera—Tacamahaca, or Balsam Poplar, is a very distinct species. This is particularly northern, extending to Stone Lake, latitude sixty-three.‡ Leaves on round petioles, dark green above, rusty brown beneath; tree of medium to large size, with open, straggling branches. Though unseemly, it is often found in cultivation.

Populus candicans, of Aiton, Balm of Gilead, is a variety called also Heart-leaved Balsam Poplar. This form is chiefly seen in cultivation, though it has little to recommend it.

Populus angustifolia, of James, is described by S. B. Watson, of Clarence King's survey of the fortieth parallel, as a common tree in the Rocky Mountains. It is now grouped with *candicans* and *balsamifera*, of which it is a very distinct western form, having also quite a diversity in its foliage, some leaves being ovate, while in other trees they are nearly linear, and with a drooping spray. The resemblance to willows is very striking, as seen on the Platte River, Colorado, near Denver.

8th. *Populus trichocarpa*, Torrey, is western, found in Truckee Valley.

9th. *Populus Nigra*, L., European, was not recognized by the Michaux in this country, but trees found near Albany, N. Y., on the Hudson, and in New York City, were described by them as *P. Hudsonica*, and by Pursh as the *betulifolia*. There is little doubt about its having been introduced from Europe, where it grows to a large size, and with *P. alba* is much used along the Danube in reclaiming low overflowed lands, whose thickets arrest the drift of floods and furnish abundant material for the fascines used in the wing dams and levees, erected for improving navigation.

10th. The Lombardy Poplar, *Populus dilatata*, of Aiton, is no longer looked upon as a species, but merely a variety or sport from the *nigra*. This is extensively grown as an alley tree along the highways of southern Europe, where it is a great favourite, despite its extremely formal habit. It was early introduced and extensively planted in this country also, particularly in the streets of towns and cities. In the Eastern States very large trees may yet be seen in good condition. In the Western States, especially in northern Illinois and Wisconsin, it has been largely planted to fence-rows as wind-breaks, and the effect in a prairie country is very pleasant; but in our western soils the tree does not prove to be long-lived. The plants found in this country appear to be only males. How is it in Europe?§

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* N. Amer. Sylva, vol. ii., page 120.

† New York Natural History, Botany, vol. ii. page 215.

‡ Dr. Torrey, Natural History, N. Y., Botany, vol. ii. page 316.

§ This question is already answered by my friend and jury colleague at Vienna, Gav. Giovanni Carlo Siemoni, who says this poplar is but a form of the *P. nigra*, and that all the plants are males. He adds that it has long been extensively planted in Lombardy, particularly along the River Po. In evidence of its antiquity, he quotes Ovid's reference to it.—*Manuale d'Arte Forestale*, Firenze, 1872, page 137.

Watson, in his "Annals of Philadelphia," says this tree was introduced into that city in 1774, by William Hamilton, Esq., of "The Woodlands" (near the Centennial Exhibition), and all the Lombardy Poplars in the United States may be considered branches, elongations or offsets of the tree from which Mr. Hamilton obtained his specimen.*

Aspens.

Aspens, or Abeles form a distinct group among the poplars. They are usually smaller trees, especially the American species.

11th. *Populus tremuloides*, Michaux. Quaking aspen is here but a small tree of the second or third class, seldom more than twenty to forty feet high, particularly toward the north, where it becomes a mere shrub. A form of this species in the parks of the Rocky Mountains, springs up spontaneously in the greatest abundance wherever the woodlands have been burned over. The older trees had handsome shafts fifty to sixty feet high, and are used in construction. This is almost unique as a deciduous tree among the conifers of that region.

Generally speaking, this species has little value, but there are some peculiar forms which are cultivated and placed for effect in gardens and parks.

12th. *Populus grandidentata*, Michaux, Michigan Poplar of nurserymen, is a much finer tree, also northern in habitat. On account of its rapid growth, this had received considerable attention by western planters, and though only a poplar, merit is claimed for it as fencing material ;† the poles cut in early summer and peeled have been found to last as well as rails nailed to posts for fencing.

13th. *Populus canescens* or the *Populus alba*, Linnæus, the common white or gray poplar, with its many forms or varieties of Abeles, Athenian, maple-leaved and silver poplar.

Though widely diffused and planted everywhere, and multiplied wonderfully by numerous suckers in their new home, these are believed to be of European origin. If correctly understood, my good friend, Prof. Karl Koch, of Berlin, who has made a life study of trees, considers this species to be American, or common to both hemispheres. His valuable work‡ is unfortunately not at hand.

Populus tremula, Linn., is a small tree in Europe which may some day be united with our *P. tremuloides*. It is chiefly valued as a first crop on devastated tracts to prepare the soil for those of greater utility, says Siemone.§

In Southern Europe the white poplar becomes a noble tree, and the timber is much used in the construction of dwellings. It may be found valuable by our western planters. Michaux claims two distinct trees, the white and the gray, attributing superiority to the latter.—*Western Nebraska Horticultural Society.*

THE TIMBER QUESTION.

This is a matter which has no politics in it, but which has already become an important question. In the new north-west part of the State, the people are yet labouring to get rid of the forest, but in the old and early settled portions it is evident to everyone that the war of the axe and the trees has been carried too far.

It is certainly one of the functions and one of the duties of the Legislature to consider this matter. It is an agricultural question also ; and why that Board and the College has not given attention to it, is something of a mystery to us.

The first we heard of it, as a practical effort, came from the State Horticultural Society, in the form of a petition for a law encouraging the culture and preservation of forest trees. This was referred to the Committee on Agriculture in the House. Next came a memorial

* Darlington's Agr. Botany, 2nd Edition, page 332.
† Bryant's Forest Trees, page 124.
‡ Koch's *Dendrologie.*
§ *Manuale d'Arte Forestale.*

from Colonel Whittlesey, a member of a Committee of the American Association for the Advancement of Science, presented by Mr. Chapman, which had the same reference as that of the Horticultural Society. The Committee of the American Association have presented the whole subject to Congress and the Executive, so far as it has connection with the public lands. President Grant has sent in a message to Congress, and that body is effectually at work offering land bounties for tree planting on the prairies.

The future consequences of the destruction of timber will be appalling if they shall be the same here as in other countries—with our rapid modes of doing everything, this future may not be very distant. It is the object of the Scientific Committee to collect the facts respecting timber destruction as they have developed in Europe.

The papers before our Legislature refer less to the general subject than to what pertains to Ohio, for it is not in the power of Congress to do much for us. This we must do ourselves.

Mr. Chapman reported a bill which has not yet been discussed, which embraces only the encouragement of trees in the public highways. Something more than this must be done eventually; but this is a good beginning. The subject will work its way into notice from the necessity of the case, though its progress may be slow. Some two years since we cuddled the forest trees somewhat, as may be seen by our files, but with very little effect.

People are slow to perceive the advantage of what seems to concern posterity. To show that the growth of trees does not inure to future generations entirely, we quote largely from the memorial of Col. Whittlesey, which was printed by the House. He says:

The benefits of tree planting may be felt in fifteen or twenty years, and timber cut in thirty to thirty-five years.

In Salisbury, Connecticut, on the rocky slopes of the Taconic mountain, too rough for cultivation or even pasture, the spontaneous growth is cut once in twenty-five years for making charcoal, and pays the interest on $100 per acre. It is divided into twenty-five belts or strips, running from the base to the summit of the mountain, one of which is cut away each year. I have seen in southern Illinois, in 1832, a small growth of oak and hickory, on the borders of the prairie, which in 1848, after a lapse of sixteen years, was large enough for many uses on the farm, making two posts or two rails.

In Aurora, Portage county, there is a farm where the shell-bark hickory has been allowed to grow in an old slashing. After twenty years these trees produced a profitable crop of first-class nuts; and the larger ones were cut for axe helves and pick handles. Old settlers of Stark county, Ohio, have told me that where, in the year 1800, there were openings covered with bushes not as high as a man's head, in 1850 the trees were few of them less than fifty feet in height. In Massachusetts a white pine, which had been transplanted, attained a diameter of two feet (at two feet above the ground) and a height of eighty feet, in thirty-five years.

The City of Cleveland has acquired the title of the "Forest City," on account of shade trees planted in the streets and public grounds, most of them within twenty-five years. This was brought about by public opinion, cultivated by the example of the late Leonard Case and a few other large owners of city lots. An elm set out by him in 1824 still thrives near the south-west corner of the post office. Its girth two feet above the pavement, is seven feet, and consequently its diameter is two feet five inches. In 1836, the Hon. John W. Allen, John M. Sterling, and the late Charles M. Giddings planted native trees in front of lots in which they were interested. By their exertions, the village corporation authorized the same to be done in the north-east quarter of the public square, and in 1839-'40, in other parts of it, under the direction of John Wills. Those trees are principally elms, and now, after a life of thirty-five to forty years, are from one and a half to two feet in diameter. By observations upon nineteen cultivated trees, whose age was known, I find that the average increase in diameter is about two-thirds of an inch each year; the annual layer or ring of growth being not far from one-third of an inch.

For light lumber and wooden ware, the whitewood or poplar, the white pine, chestnut, and the linden or basswood may be used in thirty years from the seed. Three to five years may be gained by transplanting young trees. In a field of seedlings the less thrifty

can be profitably thinned out and used as fuel, at twelve or fifteen years; and the ground will then produce pasturage. If at the expiration of thirty or thirty-five years it shall be entirely cleared, the soil will be found restored and ready for cultivation.

Every farm of one hundred acres should have at least fifteen acres in growing woodland, in which, by proper care, the crop may always be kept good.

As the primitive forest is thinned out for timber, or by natural decay, by a proper and well advised attention to the second growth it will renew itself perpetually.

In this State, besides the ordinary uses for timber on farms, there is an extraordinary demand for fuel and ties, by railroad companies. Their fuel may be obtained from coal mines, but no substitute is known for wooden ties. The roads of the State now require for repairs, without regarding the laying of new lines, about a million and a half of ties annually.

What is necessary here is the preservation of a proper proportion of wooded land, which is not only valuable property, but is indispensable to the full enjoyment of the remainder. When the growth of native timber is wholly destroyed in the ancient States of Europe and Asia, the region becomes, in process of time, a desert, or so near it to be of little value. The reasons why growing trees have such an important influence upon the increase of inundations, and consequently of low water and of drought, the diminution of atmospheric moisture, which affects vegetation of all kinds, the increase of heat in summer, and of cold in winter, rural beauty, shade, health, and numerous consequences that come on slowly, but in time produce prodigious results, I do not at this time propose to give.

J. A. W.

SUMMER MEETING.

The summer meeting was held at Guelph, on Tuesday and Wednesday, July 6th and 7th, 1880.

The President and Vice-President being absent, the Secretary called the meeting to order.

P. E. Bucke, Esq., of Ottawa, was called to the Chair; the minutes read; and the question "Which varieties of Strawberries are least injured by late frosts?" considered.

In reply to this inquiry it was stated that as a matter of course the later any variety came into bloom the more likely it would be to escape the spring frosts, but that usually the late blooming varieties were also late in ripening. Also that those varieties which had an ample supply of foliage reaching above the fruit stalks were less liable to suffer, because the leaves, in some measure at least, protected the blossoms.

Mr. Gilchrist remarked that they were very liable to have late frosts at Guelph, and that he had not observed any marked difference in varieties with regard to their ability to resist frost, or to the blossoms escaping the effect of the frost by reason of being protected by the leaves, but that if the variety happened to be in full bloom at the time the frost came, the fruit was mostly destroyed; yet if it had blossomed long enough before to admit of the berries having attained to that stage of their growth when they are turned down towards the ground, the fruit mostly escaped injury, as also did those varieties which were not yet in bloom. Notwithstanding the fact that the Wilson blossoms are not protected by the foliage, it was the variety that strawberry growers relied upon in that locality for profit.

Further conversation on the subject failed to bring out anything definite with regard to the varieties of strawberry which suffered least from spring frosts, and the meeting adjourned, to meet at the Experimental Farm in the afternoon, and at the City Hall in the evening.

The President and Professors received the Association with great cordiality, and did all in their power to make their visit agreeable and instructive. After giving the gentlemen a bird's-eye view of the farm from the top of the main building, they conducted them over that part of the farm which is devoted to fruit and garden culture, and explained the nature of the planting already done, and what has been commenced this spring of fruit

and forest tree planting for educational and experimental purposes. A field of twenty acres has been set apart for fruit culture, with the expectation that ultimately it will be occupied by trees of apple, pear, plum and cherry, and in the meanwhile afford ample room for the cultivation of small fruits, other than grapes, for which a field of some five acres will be set apart. These fruits are intended to afford the institution a continuous supply of fresh fruit for consumption, and the means of examination, comparison and experiment as a part of the instruction given to the pupils.

A commencement has also been made in forest tree planting, beginning with the sowing of tree seeds, and the gathering of young trees from our own forests and planting them in rough land that has never known plough, with a view of illustrating what can be done by every farmer in the way of supplying himself with trees for ornament, shelter and economical purposes.

The members were also shown the fine specimens of some of the most valuable breeds of cattle and sheep, which have been imported for the farm, thus enjoying an opportunity, of examining and comparing different breeds, not often to be found. In this way the afternoon was passed both very agreeably and profitably, and the members returned to the town in time for the evening meeting, most favourably impressed with the educational advantages of the institution, and the courteous hospitality of the officers.

It is gratifying to learn that the farmers are taking an interest in this School of Agriculture, and that already several thousands have visited the grounds this summer as a pleasant holiday excursion for their families, and have shown their appreciation of what is being done there for their benefit by paying a visit to the institution; and, although sometimes coming in considerable numbers at a time, not a shrub, or plant, or flower, or fruit was touched.

Evening Session.

After appointing Messrs. Leslie, Beall, and A. M. Smith a Committee to examine the fruits on exhibition, the meeting listened to a paper from Mr. B. Gott, Arkona, upon the fruit prospects of the County of Lambton.

Mr. Gott received the thanks of the meeting for his interesting paper, which he was requested to hand to the Secretary for the Annual Report.

REPORT OF THE FRUIT PROSPECTS OF THIS SEASON.

Gentlemen of the Fruit Growers' Association of Ontario:

The present season being every way a peculiar one, I concluded that in coming among you, a statement or report of the fruit prospects of that part of Ontario with which I am familiar, might not be uninteresting. This county, viz., the County of Lambton, in the extreme west of Ontario, is rapidly becoming widely and favourably known as a successful and promising fruit-growing region. In the same County of Lambton we have the famous grape, peach and strawberry section, extending for several miles around Arkona, on the banks of the river Aux Sauble; the noted apple and peach orchard section for many miles on the lake shore in the Township of Bosanquet, and a most admirable general fruit section around the Town of Sarnia, and extending the whole distance on the borders of the beautiful River St. Clair on the frontier. The county is also known and favourable in all its divisions for extensive home fruit productions, so that its people have an abundance of the good things of this life as well as the hope of that which is to come. The capabilities of this extensive and wealthy county for extensive fruit production, are still very largely untried, and a rich reward in this direction awaits the industrious, intelligent and patient fruit grower. For many years past we have had in this region a large share and plenty of rich and beautiful fruit annually; for, although in some years our fruit has been less plentiful than in others, yet by carefulness and economy in saving and use, we have always had plenty, and an entire dearth in this valuable product of our soil of late years has been entirely unknown to us. This year, however, we have not merely

had plenty, but we have a superabundance of fruit in prospect as though we were about to be surfeited. Our whole country is teeming with its riches and bountiful products both of the fruits of the field and of the orchard. So abundant are the prospects of the general fruit crop that growers are already beginning to ask in deep concernment, where shall we market our crop? What shall we do with our fruit? and such like, and prices are dubions. Our earliest and most welcome fruit crop of strawberries is already gathered and taken care of, and a most plentiful and beautiful crop it was. One local grower has reported in our paper his product from one half acre to have been 1,568 quarts, sold at an average price per quart of 9 cents, or $283 per acre. The fruit has been exceedingly fine and very plentiful, so that all have had a large supply; and with the exception of rather heavy rains at the commencement of its ripening, nothing occurred to mar its beautiful appearance and excellent quality. This fruit is attracting much attention in this part of our county and is very likely to be very largely grown.

The raspberries, currants and gooseberries are just now on the point of ripening, and are coming in in great abundance, and of the most admirable quality ever known. The crop of both black and red raspberries is fast becoming very acceptable in this section, and is likely to prove remunerative to the growers of so rich and delicate a fruit. One gentleman in this neighbourhood is already planting very largely of them and has them in great variety and perfection, and many others are following in his wake. Gooseberries and currants are of the most excellent quality, and so plentiful generally that they are unsaleable. Our people are very much in need of simple methods of artificial means of preserving these and other summer fruits. When they are plentiful they are a drug on our hands, and at other times we are in great need and would be glad of them. The great variety and excellence of these fruits should secure for them better attention and better culture, and we are pleased to see considerable improvement in this direction, and the finest of fruit is now abundantly produced.

Our crop of apples this season will be plentiful but not abundant. Many of our apple trees are biennial in their bearings, and on account of a very heavy general apple crop last season this is the off year with many trees. Nevertheless, in summer fruits especially, the crop will be considerable, and plentiful in Early Harvest and Red Astrachans the most popular and profitable of summer apples. In some cases also winter varieties of standard merit will be adequate to the demands for home and family use; and we shall doubtless be able to show this fall at our local and popular exhibitions some of the finest and handsomest apples seen for many years. Contrary to all expectations the ravenous insects and diseases of all our fruit bearing trees and shrubs are most remarkably favour able; and not for many years have we enjoyed such a freedom from insect pests as in this In this particular our apple trees are no exception as far as the tree and the leaf are concerned, but we already notice some considerable mark of the destructive codlin moth in the fruit. If better attention were given to the suppression of the ravages of insects and diseases on our fruit trees our rewards would doubtless be great.

Pears are not so much planted among us and do not receive so much attention as they richly deserve; but where they are planted, and receive an ordinary amount of intelligent carefulness, they richly reward the labours of the patient fruit-grower. The crop this season will not be large, but some very fine fruit will be produced, especially of Bartlett and Flemish Beauty, the two most popular and profitable of all pears. It is very remarkable that scarcely any of the *dreaded blight* on pear trees has been known in this county, and they are also most remarkably free from the depredations of insects. This may be therefore looked upon as the *El Dorado* of the pear tree and the very home of this valuable and luscious fruit.

The *Cherry* crop is not abundant and save only in one variety, this county is not celebrated for its beautiful cherries. This variety usually called the *common sour cherry*, is plentiful enough and fully adequate to supply all the inhabitants with acid during the rest of their lives. This common sour cherry, or Late Richmond of the catalogues, is almost indigenous to this county, and easily and abundantly propagated, and as Col. Brooks remarks soon makes a free nursery to the neighbourhood. Some large trees, however, of improved varieties are very productive, and annually produce very fine fruit, but spring frosts are their greatest bane. There is a singular fatality this season come over some of

our fine young growing cherry trees. It appears to be a winter or frozen sap blight, caused evidently by our unusually mild and spring-like winter. The theory is that the warmth attracts the sap into the body of the tree, and afterwards freezing, then bursts the wood-cells, and the tree, though making an attempt to start and live, soon dies. We shall lose some fine trees from this cause. The cherry slug is not present.

Of *Plums* this may be regarded as the favourable home, and the crop will be amazing both for quantity and quality. Black knot is very prevalent, and little is being done to prevent its destructive spread. It is difficult to see what our municipal officers are doing in this matter. The dreaded and destructive little Turk alias the plum curculio, is very abundant and persistent, but continued and patient jarring overcomes the difficulty, and the crop is saved.

This is the centre of a very interesting peach section, and the crop of this popular and valuable fruit promises to be the largest known in this county for many years. Several causes are operating on them to thin them out, yet the trees are literally loaded to breaking down, and it will be impossible to obtain a market for the fruit in local centres. But as the fruit is usually produced so fine and of such excellent quality it can be very profitably and easily shipped to other markets where good paying prices can be obtained. The dreaded *Yellows* of which we hear so much in peach sections is not known among us. This we consider a happy exemption, and we are anxious to make the best possible use of it.

Thus to sum up the remarkable points or characters of this very remarkable season, we have first, a season of extreme and unusual earliness. Every kind of fruit appears to be fully two weeks in advance, by the day of the month, of its usual time of ripening. Secondly, a most abundant crop of all kinds of fruit simply, excepting apples and pears, and of these we shall have a plentiful supply ; and, thirdly, the season has been most remarkable for its comparative immunity from insect ravages and blight. This is a great blessing, for which we should be very thankful, as also I trust we are. Hoping for like favourable circumstances in all parts of our fruitful country,

I am yours very truly,

B. Gott.

Arkona, Ont., July 5th, 1880.

Raspberries.

The question "What raspberries succeed best in the vicinity of Guelph?" was considered.

Mr. Gilchrist remarked that the Philadelphia succeeds best, some other newer varieties are tender; that he does not think raspberries can be grown here with profit, for the reason that wild raspberries are so abundant and cheap. The Clarke and Arnold's Diadem are tender.

Mr. Bucke, of Ottawa, has found the Saunders raspberry very hardy, he has raised some seedling raspberries from the seeds of Saunders' hybrid, and they proved to be some of them white, some black, and some red.

Mr. Elliot, Guelph, does not believe that raspberries can be profitably grown at Guelph. He finds it necessary to lay all varieties down to protect them from the winter. The Clarke is the strongest and best grower he has yet tested, and he believes it to be as hardy as any variety. He has grown Franconia, Herstine, Brinckle's Orange, and Marvel of Four Seasons.

Mr. Davidson had tried to grow raspberries, but had failed.

Mr. McCrae grows Clarke, it has stood the past winter very well.

Gooseberries.

The subject of gooseberries was then taken up.

Mr. Elliot had grown only Downing and a small red variety.

Mr. Murton has grown the large gooseberries with much success. The soil is a deep rich loam, stiff, and the plants are well trimmed up by cutting out the lower branches; is able to grow Whitesmith and other English varieties without mildew.

Mr. Patterson has grown large English sorts for some ten or twelve years. He usually has more or less mildew, but by thorough pruning and thinning out of the branches, is able to prevent it from spreading to any serious extent. He finds them to grow equally well in sandy, loamy, and stiffer soils.

Mr. Gilchrist has found all of these varieties to mildew badly with him, and believes that we must look to our own native varieties for good gooseberries, in the future. The Whitesmith has been winter-killed in his grounds.

Mr. Davidson has found the English varieties to mildew, and believes it is attributable to the fact that the plants are too much shaded.

Forestry.

"What are the economical uses of woods other than pine, and what are their respective commercial values?"

In reply to this question, Mr. Thomas Beall, of Lindsay, submitted the following memoranda:—

Ash, Black—Is used for hoop timber, fruit baskets, common carriage work, such as sills, boxes, etc., and also in cabinet work and house joining. Value, from $8 to $10 per M.

Ash, White—Is used for handles for nearly all kinds of agricultural implements, such as spades, shovels, picks, forks, hoes, and for scythe-snathes and cradles, for barley-forks, hay-rakes, etc.; also for waggon tongues and boxes, crossbars, whiffle-trees and neck-yokes. A small quantity is used by cabinet-makers, and it is of late years being much used for inside finishings for house-building, for window and door casings, wainscoting, flooring, etc. Value, from $15 to $20 per M.

Beech.—For Firewood only.

Butternut.—Used in cabinet-ware for common sideboards, table tops, whatnots, bureaus, etc. Value, from $10 to $14 per M.

Basswood.—For common chair work and seats of various kinds, buggy and cutter work, fanning mills, canoe building, and also used by cabinet-makers for many articles of household furniture. Value from $8 to $12 per M.

Birch—Is much used (in connection with maple) for flooring in public buildings, halls, etc., also in stair building for newel posts, ballusters, rails, etc., and is also much used by cabinet-makers. Value from $15 to $20 per M.

Cherry.—Very scarce. Uses same as last-mentioned. Value from $20 to $25 per M.

Cedar.—Nearly all our rail fences are of cedar, also our fencing posts and telegraph poles. It is much used also for railroad ties, and for sleepers for side-walks, cellar floors; also for shingles. Cedar lumber varies in price more than any other of our native woods, ranging from $6 to $20 per M., the larger price being readily obtained for long, wide, and clear boards.

Elm, Rock and Gray.—Used much in the manufacture of heavy sleighs and cutters, wooden ploughs, etc. Value $12 per M.

Hemlock.—The bark used for tanning leather. The wood makes excellent joists, scantling and rough boarding, or any rough work into which nails are driven, such as sleepers for sidewalks, and also for railroad ties. The lumber sells at from $6 to $8 per M.

Maple.—Used largely in cabinet-making, and for flooring (with birch or walnut). It is also in great demand for the manufacture of the wood-work of nearly all kinds of agricultural machinery, or other articles where wood is required having great rigidity. Value about $16 per M.

Spruce.—Is sometimes used for flooring, and is much used for planking for steamboats, scows, etc. Value about $14 per M.

Tamarack.—Is much used for ladders, scaffold-poles, ledgers, pultogs, etc., during the construction of buildings. It is often used for rafters for barns, sheds, etc. It is very useful wherever long, straight, and tough poles are required. It makes excellent railroad ties when sufficiently large. A small quantity finds its way to the saw-mills where it is made into flooring, and is worth about $12 per M. Great numbers of the stumps are used as knees in boat and scow building.

Oak, White—Is very much used in the manufacture of heavy waggons and carriages of all kinds, sleighs and cutters, and also for many of the agricultural implements and machines at present in use, and it is also used for some of the finer qualities of cabinet-ware. Value from $20 to $25 per M.

Oak, Blue—Is used for the same purposes as the foregoing, excepting cabinet-work. It is a better quality of timber than the white oak, and is very scarce. Value, $25 to $30 per M.

Oak, Red.—Used largely in the manufacture of household furniture, and for stair building, newel posts, ballusters, hand-rails, etc. Value $15 per M.

The foregoing statements respecting the economic uses of woods, are confined to the kinds found growing in the vicinity of Lindsay, and the uses to which they are applied, are those prevailing in this part of the country. The prices attached are the market prices in this town.

THOS. BEALL.

Lindsay, 6th July, 1880.

The meeting thanked Mr. Beall for the very valuable information he had given, and the remainder of the evening was spent in conversation upon the uses to which our various woods were put, and the constantly increasing cost of many of them, owing to the diminishing of the supply and the increasing demands of an increasing population.

Morning Session.—July 7th.

At the opening of this session the Secretary read a letter he had recently received from one of our most prominent pomologists, Mr. James Dougall, Windsor, accompanied with a photograph of a new weeping cherry that had originated on Mr. Dougall's grounds, and a branch laden with fruit taken from one of his new seedling cherries, named by him the Windsor. In this letter, Mr. Dougall states that the Windsor is a very prolific and valuable market fruit, the specimen branch sent being from a young tree that is bearing for the second time, and is literally loaded with fruit, all the branches being fully as well and some much better loaded than the branch sent.

The Secretary stated that he only regretted the branch had not been received a little later, so that he could have brought it to this meeting, for it was certainly the most profusely covered with fruit that he ever saw. The cherries, though not *very* large, were of fine size, and seemed to be quite firm fleshed. They were hardly ripe enough to enable him to judge of the flavour. He should think that if any variety of cherry would be profitable as a market sort this certainly would take the lead.

He also exhibited to the members the photograph of the Weeping Napoleon which he had received from Mr. Dougall, which was taken last year, and remarked that the fruit sent him from this tree had become mouldy in the transportation, and that he could not speak of its quality. The fruit did not seem to be as large as that of the Windsor, and was darker in colour.

Mr. Dougall states in his letter that the origin of the weeping variety was a side shoot from the stem of a Napoleon cherry, that grew out below the graft and bent down to the ground. Some trees were budded from the shoot, one of which, being worked up high, grew to be quite a large tree, the others being budded at the ground never could be got to grow into trees. The one from which the photograph was taken was budded subsequently at nearly six feet high, and shows a most perfect and beautiful weeping habit.

The Secretary also read a letter from Mr. A. Hood, Barrie, in which he regrets his inability to send to the meeting some fruit of a cherry tree grown in the grounds of Mr. J. R. Cotter, of Barrie, which he describes as being a forest growth, though the fruit bears no resemblance to the common wild cherry, and as being perfectly hardy in that climate and productive. He thinks the tree worthy of attention, because the fruit is superior to anything else that is equally hardy, healthy and vigorous.

Mr. Hood states that he thinks fruit will be a failure in his section—plenty of blossoms, but little fruit. Plums in particular, from some cause or other have set very little fruit, and the curculio has put in his mark on what little there is.

The meeting expressed their thanks to Messrs. Dougall and Hood for their kindness in bringing these matters to their attention, and referred the letters to the Secretary for incorporation in the report.

The Chairman, Mr. Bucke, of Ottawa, opened the discussion upon "The advantages of tree growth and shelter on climate, rainfall, and the protection of growing crops," with an interesting paper, for which he received the thanks of the meeting, and which is as follows :—

FORESTRY AND TREE-PLANTING.

By P. E. Bucke, Ottawa.

At the Summer Meeting of the Fruit Growers' Association of Ontario, held in the City of Guelph, the subject of Forestry and Forest Trees for beautifying cities and farms, and for profit, was discussed in open meeting for the first time in Canada.

The subject is an interesting one and must soon awaken considerable attention amongst the rural classes, and the manufacturers of the different varieties of woods. In all the countries of the old world the subject of Forestry is recognized as one of the highest importance, and is usually made a matter of Government attention. In some countries where the native forests have been wholly removed there has been a great waste of the ancient fertility of the soil, and often an exhaustion, if not an absolute destruction of the nations that once flourished in affluence.

Palestine, Arabia, and various parts of Asia Minor and Turkey in Europe, are illustrations of this waste and ruin in the east, while Spain is perhaps the most striking example to be cited in the west. It is an indisputable fact that the powerful nations which have for centuries occupied these countries first rose to wealth and stability owing to the natural wealth of the soil and the forests which originally occupied the surface, and their decline was at least coincident with the waste and denudation they created. The lands became less and less productive, and plains only remain where general cultivation and dense population long existed, and finally the population declined as the exhausted soil refused to yield sufficient food for its maintenance, until as at the present day a precarious existence is maintained by a sparse population. The people have become enervated in these regions, and it is not probable that any persistent or vigorous effort will ever be put forth by them to restore what their forefathers in wantonness destroyed.

It is to be regretted if this state of the case be true, that history is rapidly repeating itself in the Dominion. Not the slightest effort is being made by the people to repair the waste of our woods. It is to be hoped that when the schedules are being prepared for the next census a column will be added so that some definite idea may be arrived at as to how our country stands with regard to forest lands. In the older settled counties of Ontario, it has been stated, and, it is believed, with some truth, that there is not on an average one acre of wood to each hundred-acre farm, a proportion totally inadequate to the requirements of any well regulated country, being a wood area of only one per cent. From some statistics before us it is ascertained that Norway, which supplies England with ships' spars almost exclusively, and is the best wooded country in Europe, has sixty-six per cent. of a forest area, Sweden sixty, Russia thirty, Germany eighteen, Holland nine, Great Britain five, Portugal four. It will be noticed that although only a few names are taken from the list, the mother country is low down in the scale, and if she had to depend on her own resources she would soon come to grief, as other nations have done before her. Her position in the sea, however, does not require her to maintain forests to assist in adding to her rainfall, and her vast mercantile marine brings the various woods from South America, the United States, Canada, Russia, Norway, Sweden, and any other country that supplies the special varieties required.

Lands which have been cleared and cropped for thirty years even, become hard, refractory, and liable to destructive droughts, which were aforetime perfectly free from these

causes within the memory of living men, and even of the present occupants, who can remember when the soil was of a loose, fertile character, and fit for the production of any crop committed to its keeping. Any person with ordinary observation will concur in the necessity of arresting the progress of these changes, and I have no hesitation in saying that the results complained of are mainly due to the removal of our forests. It is candidly admitted that careless cultivation has much to do with these results, but the loss which the protection of forests supply of moisture to the soil, and a steady and constant evaporation, which gives humidity to the air, must not be lost sight of.

Ontario is setting the General Government a good example in bringing forward the question of forestry, but the Dominion should also take the matter in hand, and by some general Act protect the wood where necessary, and encourage its plantation where it has either been destroyed, or, as in the case of the North-West, where, "in the memory of the oldest inhabitant," it has never grown. It was thought at one time that the western prairies were unsuited for forest culture, but this has been quite disproved. When the heavy sod is broken up and the destructive fires which sweep these plains are arrested, it is found that certain kinds of timber live and thrive on these once treeless plains. It would be well, therefore, in making land regulations for their settlement, to introduce special inducements or exemptions, which settlers may avail themselves of, if they undertake the duties of forest tree planting. And an Act for the restoration and preservation of forest trees, passed by the General Government, is the first and most effective step that could be taken; and this would not, if wisely constructed, act in any way prejudicially or injuriously to the first occupiers of the soil.

It will be conceded on all hands that both men and animals instinctively seek the grateful shade of trees during the heated season. It is a lamentable fact that so destructive has been the woodman's axe in this country that there are hundreds of pastures without a shade-tree for the protection of the stock which graze upon them. In some countries cooler than Canada it would be the duty of members of the Society for the Prevention of Cruelty to Animals, to prosecute parties who would wilfully put animals into a field without shade. In England the Canadian visitor is struck at once with the beauty of the landscape, which everywhere is dotted with trees along the hedgerows.

The planting and cultivation of hard-wood trees for house building and economic purposes, has not yet been begun in this country, and is commonly looked upon as a work wholly for the use of posterity, and people are slow to realize that they owe any duties in that direction, arguing that posterity has never done anything for them; but this, after all, is a silly way of putting the question, and will not bear the slightest investigation. People living in towns might as well say, we will only build town halls, churches, or put in waterworks, or make other public improvements, such as parks and pleasure grounds, that will last our own day, and then fall into decay. Posterity has never done anything for us, why should we beautify and build for them? If the farmer is not utterly lost to selfishness, he would leave a goodly heritage in cultivated forest trees to his posterity. And there is hardly a tree that can be planted which will not amply repay its planter, if properly reared and protected, in the space of from fifteen to twenty years.

It is not difficult to realize the day which must shortly dawn upon us, owing to the heavy demands made on our forests, by the progress of the country, which will make good timber scarce, and quite as valuable here as it is in the European markets. And it is the duty of either the State, or the people, to see that that day is amply provided for.

The destruction of forest trees in Canada is quite deplorable. There is no doubt it has in this as well as in other countries diminished the rain fall, while freshets become greater, though not so lasting. Many streams with ample water power for the whole season twenty or thirty years ago, now only afford sufficient force to turn the mills on them in spring and autumn, whilst others have quite dried up. In Missouri it is stated that the removal of trees has been the cause of the shrinkage of the rivers there, less rain fall, hotter summers and colder winters—and this has no doubt been the case here. The influence of trees on climate proceeds from, 1st, their removal causes quicker evaporation; 2nd, the winds have more sweep in winter. Steady evaporation in summer produces a cool atmosphere. Trees have the effect of breaking the clouds as they pass over.

Two remarkable instances are on record as to the advantages of tree-planting. The town of Valencia, in South America, is situated about one and a half miles from a beautiful lake which was surrounded by a dense forest. The trees were removed, and in the course of time the waters receded four and a half miles. The trees were afterwards replanted and in the course of twenty-two years the lake returned to its original boundaries. The other instance is the Delta of the Nile, which was dry and arid until planted some thirty years ago with trees. It is now said to be well watered with refreshing showers. In India the British Government always plant trees along their extensive canals for irrigating purposes, to check evaporation, and to beautify the country.

The seed of all kinds of trees should be sown as soon as practicable after being gathered. Exposure to the air hardens their outer coverings. When, however, owing to their ripening so late in the season that they cannot be immediately planted on account of frost, they should be preserved in such a way as to keep their vitality, and remain fresh and plump. This may usually be done by keeping them from the air in dry sand, in boxes, in a cool cellar.

Some seeds, such as the elm, ripen early in summer, and must be sown immediately, so that they may make good growth before winter sets in.

The European larch is probably one of the best trees obtainable for forest culture or for barren and broken lands. This tree is quite similar to our native tamarack in appearance, but is probably more suited to dry exposed situations on account of its denser foliage. In the States it is being planted by the million. Its rapid growth is quite remarkable. It is estimated that it will grow half an inch in diameter yearly for the first ten years, and one inch yearly for the next ten. It is durable, tough and strong, and well fitted for almost all building purposes, and would make the best of fence posts or railway ties. At two years old they may be purchased at from $10 to $15 per thousand. They are readily transplanted if lifted early in the spring, and their roots never allowed to dry in the least; this may be prevented by dipping them in thin clay mud before setting. The rows should be four feet and half apart and one foot apart in the rows. A man using the spade, and a boy handling the trees, may set 2,000 per day if the ground has been properly prepared. They will need weeding in May and June, for from two to four years, according to the weediness of the soil and the growth of the trees. It takes 8,000 plants for an acre, and the cost would be $80 for plants; ploughing and harrowing before setting, $4; setting, $8; ploughing, hoeing and weeding, first year $8, second $4, third $4. Interest on land at $50 per acre for eight years, $32. Total cost per acre at eight years, $140. Credit during that period 3,000 plants at $20 per 1,000. After two years growth, $60 (these are to be set in other ground). If allowance is made for 1,000 dying they will be two feet by four and a half apart. When eight years old they will be from two to three inches round, and from fifteen to twenty feet high. 2,000 more may then be removed, leaving them four by four and a half feet apart. At five cents apiece, these would fetch $100, so that at eight years old an acre has cost $140 and is credited with $160 for trees sold. Those replanted at two years from setting should be placed at four by four and a half feet; they would then cover about one and a half acres and would cost for setting and cultivating, two years, about $100.

To succeed in raising healthy plants it is essentially necessary that their seed be deposited in a deeply worked, light loamy soil. No half way measures should be tolerated in this respect. The seeds should be sown in drills; and if hand culture is to be practised, eighteen inches apart would be a good distance. The depth of planting will be regulated by the size of the seeds. Small seeds may be covered an inch deep, and acorns and nuts two inches. The earth should be firmly pressed over the seeds by a light roller. Very small seeds, like the birch, may be sown on the top of the ground, and raked and then rolled, which will keep the moisture of the soil from evaporating too readily. The young trees will require the usual care bestowed on other crops, such as weeding, hoeing and raking, to keep the surface loose, so that the rain fall may not run off.

Small trees are easier moved than large ones, and should be set out in nursery rows after two or three years old, or even in their final position if cattle can be kept away from them.

Trees for avenues and road sides, will require to be from eight to twelve feet high before they are placed in their permanent position, and should be taken from the nursery rows as required for these purposes, but when thickets or belts are required it is best to set the trees at once from the seed rows in their permanent places.

The best practical mode of securing a rapid and effectual artificial plantation is to thoroughly prepare the soil by ploughing, harrowing and manuring as if for any other farm crop, as trees will not thrive apace on poor land, and when quick returns are required, attention must be given to the first principles of their cultivation. The plants should be set in rows three feet apart, and if they are three feet high but little pruning will be required. Fine timber can be secured with as much certainty as fine corn, if thickly planted, and if a due regard is had to judicious trimming as the trees increase in size, together with pruning such branches as seem to interfere with the symmetrical growth of the trees. Unfortunately the subject of forest growth has not yet received that attention which the denudation of our lands in Ontario requires.

The cultivation of basswood is an industry that would well repay any one to go into. Besides being a valuable shade tree, it is getting to be one of considerable commercial value as one of our best forest trees for the manufacture of paper. At the neighbouring town of Georgetown I had the pleasure of witnessing the mode in which it was manipulated at the paper mills of Mr. Barber, and he told me he did not think the supply about there would last over three or four years. Every one who has cut down this tree will remember how readily it suckers from the stump. Our able and practical President, Mr. P. C. Dempsey, informs me that if these are removed with a sharp hand-axe early in the spring leaving a small portion of the old wood for what is called a heel, these cuttings will readily grow, and in a few years pay a good profit, as the market is assured. It is a rapid-growing tree, and I fancy in ten years those which are thinned out would be of sufficient size for the paper mill.

The best native trees for cultivation are the sugar maple, white ash, black walnut, sweet chestnut, butternut, hickory, and the oaks.

Maples and elms may be pulled by hand from the woods in autumn when six or eighteen months old, and set in nursery rows, and unless very large quantities are required, farmers will find this the best way of procuring most seed-bearing trees. The nuts, being more easily gathered, may be easier collected and planted. The black walnut is one of the easiest grown trees on the continent, and decidedly the most valuable, as it does not require a long straight stem without branches as most other trees do for economic purposes. The more knotty it is the more valuable is the wood. It is also a rapid grower, and with anything like good cultivation will make eight feet in three years, when it can be set out and left to itself.

Many of the seeds of valuable timber and ornamental trees ripen during the months of September and October; amongst these may be mentioned the horse chestnut, the birch, the ash, the beech, the oak, the butternut, the black walnut and the sweet chestnut. It will be well, therefore, for those contemplating the rearing of a large quantity of these from the seed to be on the lookout during summer for suitable trees to gather seeds from. The seeds should be planted as soon as obtained, and for that purpose ground ought to be prepared beforehand to receive them. The planting should be made in rows of a sufficient distance apart to admit of the hoe being used between them, and the soil should be made rich and light by being well and deeply worked. A generous treatment of the soil for a seed-bed cannot be too strongly insisted upon.

Trees of medium age should be selected to gather seeds from, as those taken from trees which are too young often prove barren, whilst those from trees of a mature age frequently furnish plants of weakly growth. Nuts, and seeds such as ash, often refuse to germinate until the second year, so that all hope should not be lost if the first season's crop should not prove a success. So soon as the leaves have fallen, and the wood is well ripened, cuttings may be made of the various kinds of willows and poplars; these should be made about eighteen inches long, of the present years shoots, and inserted one foot in the ground. The great success in growing all cuttings is to have the earth firmly deposited at the base of them, and for this purpose the trench in which they are set should be only partially filled and the soil pressed down with a suitable instrument, and then filled up tightly. A

piece of slab or board six or eight inches wide and two inches thick, sawn squarely across one end and tapered to a handle at the other makes a handy implement for setting all kinds of cuttings. These should be planted from six inches to a foot apart, in rows, so as to allow the hoe or cultivator to pass freely between them ; from two to three feet between the rows would be found a suitable distance both for cuttings and seeds. It would be well if more attention were given to nut-bearing trees, amongst which are some of the best for timber, and the handsomest for shade and ornamental purposes, and the fact of their bearing nuts should be no detriment to their being cultivated. Who cannot recall the days of his youth when he sat over the winter evening fire cracking his nuts and chaffing his girl ? But the nut-bearing trees are getting scarcer as the evenings grow longer, and now there are fewer nuts to crack than formerly; but there is no reason why the rising generation should not have quite as much innocent amusement as their fathers had before them, if only a little judicious forethought were exercised. Most of the nut-bearing trees grow rapidly. The writer has seen a growth of six feet made on a young black walnut since last spring, and a growth of this length is no unusual sight on young butternut trees. The writer has some young plants of this variety, the nuts of which he planted seven years ago. The trees had catkins on them this spring but did not bear. He has no doubt they will be productive next year. These trees have been twice and three times transplanted, and for the last few years have been growing in a heavy lawn sod, so that although the soil was good the experiment was not on the whole favourable to the rapid growth of the young trees. The wild sweet chestnut, whose fruit, though small, is of excellent quality, is a very rapid grower where soil and climate are congenial, and will stand the winters very well along the St. Lawrence river front as far east as Cornwall, and is quite suitable for planting all over the western peninsula as far north as Owen Sound. The timber of this tree cannot be excelled for furniture, and is chiefly used for bed-room sets. It has a fresh, light and neat appearance when oiled and varnished, which brings out its large open grain, and its peculiar rich yellow hue gives it a cheerful appearance. A firm in Detroit manfuactures from this wood very largely.

We would recommend the raising of all nut-bearing trees from the seed, and transplanting them to their permanent position when from four to six feet high, as these trees are not considered as a rule so easily removed as the seed bearing varieties, although we know of some set out at ten to twelve feet high with very good success, but they had been root-pruned and reset before. We believe any one wishing to obtain nuts of the black walnut or butternut, or young trees, may get an almost unlimited quantity at a trifling cost from Chief Johnston of the Six Nation Indian reserve at Brantford. Our Experimental Farm at Guelph should procure a couple of bushels of nuts for planting, in order to shew the general public how readily they can be grown, and with what rapidity the denudation of our forests can be restored. The variety, date of planting, etc., should be kept on a stake at the end of the row so that visitors could see at a glance the progress made from time to time.

The time was fully taken up in the discussion of the importance of planting trees for shelter, and the several kinds of trees, native and foreign, that may be cheaply and profitably planted.

It was stated that in many places a demand had sprung up for soft woods, such as basswood and poplar, for the manufacture of pulp for paper, and that, often, broken land that cannot be profitably tilled could be planted with these rapid-growing trees with great profit. Many young trees of ash, maple, hickory, etc., could be taken up by farmers and planted for a couple of years in nursery rows where they could be cultivated, and then transplanted to broken ground and hill sides, with great certainty of living.

Mr. Beall mentioned an instance of a farmer who, desiring to have a belt of trees for the shelter of his orchard, fallowed a strip of the desired width and then covered it with leaves and surface soil from his wood lot, and in a few years it was densely covered with a growth of young trees.

At the close of the discussion the meeting expressed its opinion in the following resolution :—

Resolved, that the members of this Association are deeply impressed with the importance of encouraging the growth of forest trees in this Province, believing that they

exercise a very decided influence on temperature, and furnish valuable shelter for our field crops and fruit teees. We also regard this subject as an important one from an economical standpoint, and believe that general forest planting in those portions of the country which have been almost denuded of woods would soon add very much to the value of land, and become before long a constant and increasing source of revenue. In this way also much land now of little or no value on account of its rough, hilly, or stony character, could be utilized with great advantage to the owner.

Some conversation was also had upon the encouragement of tree planting, the tenor of which was to the effect that it could be best done by placing before the public the necessary information with regard to the value and feasibility of such planting, and the profit that would result to the planter.

How to popularize the study of forestry among the sons and daughters of farmers was also considered, and the meeting was of the opinion that the introduction of a class-book on this subject into our common schools would do more than anything else to impart knowledge, and so awaken an interest on the subject; and upon motion of Mr. Beall the meeting requested the President and Directors to confer with the Honourable the Commissioner of Education upon the introduction of such a class-book.

REPORT ON NEW FRUITS EXAMINED DURING THE SESSION OF THE AMERICAN POMOLOGICAL SOCIETY AT ROCHESTER, N.Y., SEPTEMBER 18TH AND 19TH, 1879.

PEACHES.

Forty-four Seedlings originated by J. D. Husted, Lowell, Kent Co., Michigan, from cross of Hill's Chili upon Hale's Early in 1875. They are in season between Hale's Early and Crawford's Early and are all of good quality. The majority are either reproductions or slightly modified forms of Hill's Chili.

Wheatland.—From David Wheatland, N.Y. Very large, yellow, resembles Crawford's Late.

Mrs. Brett.—From J. H. Ricketts, Newburg, N.Y. Large, white with red cheek, very juicy, sub acid, very good.

GRAPES.

Lady Washington.—Originated by J. H. Ricketts, Newburg, N. Y. A cross between the Concord and Allen's Hybrid. Bunch very large, compact, shouldered; berry medium to large, deep yellow, pink where exposed to the sun; flesh tender, juicy and sweet, and very good. Vine vigorous, hardy and productive; leaves large and thick. Promising for the market and the amateur.

Jefferson.—Also from Mr. Ricketts. A cross between Concord and Iona. First fruited in 1874. Bunch large, not very compact. Berry of medium size, deep pink, very vinous. Quality best. A showy variety. Foliage of *Labrusca* type.

Bacchus.—From the same grower and origin. An accidental seedling of Clinton. Bunch medium; berry medium, blue black, very vinous, and promising as a wine grape. Foliage of *cordifolia* type.

Naomi.—From the same grower. A cross between Clinton and Muscat Hamburg. Bunch large, loose; berry medium size, green tinged with bronze. Very juicy and high flavoured. Quality best. Foliage of *Labrusca* type.

No. 1 B.—From the same grower. A cross between Hartford Prolific and Clinton. First fruited in 1877. Bunch large, cylindrical; berry medium, white, good. Foliage *Labrusca.*

No. 254.—From the same grower. A cross between Martha and Sultana. First fruited in 1874. Bunch large; berry small, yellow, very juicy and high flavoured; seedless. Quality best. Foliage of *vinifera* type. Vine vigorous but only half hardy.

Noah.—Originated by Mr. Wasserzieher, at Nauvoo, Illinois. A seedling of Taylor. First fruited in 1876. Bunch medium, compact ; berry medium, yellowish green. Resembles Elvira, but hardly equal to it in quality. It gives promise of value as a wine grape.

Dutchess (named from Dutchess County).—Originated at Poughkeepsie, N.Y., in 1868. A hybrid between a White Concord Seedling and Walter. Bunch large ; berry above medium size, greenish white, flesh breaking. Very juicy, vinous. Quality very good.

Poughkeepsie Red.—Of the same origin as the preceding. A hybrid of Walter and Iona. Bunch medium, compact, shouldered ; berry medium, pale red, vinous, sweet. Resembles Delaware and of equal quality. The foliage resembles Delaware.

Rochester.—Originated with Ellwanger & Barry, Rochester, N.Y. An accidental seedling. Bunch large, compact, shouldered ; berry above medium size, reddish amber. Very juicy and of good quality. Vine hardy and very prolific. The foliage resembles Delaware.

Monroe.—Of the same origin as the preceding. Bunch medium, compact ; berry large, blue black, subacid, vinous. Quality good. Vine hardy and vigorous.

Niagara.—Originated by Messrs. Hoag & Clark, Lockport, N.Y. First fruited in 1872. A cross between Concord and Cassady. Bunch large, compact, shouldered ; berry large, yellowish white. Flesh sweet and juicy. Quality good. Foliage large, lobed, very pubescent. Matures with Hartford.

Pocklington.—Originated by John Pocklington, Sandy Hill, Washington Co., N.Y. A seedling of Concord. Bunch very large, shouldered, compact ; berry very large, yellowish white. Flesh pulpy, juicy and vinous. Quality hardly good, but the specimens were not fully ripe. Two of the members of the Committee, Dr. Burnet and Mr. Bateham, stated that they had seen the fruit in finer condition. A very showy fruit. Foliage very large and pubescent.

Hybrid Seedling.—From Dr. W. A. M. Colbert, Newburg, N.Y. A cross between Iona and Muscat Hamburg. Bunch large ; berry large, purplish black ; pulp dissolving. Quality very good.

Lavega.—A hybrid seedling. From W. H. Mills, Hamilton, Ontario. Bunch medium ; berry large, reddish, vinous. Quality very good. Vine hardy.

Seedling No. 3.—From William Haskins, Hamilton, Ontario. Bunch and berry large, white, vinous and high flavoured. Quality best. A hybrid. Vine hardy.

Seedling No. 10.—From the same grower. Bunch and berry small, white, very sweet ; skin tough. Quality very good. Vine hardy.

Burnet.—From P. C. Dempsey, Albury, Ontario. A cross between Black Hamburg and Concord. Bunch large, loose ; berry large, purplish, vinous, very juicy, very good. Vine hardy.

Seedling No. 60.—From the same grower. White, vinous, very good. A hybrid. Hardy.

Hybrid Seedlings.—From C. J. Copley, Stapleton, N.Y.

18 F.—Berry very large, black, good. *Labrusca* foliage.

14 F.—Bunch large, compact ; berry large, greenish white, lacks flavour, but may be better in a good season.

Twenty-one Seedlings—From W. G. Hulkerson & Co., Oriel, Michigan. These originated from a single bunch of Wilder (Rogers' No. 4) and show considerable variation in size and colour of berries, ranging from deep blue black to red. While none are improvements upon the parent, the results are such that future experiments in this line should be continued and encouraged.

Prentiss.—Originated by J. W. Prentiss, Pultney, Steuben Co., N.Y., is a seedling of Isabella. Bunch medium, compact ; berry medium, yellowish green ; skin thick ; flesh pulpy, but quite dissolving, juicy, sweet with some flavour. Quality good to very good. Belongs to the *Labrusca* type. Ripens with Concord and keeps well. Vine is very hardy and very prolific. A promising white grape.

Numerous other specimens of new varieties of grapes were examined, but being either inferior in quality or in an unsound condition, they are not mentioned in this report.

LEMON.

Olivia.—From George C. Swan, San Diego, California. Specimens very large and of fine appearance and said to contain sixty-five degrees of citric acid. The Committee not having any means to test these fruits can only commend the sender for his interest manifested in the progress of horticultural products.

P. J. BERCKMANS.
SAMUEL HAPE.
SYLVESTER JOHNSON. } *Committee.*
ROBERT BURNET.
M. B. BATEHAM.

FLOWERS IN PUBLIC HALLS.

By B. Gott.

The many lovers of good manners and fine public taste everywhere, cannot but be deeply pleased by the prospect of the many exhibitions of flowers in public estimation and in public morals. Wherever we go, either in summer or winter, these beautiful objects of Divine beneficence accompany us, and are to be found to a greater or lesser extent; they thrust themselves upon our observation, and command at once our serious and devout attention. Their use in public halls and so in public assemblies, is apparently much on the increase. A simple social gathering of friends is made more pleasing, and has better remembrances clinging around it, by the presence of a few pots of choice flowers. They are made to do duty by increasing the native attractiveness on the brow of bridal beauty; and on the lifeless clay of departed friends they are equally serviceable to spread everlasting loveliness. The sportive and guileless child, on the very threshold of its happy being, stops to pluck and admire the gay flower, spotless as itself; and the cultured and well-trained sage of the school is equally curious to know and examine its wonderful and mysterious parts and properties. Even the ignorant, the vulgar and the debased, are attracted by such displays of wonderful beauty and spotless purity, and are thus frequently made to reflect on their own sinful and impure ways. In the beautiful words of Horace Smith :—

> Your voiceless lips, O flowers, are living preachers,
> Each cup a pulpit, and each leaf a book,
> Supply to my fancy numerous teachers
> From the loneliest nook."

In this way are the humble, inaudible flowers of the field accomplishing their double mission of ornamentation to the earth and moral instruction to wayward and erring humanity. Either a man must forever banish himself from the enobling society of flowers, or from the degrading influence of evil society and ways. Those opposing influences cannot coalesce, and a morally degraded being cannot love the presence of the beauty and loveliness of flowers. Said a friend to me a few days ago, "A genuine lover of flowers cannot be dangerous company." At present we shall not attempt a reference to flowers in the public parks of our cities, or our public cemeteries, the quiet resting place of our honoured dead, many of which places are beautified and richly adorned by the varied forms and beauty of flowers; but we must confine ourselves to the subject-matter in hand, "Flowers in our Public Halls."

Firstly, Flowers in our banqueting halls.—It is said of the admirable Lady Dufferin, the popular companion of our late Governor-General of the Dominion of Canada, that she had a very heavy stock of admirable pot plants, which was made to serve the purpose of decoration on her tables at the public gatherings of the nobility. The same is also said to be the right royal taste of the wife of our present Governor-General. We may be pardoned for making use of a description of a grand festival held by the Massachusetts Horticultural Society, at Fanueil Hall in Boston. "At this grand festival six hundred ladies and gentlemen sat down to a sumptuous feast. The tables, fourteen in number,

were loaded with every delicacy of the season, but the crowning glory of all was the great profusion of delicious fruit, and magnificent display of gorgeous flowers. The scene was exciting and brilliant." The Hon. Daniel Webster said, "I congratulate you, Mr. President, that our flowers are not

. . . . 'Born to blush unseen,
And waste their fragrance on the desert air.'

"Our flowers are cultivated by hands as delicate as their own tendrils, viewed by countenances as spotless and as pure as their own petals, and watched by eyes as brilliant and full of lustre as their own beautiful exhibition of splendour. All our associations of beauty and taste are blended with flowers. They are our earliest token of affection and regard. They adorn the bridal brow at the wedding, they are woven in garlands around the head of the conqueror, they are strewed on the coffin of the dead, and here is another of their most grateful and beautiful uses—ornamenting a table at a festival and enlivening the scene and enchanting the eye." From an adddress by Hon. Caleb Cushing: "In that 'central flowery land' this is the case at all festivals, flowers there adorn the table and meet the eye in every direction on all occasions, but here alone—here and in other Christian lands—woman enchants and beautifies with her presence the scene. We have learned to admire art, to appreciate sculpture and painting, and to look upon fruit and flowers as models of delicacy and beauty." Such are the sentiments and statements of the refined and eloquent, and such are the growing sentiments of our people in this country.

Secondly, Flowers in our educational halls, our school rooms and our lecture rooms—We have frequently seen on the expressions of childhood the pleasing smile, the grateful sense of pleasure, on the presentation of a carefully selected bouquet of flowers, to adorn the teacher's desk in the school room. Their place here is educating and refining, and the influence upon the children is grateful and ennobling. On our lecture-stands, too, there is a place on either side of the speaker for a vase of flowers.

"Flowers" says a writer, "of all created things are the most innocently simple, the most superbly complex, playthings for childhood, ornaments for the grave and companions of the cold corpse. Flowers are beloved by the child and studied by the thinking man of science. Flowers that unceasingly expand to heaven their grateful, and to man their cheerful looks, soothers of human sorrow; fit emblems of the victor's triumph and the young bride's blushes. Welcome to the crowded hall and grateful upon the solitary grave! Flowers are in the volume of nature, what the expression 'God is love' is in the volume of revelation."

We should then studiously encourage our children to cultivate, to gather and to study the flowers of the field, whose influence upon them and their character is so grateful, ennobling and virtuous. We love to see them conspicuous in our school rooms, as a tribute of gratitude and love, and we would fain to see them intelligently placed on the table of every educational hall in the land.

Thirdly, Flowers in our restaurants and dining halls, our public places of refreshment and our bar-rooms.—In good houses of this character, throughout the United States, the practice of placing fine pot plants of rich bloom in their rooms, and on their tables and bars, is fast becoming very common, and we think justly and with the best of influences and results. Having occasion lately to step into a restaurant room for refreshment in the town of Sarnia, Ontario, we were at once struck by the cosey, homelike, comfortable aspect of the general outfit of the room. It was handsomely furnished and perfectly equipped with everything needful for the comfort and refreshment of the guests, either in the cold or warm season. One end of the room in close proximity to large fine front window, was totally taken up with stands of as valuable, healthy and handsome pot plants as we had ever seen. These were admired by all. The influence of that stand of beautiful plants was in itself refreshing, and our active thoughts were speedily carried to their counterparts on the stand watched and tended by the loved ones at home. Who can properly estimate the potent influences for good and virtue daily hovering around that stand of plants. May the time soon come when many such exhibitions of floral beauty shall be met with in all our public places of resort, encouraged by the voice of fashion and public good taste.

A few days ago in our business tours we had occasion to step into the public bar-room of one of the public hotels in Thedford, Ontario. Our curiosity was at once aroused by the spectacle of a quantity of fine choice pot plants standing in the windows and on the bar. This, in our opinion, is a move in the right direction, for in a general way in no place of public resort are the tender, refining influences of plants and flowers more in requisition than in our public bar-rooms. We do not wish to uphold the bar-room system of the present day, where men gather solely to imbibe unnatural and diseasing stimulants, to their evident injury, but if they are a necessity of the age, and legalized by an enlightened Government, we do hope that it may become popular to connect therewith all the redeeming and refining influences possible. In the immediate presence of the forgetting man, drinking himself into unmanliness and brutality, stands the pure, silent and potent preacher, the flowering plant, that is so much like the one his loving and patient wife watches at home, or the one his dear kind mother praised and fussed over until he almost knew every leaf upon its stately stem, and every petal upon its sweet and beautiful corolla. If he but turn his eyes upon them he feels silent reproof for his ingratitude to admonishing maternal influence, and in shame he returns to wounded affection. As a late writer has it, "With tender emotions do I remember the old white rose bush trained to the top of the house by the hand of a dear mother. How many pleasing reminiscences crowd upon the memory of one who, at the age of three score years and ten, looks back upon the scenes of his childhood and youth, when from his sainted mother he received lessons of morality and piety, while engaged in the cultivation of a limited flower garden. Let us then with joy contemplate these ennobling and refined influences, even in the public halls of entertainment, and in every possible way encourage them in this relation, for they do a silent but reproving work that sterner influences cannot do. We want to see them placed everywhere, where human character can be formed, and at all seasons of our variable Canadian year. At no time, or place, or season, can we safely afford to do without an influence so redeeming and divinely good.

ADDRESS DELIVERED BEFORE THE HORTICULTURAL SOCIETY OF WESTERN NEW YORK.—JANUARY, 1880.

By James Vick.

Man may be happy without a garden; he may have a home without a tree, or shrub, or flower; yet, when the Creator prepared a home for man, made in his own image, He planted a garden, and in this placed the noblest specimen of creative power, to dress and to keep it, and there he remained during his life of innocence and happiness. And, in all parts of the civilized world, the refinement, and innocence, and happiness of the people may be measured by the flowers they cultivate. The love and care of flowers is one of the few pleasures that improve alike the head and the heart. It is a pleasure that brings no pain, a sweet without a snare.

Wonderful changes have taken place in our country within the memory of some who do not think themselves very old, and who have but recently stopped pulling out the grey hairs, as a hopeless task. The huge chimney, made of rough stones, with its log cabin attachment, the well-sweep, the rail fence and bars, the wood-pile with its mound of chips and rusty old axe, useful for the boys when out of school, have all disappeared. The pigs no longer seek admittance at the front door, nor demand a first chance at the dinner—having snuffed its fragrance from afar—in language more expressive than elegant; even the music of the spinning wheel is hushed.

We have nothing to say against log cabins. They were proper for a new and wooded country, and quite picturesque—a necessity and a blessing. Many noble men have commenced life in log cabins, but we observe that they did not stay in them longer than necessary. But the log cabin is gone, never to return. It long ago gave way to the square box, painted red, or, if unusually pretentious, pure white, adorned with blinds of the most intense green. The yard was cleared of chips and surrounded with a board fence, a straight walk leading from the street to the front door, while a few beds, bordered with

shells or stones, contained Poppies and Bachelor's Buttons, and Grass Pinks, and Sweet Williams. A few Hollyhocks and Lilacs added both beauty and fragrance to the little home garden. A border in the background contained Thyme, and Sage, and Summer Savory and similar treasures for the good woman's culinary uses, while a patch of Tansy and Peppermint were quite as necessary for the good man's bitters.

But change and progress is the order of the world, especially of the American world, and the old house that the carpenter made in the similitude of a dry goods box became worn out, or too small, or too very unfashionable; and the architect designed, and the builder erected a new house, with towers and gables, and curious porches, and strange windows, that one might almost think an emanation from fairy land. The old flowers are discarded with the beds and borders of whitewashed stones, and even the fence has been removed to the pasture lot. The front yard has become a lawn, and the tansy and peppermint bed have been transformed into a parterre. Instead of flowers a few weeks in the year, as in the olden time, there are now unbroken beds of beauty from early spring until the frost-king lays his cold hand upon every leaf and flower.

The change has done much to make people better, healthier and happier; but its speediest and happiest effects are with the women and children, while the men are enjoying in many cases the blessings they do not appreciate, and sometimes do not deserve. A few there are who try to show their manhood by a contempt of beauty. They are, however, remnants of a race almost extinct, and we say, peace to their ashes. Men of intellect and refinement are helpers in the good work, and nobly aid the weaker ones in making homes of beauty. A few suggestions as to how this can best be done will be in place.

The foundation of modern gardening is good walks and good lawn, and as both will last as long as the maker, it is well that the work should be well done. First secure good drainage, and then determine on the walks, making no more than actually necessary. Stake out the lines, and remove the earth twelve or eighteen inches in depth, using the earth thus obtained to fill up any depressions. Dig or plough quite deeply the ground designed for a lawn, and pulverize the soil thoroughly, removing all stones to the trenches prepared for the walks. Place a narrow margin of grass on each side of the walk, so as to secure the outline; see that the surface, at least, of the soil intended for the lawn is mellow, and will not bake. Sow Kentucky blue grass and a little white clover, or the prepared lawn grass of the seedsman, at the rate of four bushels to the acre. After the walks are filled with rough stones to within four or five inches of the surface, cover with fine gravel until the centre is level with the surface of the lawn. This work is best done very early in the spring, so as to give the grass seed the benefit of spring rains, or it may be done in September. If the soil is very stiff, it is well, after sowing the seed, to cover the surface with an inch of fine manure, and this should remain, after raking off a little of the coarest, during the summer, if it seems necessary. This plan is almost essential to success in the south and California, and other warm and dry sections. If the work is well-done, by the last of June the lawn will look well and require cutting. Weeds naturally appear, but as they are mostly annuals, if the grass is kept short they cannot seed and will soon disappear. A few perennials, like dock and plaintain, should be removed by hand.

Having obtained a good lawn, the usual practice is to spoil it as soon as possible, by making unnecessary walks and flower beds, and by excessive planting of trees and shrubs. Grass cannot grow in dense shade, and no lawn can look well cut up by narrow walks. A good portion of the lawn, if possible, should present an unbroken surface, only an occasional and handsome tree being admitted, and at such distances apart that they can grow and become perfect in form; and let no desecrating hand mar the work of the Creator by the saw, nor touch an ornamental tree with a pruning knife. This should only be allowed under such circumstances as would justify the amputation of the limb of a friend. The shrubs should be in clumps, or groups, and so thickly planted as to cover all the ground, and the soil under them kept cultivated and clean, like a flower bed. A few flower beds may be made, and usually near the borders, or opposite windows, and they should be of simple, graceful forms, and look well the whole summer, and every day and all day. There are many beautiful flowers that bloom only for a few days, or weeks, and, however desirable they may be in certain places, are unfit for beds on the lawn.

Others are in flower a long time, but the flowers are not sufficiently abundant, or are hidden by the foliage. Some kinds, though they flower freely, cannot endure the full blaze of the summer sun, and are, therefore, unfit for this work. Of all flowering plants, the scarlet geraniums have been the most popular for bedding, and the most freely used in all parts of the civilized world for making lawn beds, so much so that the opponents of the system have denounced it in ridicule as the "scarlet fever."

Through the skill and enterprise of florists, we now have many varities of plants with bright and beautiful foliage. Among these are the variegated-leaved geraniums, Achryanthes, Coleus, Centaureas, and Golden Pyrethrum. The Achyranthes is a darkish purple or maroon; the Coleus gives a very wide range of colour; Centaurea is snowy white, and Golden Pyrethrum, yellow. It will be readily seen that with such material most charming beds of colour can be formed. These beds and borders are often formed of rows of plants or flowers of different colours, and are then called ribbon-beds, and, when the patterns are more intricate, carpet beds, and they are often gorgeous.

Another style of lawn bed, and perhaps the most magnificent of all, is composed of large sub-tropical plants. They give us a taste of the luxuriance of tropical foliage, and, on lawns where there is sufficient room, nothing will afford more pleasure. These beds are usually planted with Ricinus for the centre, then Cannas, followed by *Caladium esculentum*. A low, outside border may be composed of Centaureas or Coleus. The Ricinus is obtained from seed, and will grow about as freely as corn, and require about the same soil and warmth. For earliness it is sometimes started in pots. The dry bulbs of Cannas and Caladiums are obtained from florists, and young plants of Coleus or Centaureas are to be had quite cheaply in the spring.

The plants desirable for bedding are not expensive, and good flower beds and ribbon beds can be made of annuals at the cost of a few cents, and for this not many equal the *Phlox Drummondii*. A few rows of white, purple, and scarlet will form a ribbon bed of great beauty, and the product of a paper of Petunia seed will make no mean show, if properly cared for.

These beds, it must be remembered, are for the adornment of the grounds alone, and they furnish no flowers for the house—no presents for friends, no bouquet for the dining room, or for schools, or churches, or the sick-room. These we must have. So, just back of the lawn, make generous beds of flowers that you can cut freely—Asters, Balsams, Zinnias, Stocks, Mignonette, Sweet Peas, etc.

The great difficulty with American gardens is that they are too large, and not sufficiently cared for. If we gave the same amount of labour on a quarter of an acre that we now expend on an acre, the result would be much more satisfactory. No one should have more ground in garden than he can keep in the very highest state of cultivation. It is this kind of excellence that affords pleasure, while failure or partial success is a source of pain. It is not only a fault to cultivate too much ground, but even too many flowers. Some seem anxious to obtain and grow everything. This is not well, especially where there is not a good deal of time and money to be devoted to the work. A choice selection is best, and we like every cultivator of flowers to have a pet or hobby. Always have something choice—something grown better than anyone else is growing it—something you have reason to be proud of. It will astonish you to see how flowers thrive under such petting, and what wonderful exhibition they make of their gratitude.

We name a few plants suitable for special garden work. These lists embrace but a few of the many adapted for the several purposes indicated.

Dwarf Plants for Edgings or Borders of Beds.—Alternanthera, Armeria or Thrift, and Pyrethrum aureum.

White-Leaved Plants.—Glaucium, Centaurea, and Cineraria maritima.

Showy-Coloured Foliage.—Achyranthes, Coleus, and Bronze and Silver-leaf Geraniums.

Scarlet Geraniums.—Gen. Grant, Queen of the West, and Excelsior.

Tall Foliage Plants.—Caladium esculentum, three to four feet in height, leaves more than two feet in length. Cannas, from three to five feet in height; a variety called Robusta, from five to eight feet. Ricinus, Castor-oil Bean, from six to twelve feet.

Annual Flowers for Brilliant Show.—These are, doubtless, familiar to most of our readers. The Aster, Antirrhinum, Balsam, Dianthus, Delphinium, Pansy, Petunia, Phlox Drummondii, Portulaca, Salpiglosis, Stock, Verbena, Double Zinnia, and other varieties that we have not space to name, should be in every collection.

Flowers Desirable for Fragrance.—For fragrance nothing equals the Mignonette, Sweet Alyssum, Sweet Pea, Erysimum, Stocks, Pinks, Picotees, and Carnations.

Ribbon Beds.—A very pretty ribbon bed is made by taking different colours of the same flower, like Phlox, Portulaca, Stocks, or Asters.

In conclusion, we say to all, cultivate flowers. These children of the field speak to us in every fragrant breath and lovely tint, and graceful form, of Him who spoke from naught such matchless beauty.

AMBER CANE.

To the Editor of "The Signal."—During last winter I noticed several letters in agricultural papers about raising Amber Cane in Canada and the States with the object of making sugar and syrup from it. I encouraged my neighbours to try it; last spring I sent to a Detroit seed firm and obtained 4 lbs. of Amber Cane seed. I paid 50 cents a pound and 20 per cent. duty. About the 18th May I planted about half an acre in well manured mellow land; the rows were 3½ feet apart. I put 8 or 10 seeds in each hill and thinned it out after it came up to 4 or 5 stalks in each hill. It looked puny and tender for a few weeks, but when the hot weather came it grew very rapidly. About six rods of the ground was too wet and it rotted. It requires about the same cultivation as Indian Corn and will ripen about the same time. Mine was fully ripe in the middle of October. I saved considerable of the seed. The average height of stalk was 10 feet 2 or 3 inches. Two other parties grew some near Clinton this season and one of them has machinery for pressing and manufacturing it. I took my cane to him and had it converted into syrup, receiving half the product. I got 35 gallons of good syrup. If the seed is good 1 lb. will plant an acre. My farm is two and a half miles from Lake Huron; we seldom have spring or summer frosts. Please insert this for benefit of readers of the *Signal.*

GEORGE COX, *Goderich Tp.*

We have, by kindness of Mr. Cox, received a sample of the above mentioned syrup and although made after a very crude fashion it has the appearance of the ordinary Amber Syrup of commerce. It is quite palatable and pleasant, and seems devoid of a certain pungent, acrid taste possessed by much of the so-called sugar cane syrup. Mr. Cox's experiment shows a yield of 140 gallons to the acre, no doubt with a little experience in cultivation and manufacture, this could be increased. Even as it is, and allowing one half for manufacturing, the yield of 70 gallons per acre would seem to class this as a profitable branch of agriculture. Allowing 50 cents per gallon, we have a return of $35 per acre.—Ed.

THE FORESTS OF OHIO.

HAS THE TIME ARRIVED FOR THE PLANTING OF TIMBER?

An affirmative answer by Dr. John A. Warder—Address before the recent Ohio Agricultural Convention.

Having been courteously invited to appear before you and to take the affirmative in opening this discussion upon the deeply important subject of Forestry, I present myself before you with the diffidence of one who must acknowledge himself a novice in the science, and crave your patience during the few moments occupied in an endeavour to discharge the assigned duty.

In the programme for the day appears this query:

"Has the time arrived in Ohio to plant trees for timber?"

In attempting a response to a question that is as yet so new to the men who themselves have aided in clearing off the dense forests that once covered the region watered by the Ohio River and its tributaries, it can hardly be expected that one who has worked with his own hands in effecting that destruction, nor you who have looked upon the work as a necessity, should be prepared to pronounce upon the limit beyond which the clearing of the land should not be allowed to procced. Nor is it at all likely that you may be ready to accept, much less to adopt as your own, all of the postulates and axioms that, on such an occasion at this, might be suggested and pronounced by any one who has made Systematic Foresty a subject of serious investigation.

As yet, little or nothing has been done among us in the way of forestry. Here and there a few trees have been planted, rather for ornament than for utility. The taste for the comfort and beauty of trees is growing however, and of the thousands who daily travel along our great highways, few are they who cannot admiringly appreciate the improvement by tree planting about the village stations, the groups of ornamental trees clustering around the rural homesteads, the lines of trees along the country roads, and on the boundaries of cultivated fields.

These efforts of individuals to restore the sylvan beauties of the land are worthy of all praise. They are well supplemented by the Village Tree Planting Associations happily suggested and successfully carried out by Mr. Northrup, of Connecticut, who should have many followers in Ohio. Your attention is especially directed to his pamphlet.*

Under the happy influences of the tree planters the cemeteries of our land are everywhere becoming the quiet resting places of the dead, sheltered by umbrageous trees, instead of the forlorn, desolate and neglected fields of the past—so unworthy of the title, God's Acre (Gottes Acker), and so discreditable to our boasted civilization.

Public and private parks are being set apart for the special culture of these beautiful natural objects, and they become the most agreeable resorts, and are means of instruction for the people. All these encourage a love for trees, and increase our knowledge of them, and to that extent are accessory to forestry.

In this, however, the people of our country have much to learn; the general want of familiarity with our sylvan wealth, either collectively or individually, is a matter of surprise to those who have made this matter a study.

Upon this occasion it may be admissible to refer more particularly to a single tree, which is destined to become a factor of no mean importance in the future forests of our land, and through them to solve one of the great problems of the iron road, the cross-tie question, and the future supply of sleepers.

We may be pardoned for having a State pride in this tree, for though not a native of Ohio, it was here that the distinctive characters of the Speciosa Catalpa, the western species, were first pointed out and presented to the public. It was here that it was first planted and distributed by General William Henry Harrison, who brought it from its native home on the Wabash. It was here that its merits as a perdurable timber were published by him at an agricultural meeting in Hamilton County, when he urged his fellow farmers, as early as 1825, to plant the tree extensively for its great value as timber.

It was in Dayton, Ohio, that its great beauty as a shade tree was observed by Dr. J. Haines, who propagated and distributed the plants that now ornament the streets of that city. In 1853 it was recognized as distinct from the Catalpa of the nurserymen, that had been brought from the Eastern States, and was then published in a magazine, devoted to horticulture and rural affairs,† that was printed in Cincinnati.

The Brothers Teas, enterprising nurserymen, next propagated the tree and distributed it widely. Further honours to the Catalpa and to our State have resulted from a great devotion to the timber interests manifested by Mr. E. E. Barney, of Dayton, who has bestowed much time and money, in the most disinterested manner, in the collection and diffusion of information‡ respecting this valuable tree, and in sending out its seeds, some of which have reached far distant lands on other continents.

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*"Tree Planting, Economic and Ornamental, and Village Improvement," by B. G. Northrup.
† *Western Horticultural Review*, August, 1853.
‡ "Facts for Information on the Catalpa Tree."

From all which it appears, that though itself a native of another region of our country, the merit of the introduction of the *Catalpa speciosa* is due to the intelligence and energy of the citizens of our own State.

Though it is not pretended that we have originated or created a new tree, we have presented one to the world that had heretofore escaped the observation and notice of the botanist. A tree of which it is said, (by one who knows that whereof he doth affirm), "Every day's experience establishes me more firmly in the opinion that it (the *Catalpa speciosa*) will prove to be one of the very best, if not the very best tree in the middle American States, and with a southern limit very far beyond any of our northern trees.

But let us now address ourselves more especially to the question before us:

"Is it time for us in Ohio to plant trees for timber?"

Yes! Yes truly and most emphatically, my dear fellow countrymen of Ohio, the time *has fully come* when we, the inhabitants of this glorious possession, should, as a duty, plant trees for timber."

Certainly we already have many warnings that it is indeed high time for us to set about doing something toward the restoration of the forests, which the necessities of agriculture and the advancing wave of civilization have so rapidly diminished, within a century of occupation, in extensive regions of our noble State. The clearing of the lands was a necessity for its occupation and application to agriculture. In this matter, every landowner must be left free to decide for himself and for his own acres. No man, or set of men, may let or hinder him from destroying or restoring his forests. Nor can his movements be controlled by legislative enactments as in other countries, since the policy of our republic is that of *non-interference*. But we have also an axiom in our policy, that the best plans are ever those which conduce to the greatest good to the greatest numbers of the people, and, whenever these may be presented in acceptable form, it is hoped and believed that such propositions will receive support.

So great is the American statesmen's confidence in the general good sense of the people, and in the capacity for self-government, that all great questions may be safely left to the popular tribunal.

When new propositions happen to be presented to the people for solution, however, they may sometimes need a certain amount of educational training and enlightenment, to prepare them for a wise decision.

The present theme is perhaps one of that character, to our fathers and to many of ourselves, who have lifted up axes upon the thick trees and prostrated those princes of the forest which had for centuries reared their proud heads, and reigned as monarchs of all they might survey. Those of us who have laboriously cleared the land of these encumbrances, have triumphed in the unequal contest, and may well congratulate ourselves on having released the fertile soil from its forest thraldom, to receive the vitalizing sunshine, and to smile for us with productive farms and happy homes, surrounded with luxuriant fields of food crops for man's use, convenience and enjoyment.

Flushed with our triumphs over barbaric nature, such may ask, "Why plant more trees and again relegate these smiling fields to the bondage of the savageism of the forest times!"

No! this clearing of our fertile lands is indeed right and proper; it will go on, and it should continue for a *certain period* and to a *certain extent*. Whatever this extent may be must depend upon so many circumstances connected with the physical conditions of a wide extent of territory, that the problem becomes difficult of solution, and requires for its proper consideration a knowledge of many branches of natural history. It need not now be discussed; suffice it that man's experience and observations in other regions of the globe will aid us in attempting a solution. From these we learn that from one-fifth to one-fourth part of any considerable stretch of country should be occupied by trees, in order to produce the best results in the physical conditions necessary for the greatest productiveness of the soil, and for the highest development of humanity.

Applying this to our own State, let us ask, how is it now in Ohio in this respect? What is the ratio at present, between the wooded and the cleared portions of our State? The statistics of this important problem are not so complete as we could desire, but such as they are, are well portrayed in Gen. Walker's Atlas of the United States census of 1870.

In his message of last year our Governor graciously devoted a brief paragraph to this subject, a subject indeed of so great prospective importance to the future destinies of the millions who are to tread upon the soil of Ohio, that our chief executive and our legislative bodies, as well as the humblest citizens, might profitably make it a subject of laborious and continued study.

It appears that in the course of seven years the area of the woodland in Ohio was reduced from about 9,750,000 in 1870 to a little more than 5,000,000 acres in 1877.

This shows that more than 4,000,000 acres of woodland, nearly one-half of that returned by the last United States census, has been destroyed in the brief period of seven years! Should these figures prove to be correct, they shew a frightful destruction of our woodlands, which must be followed in the future by their legitimate results of altered and deteriorated climate, diminished fertility and productiveness of the soil, in some places approaching barrenness, in the drying up of springs and streams, with irregularity in the flow and discharge of our navigable rivers, and eventually in the relegation of our fertile fields to barrenness and desolation. * * * What has been *may again* and *will again* recur. The most fertile regions of the old world, when subjected to similar treatment have reached this sad result. Under the infliction of such ill treatment and abuse of God's gifts, it is but a question of time when the sad but inevitable results must follow, and our now fertile plains be reduced to deserts.

The traveller Champollion, when speaking of the great desert of Sahara, in northern Africa, where he had traced the source of former rivers and streams, and had found stumps of trees covered by several feet of sand, makes the following remark: "And so, the astounding truth dawns upon us, that this desert may once have been a region of groves and fountains, and the abode of happy millions." * * * He asks, "Is there any crime against Nature which draws down a more terrible curse than that of stripping Mother Earth of her sylvan covering? The hand of man has produced this desert, and I believe, every other desert on the surface of the earth. Earth was Eden once, and our misery is the punishment for our sins against the world of plants. The burning sun of the Desert is the angel with the flaming sword who stands between us and Paradise."

The countries bordering on the Mediterranean, on all its sides, were once well-wooded, fertile, fruitful regions, sustaining a dense population. With the centuries came the undue destruction of the forests, and the consequent loss of fertility, followed by diminished population. Look at the famous regions to the eastward, Palestine the land of groves, the land that flowed with milk and honey; see the adjoining regions, now marked by the mighty ruins of Palmyra and the cities of the plain. Beyond these, see the broad fields of Persia, whence Alexander drew his mighty armies, and observe the once fertile valleys of the Tigris and the Euphrates where stood the luxurious Babylon, the great but fallen; all these once populous regions are now deserted, and literally become the habitation of bats and owls, in fulfilment of prophecy, clearly traceable to the destruction of the forests.

Even in our own favoured land, here in this new world, these scars upon the face of nature already begin to appear, and in some places on the Atlantic border tracts of farming land are already turned out as unproductive wastes.

Yes! verily, my friends, it is indeed time that we were thoroughly aroused to the importance of this matter of the conservation of our forests. We should plant shade-trees and groves, shelter belts and woods; yes, and where suitable conditions exist, we should also plant extensive forests for the sake of their future prospective, but certain, benefit to ourselves, and to those who are to come after us. Why will we not learn from the experience of past ages, which is everywhere expressed so plainly in the history of nations, and *impressed* so manifestly in the *desert scars* of the earth?

Let us take warning betimes and begin now, and at once undertake *the preservation of our forests.*

Forests are the conservators of moisture, the sources of the streams. The tree is father to the rain, was a favourite saying of Mahomet.

Then again we must remember that time is needed for the production of a tree. The Botanists call them *perennial* plants, because they continue their existence *through* the years. Vegetables of this class do not build up their massy structures, composed of con-

centric layers of solid fibre-cells, with the rapidity of the fungi, some of which will evolve millions of their cells in a few hours, visibly enlarging while we behold.

Nor can the trees be compared in their periods of growth, and the quickness of their cash returns, with the familiar tillage crops of the agriculturist. The weeks and months needed for the production and perfecting of garden and farm crops, are represented by the decades and centuries of years required for clothing the denuded surface with forest growths of mature and useful size. It is, therefore, high time to begin the work.

Be not discouraged, however. Trees grow fast enough. One of the classic writers of the age, who fully appreciated trees, put his own sentiments into the mouth of one of his rustic characters when he wrote, "Be aye sticking in a tree, Jock, it will be growing the whiles ye are sleeping."

Those of us who are now past middle life, no doubt many of you now present, can point to noble trees which have grown within your own recollection; some of them, perhaps, were planted by your own hands. Strange as it may be, however, it seems nevertheless true, that old men, those who cannot expect to see, nor to reap, the fruits of their labours in forestry, are the most energetic tree planters, rather than those just entering upon life with a bright future opening up to them decades of prospective enjoyment, and with a reasonable expectation of life even comparable to the term necessary for the development of a useful tree. Old men are proverbially the tree planters everywhere.

In regard to their periods of development, there is a great diversity among trees; some have a brief rotation. The coppice growths in European forestry are often utilized in periods of ten or fifteen years; in our own country too, we have many trees of short rotation, and some of the most useful and most profitable trees are of this character.

The *Black Locust* may be harvested after it has grown from twenty to thirty years.

The *Catalpa speciosa*, in the same period, will make good cross-ties and fence posts.

The *Ailanthus* very soon attains a useful size, and for certain purposes has been very highly commended, both in this country and in Europe. Prof. C. S. Sargent is advising its extensive plantation, and some years ago it was spoken of as the most promising tree for the arid plains of the southwest.

The forests of *Scotch Pine* in Germany are allowed sixty years to reach their useful size for fuel and for timbers.

The *Birch* there reaches its maturity in about half a century.

The *Willow*, used for charcoal needed in the manufacture of gunpowder, may be cut after growing twenty years or even less.

Chestnut, in its second growth, is most profitably cut every twenty or twenty-five years.

The beautiful wood of the wild cherry soon reaches a profitable size for many purposes, though for sawlogs and lumber the trees should be larger.

Many individual trees, planted by the pioneers upon the broad plains of Nebraska, within the few years that white men have occupied the so-called "American Desert," have already attained to useful size, and will yield each a cord of firewood to cheer their owners. While the census reports represent the extent of woodlands in Ohio as covering about one-third of its total area, which is a full ratio for lands situated like ours, we are not informed as to its condition. The skilful forester, however, cannot fail to observe that these tracts are very far from being in a condition to yield the best results either economically, or in their influence on the climate and water courses of the adjacent regions, and he finds them much less satisfactory in regard to their own improvement and perpetuation by succession.

Nearly all our woodlands have been culled severely, robbed of their most valuable products and specie; they are rarely in a condition for natural reproduction. In many cases they have been carefully cleared up; aye, cleared up by the removal of their undergrowth, both of bushes and of young forest trees, and they are even deprived of nature's own favourite carpeting, composed of the fallen spray, the leaves, the logs, with the mosses and lichens that feed upon these decaying tissues. All these make up an admirable mulching material that prevents evaporation, and which receives and retains the fallen rain, which quietly sinks into the mellow soil beneath, but which, when falling upon the bared surface of cleared lands, quickly escapes in rushing and destructive tor-

rents. Some very neat and would-be careful and economical farmers, after thus clearing up their woodlands, attempt to render them profitable by laying them down to grass, and then use their woods as pasture fields; very beautiful they are considered by the poet, but not by the forester, who sees in all this but the garnished tomb of the trees.

Yes, my friends, the time has indeed arrived when we, as a people possessing a full share of common sense, ought to realize the absolute necessity for devoting a portion of our energies and intelligence to the conservation and care of our sylvan treasures, and this will be followed by planting anew the waste tracts, and untillable hillsides and corners, or rocky ledges, with suitable trees.

We should plant forest trees for ornament to the landscape.

We should plant them for shelter to our crops, our cattle and ourselves.

Trees should be planted to guard against the failure of the water supply of the country.

Woods should be preserved for their influence in regulating the temperature and humidity of the atmosphere, for it is established by long continued observations made at the forestal stations of Europe, that the woods *are cooler in summer and warmer in winter*, and that they contain more moisture when compared with tracts of open lands in the same regions.

Finally, we should plant forests, were it even for their use and for the valuable products which they yield for our consumption in the multifarious demands of civilized life.

In all this we are forced to acknowledge our ignorance as to the best means of beginning this new industry, this new and important branch of agriculture. We are brought to a stand by the grave question of

How to Do it.

The Rev. Frederick Starr, of St. Louis, in a very excellent article presenting the urgent need for the preservation of our forests, which appeared in the U. S. Agricultural Report for 1866, appeals for Government aid, in lands and appropriations, to support and carry on suitable nurseries and forest plantations for the common good, as exemplars of such a character as no private individual can afford.

More recently, some of yourselves, joined by hundreds of earnest men in very many of the States, memorialized Congress to send a suitable and well informed Commissioner to Europe to gather up important and valuable information that should be adapted to our conditions and wants, which might enable us to emulate in our own country the perfected plans of their admirable systematic forestry management. Though urgently and persistently presented to the Senate and House committees, those bodies could not be persuaded to report upon the bills and memorials laid before them.

It may well be asked, why should not this important subject be referred to those great institutions founded upon the Government land grants for the endowment of Agricultural and Mechanical Colleges? This has already been urged, and a few of them are paying some attention to forestry and tree planting.

Some of you now present may recollect that a similar convention of Agriculturists, assembled in this chamber in 1872, did me the honour to listen to a set of resolutions begging the managers of our own Agricultural College to take the preliminary steps toward the teaching of forestry, by beginning the establishment of an *arboretum*, upon a part of their extensive grounds here at the Capital of Ohio, where, eventually, all the woody plants possible to the soil might be grown, and ever open to the inspection of the students and of interested visitors.

Even at this late date, I feel impelled to record the gratifying circumstance that the Convention of 1872 did itself credit by heartily endorsing the offered resolutions—and to acknowledge that the effort of that day, though barren in tangible or visible results upon the broad acres of the college farm, was not absolutely a case of wasted effort in the cause, nor of *love's labour lost.*

There is now undoubtedly a more encouraging outlook for the patriotic statesman in this direction as manifested in the increased interest felt by many in the subject of forestry. This is seen in the daily and agricultural press, and in the fact that the topic

under discussion should have been put upon the programme for this meeting. And, my good friends, let me also add, in the marked attention and apparent interest you have shown in this imperfect response to the question before us, and to which query is rendered the decided affirmative response:

Yes! yes, truly and most emphatically, the time has fully come when we, the people of Ohio, should plant trees for timber.

REPORT OF THE COMMITTEE APPOINTED BY THE FRUIT GROWERS' ASSOCIATION OF ONTARIO TO AID IN DIRECTING THE HORTICULTURAL DEPARTMENT OF THE SCHOOL OF AGRICULTURE, AT GUELPH.

To the Honourable the Commissioner of Agriculture:—

SIR,—The Committee appointed, at your request, by the Directors of the Fruit Growers' Association, for the purpose of assisting in carrying out your wishes in reference to more extended operations in Horticulture and Forestry at the institution in Guelph, beg to report as follows:—

That after the consultation, in reference to the work to be undertaken, which the Committee had with you on the 18th of March last, at the farm, we at once entered upon the duties assigned us. Our first step was to ascertain what had already been done in this direction, and, on taking an inventory of the fruit trees on the grounds, it was found that the orchards were very deficient in size, and that a considerable number of our most popular and desirable fruits were not represented in the collection. After mature deliberation your Committee resolved to begin the planting of an orchard which should contain all the popular varieties of fruit, and in such quantities as would be amply sufficient to supply the tables of the institution and give the students an opportunity of becoming familiar with the appearance and quality of the different sorts, and to which should be added from time to time such other varieties as might be thought desirable.

ORCHARD.

Under the advice of Prof. Brown we selected a field of twenty acres for a permanent orchard, in which it was decided to plant the apple trees in rows twenty-five feet apart, with a tree in the centre of each square, the pear, plum, and cherry trees twenty feet apart each way, the spaces between the trees to be planted, while the trees are young, with small fruits. As the funds available for the purposes of this Committee were small, we were obliged to limit the planting for this season to about five acres. A shelter belt was planted along the northerly and westerly sides, consisting of Norway spruce, Horse chestnut and European linden. Desirable fruits were then selected to the following extent: 49 varieties of apple, 23 varieties of pear, 13 varieties of plum, 10 of cherry, 9 of grapes, and 5 of raspberries.

FORESTRY.

An arboretum was begun which it is intended shall eventually comprise all the trees and shrubs likely to prove hardy in this Province, and 32 species of deciduous trees, 18 of evergreens and 46 of shrubs were planted. A large number of the newer ornamental shrubs were introduced into the borders and other portions of the grounds.

In forestry, a beginning was also made, and about half an acre of young trees of the black walnut and the same quantity of trees of the European larch were planted.

The success attending these efforts has been on the whole, thus far, satisfactory; the fruit trees, vines and shrubs having made a fair growth. In the forestry department the black walnuts have made a promising start, and are likely to make a good growth during the coming season. The European larch, in consequence of unusual drouth after planting, and the late period at which they were received, have been a failure, a very large proportion having died. We hope, however, to be able to renew these during the coming season, under more favourable circumstances.

Nursery.

A nursery department has also been commenced, and some seeds supplied with the view of raising young forest trees and shrubs for further planting. Since the autumn is a much more favourable time for planting these seeds than the spring, we deemed it unwise to do much in this department at a time of the year when the chances of success were doubtful. We are now taking steps to secure seeds of many of our forest trees for more extensive planting this fall. We regard this department as one of very great importance, from an educational stand point, since it will afford the students an opportunity of becoming acquainted with the growth from its earliest stages. It will also be the means of supplying the establishment, in the most economical manner, with a large number of young trees for future forest and ornamental planting.

Future Operations.

During the coming season, your Committee purpose completing the planting of the orchard of twenty acres of fruit trees, and to plant, also, two acres of grapes, an acre of strawberries, and two or three acres to include raspberries, currants, gooseberries, and other small fruits, which will, when completed, lay the foundation for an abundant supply of fruit for all the purposes of the school.

It is also our intention to add largely to the arboretum, where every specimen is being carefully labelled, under the direction of Prof. Brown, with the common and botanical names, for the convenience of visitors as well as the instruction of pupils.

The ornamental department will also receive attention ; a number of new flowering shrubs will be procured, and likewise a selection of hardy, perennial plants.

In forestry, a more extended work is also to be undertaken. Your Committee propose to plant, during the coming spring, half an acre each of sugar maple, hickory and butternut, a quarter acre each of white ash, English ash and white oak, some sweet chestnut, and half an acre or more of a mixture of American elm, black walnut, pine, wild cherry and ash.

It has been a source of great satisfaction to your Committee, that in carrying out the works we have undertaken, we have been ably and cordially assisted by the Principal of the School (President Mills), the Professor of Agriculture (Professor Brown), and the head gardener (Mr. Forsyth).

We beg again to call your attention to the necessity that exists of the appointment of a Professor of Horticulture, whose special duty it shall be to instruct the students in all matters relating to fruit growing, horticulture and forestry. It cannot be expected that this important branch of instruction can receive the consideration it is entitled to as long as it occupies a subordinate place among the duties of a Professor whose time is already fully occupied in superintending the agricultural and stock departments of the farm. In the interests of the school we would urge that this deficiency be supplied at the earliest possible opportunity.

All of which is respectfully submitted.

Wm. Saunders.
Chas. Arnold.
D. W. Beadle.

List of Fruit Trees, etc., Planted under the Direction of the Committee in 1880.

The following are the varieties planted and growing, with the number of specimens of each variety :—

The Apples are,

10 Golden Russet.	10 Grimes' Golden Pippin.
2 Rhode Island Greening.	2 Ontario.
6 Roxbury Russet.	6 Pomme Grise.

APPLES,—*continued.*

2 Hawthornden.
2 Ella.
2 Yellow Bellflower.
6 Ben Davis.
2 Blenheim Orange.
2 Twenty Ounce.
2 Rambo.
2 Chenango.
2 Alexander.
2 Dora.
6 Swayzie Pomme Grise.
2 St. Lawrence.
1 Montreal Beauty Crab.
1 Transcendent Crab.
1 Vanwyck Crab.
2 Early Harvest.
6 Duchess of Oldenburg.
2 Pomme Royal.
6 Baldwin.
6 Wagener.
4 Spitzenburg.
2 Fameuse.
2 Lady Apple.
2 King of Tompkins County.
2 Swaar.
2 Beauty.
2 Maiden's Blush.
2 Wealthy.
12 Talman Sweet.
2 Mother.
2 Pewaukee.
2 Beauty of Kent.
2 Fall Pippin.
4 Lady Sweet.
2 Cox's Orange Pippin.
2 Ribston Pippin.
2 Gravenstein.
2 Keswick Codlin.
1 Hyslop Crab.
1 Marengo Crab.
2 Summer Rose.
4 Benoni.
4 Red Astrachan.

THE PEARS ARE,

2 Tyson.
4 Sheldon.
6 Beurre d'Anjou.
6 Winter Nelis.
4 Seckel.
2 Dana's Hovey.
1 Mount Vernon.
5 Bartlett.
6 Flemish Beauty.
2 Summer Francreal.
4 Negley.
6 Clapp's Favourite.
2 White Doyenne.
2 Gray Doyenne.
5 Lawrence.
2 Duchess d'Angouleme.
4 Goodale.
2 Souvenir du Congress.
2 Vicar of Winkfield.
2 Osband's Summer.
2 Belle Lucrative.
2 Louis Bonne de Jersey.
2 Rostiezer.

THE PLUMS ARE,

9 Lombard.
2 Damson.
2 Webster Gage.
1 Duane's Purple.
1 Bradshaw.
2 Royal Hative.
2 Columbia.
2 Diamond.
2 Jefferson.
4 Pond's Seedling.
4 Glass Plum.
2 Goliath.
2 Reine Claude.

THE CHERRIES ARE,

2 Elton.
2 Black Heart.
2 Olivet.
1 Downer's Late Red.
2 Black Eagle.
2 Governor Wood.
3 May Duke.

THE GRAPES ARE,

18 Concord.	4 Martha.
4 Salem.	5 Canada.
4 Brant.	5 Creveling.
5 Agawam.	4 Wilder.
2 Massasoit.	

THE RASPBERRIES ARE,

155 Philadelphia.	67 Mammouth Cluster.
20 Herstine.	42 Clark.
37 Dorchester.	33 Highland Hardy.

LIST OF ORNAMENTAL TREES AND SHRUBS PLANTED IN ARBORETUM, 1880.

Acer dasycarpum laciniatum.	Pyrus aucuparia.
" platanus.	Prunus triloba.
Æsculus Hippocastanum.	Philadelphus coronarius.
Alnus glutinosa.	" nivalis.
Amygdalis nana, fl. pleno.	" Zeyherii.
" " white.	Spirea prunifolia.
Betula lenta.	" opulifolia.
" alba pendula.	" Thunbergii.
" pendula lacinata.	Salix caprea pendula.
Gleditschia triacanthos.	Salisburia adiantifolia.
Cornus Florida.	Syringa Josikæa.
Juglans cineria.	Tilia Europæa
" nigra.	Weigela hortensis.
Gymnocladus Canadensis.	" arborea.
Koelreuteria paniculata.	" rosea.
Lirodendron tulipifera.	" variegata.
Magnolia acuminata.	

EVERGREENS.

Abies excelsa.	Retinispora plumosa.
" Canadensis.	" pisifera.
" nigra.	Thuja, Parson's dwarf.
" alba.	Biota orientalis.
Picea balsamea.	Thuja, Rollissin's Golden.
Pinus Austriaca.	" Siberica.
" pumileo.	Taxus Canadensis.

FOREST PLANTING AND PRESERVATION.

(From the proceedings of the Western New York Horticultural Society.)

By Henry E. Hooker.

The subject of planting trees for timber, and the growth and preservation of woods, to meet the wants of the future, may seem to some outside the business of our Society, or at least premature, considering how cheap lumber is at present, and how long it takes to grow saleable timber; but I believe a cooler consideration of the aspects of the case, and the discussion of it here, will show that it is not too soon to look into it, nor too early to try some moderate experiments.

In this matter our neighbours, both east and west of us, are moving faster than we are, and have already secured valuable experience and present profit, by somewhat extensive plantings.

The western nurserymen have grown large quantities of seedling forest trees, which have been sold for timber plantations in prairie sections, and even shipped some of their largest orders to the eastern States, where the proportion of timbered land is greater than it is here in western New York. They waked up to the fact that the systematic growth of such wood as is most needed now, and will soon be greatly in demand, will be *profitable*, much more so than the hap-hazard, spontaneous growths of mixed wild woods.

As an encouragement to this undertaking, consider the immense increase in the manufacturing industries which are dependent upon a supply of good timber for their success; and how great must be the call for lumber if our nation continues its present prosperity; compare this demand with the rapid disappearance of the forests, and some idea may be formed of the probable *profit* of tree planting.

Thirty years, or even less time, with proper management, would furnish us forests capable of supplying the most desirable varieties, sizes and qualities of timber. The growth of trees here is so much more rapid than it is in France, Germany or England, that it is safe to say we can reach a size and quality in thirty years which they need fifty years to produce. Europeans do not think it unreasonable to plant trees for use fifty or eighty years after planting. Cannot we undertake a crop only thirty years in maturing, which will also be a source of comfort and income after ten or fifteen years?

We are called now to undertake works in all departments of industry, which are to be pursued at a more temperate pace than formerly, and to be satisfied with results which would once have seemed inadequate compensation.

Farmers upon the prairies, who have had to contend with winds and storms, which came to them over vast areas not broken by timbered lands, and who have suffered the loss of crops, buildings, stock and valuable lives from this cause, are impressed with the fact that they must have screens and fruit protection before they can be comfortable or safe. Their efforts will, I doubt not, be crowned with success, and we *may see*, before many years, that they surpass us in the possession of valuable timber, as far as they now excel us in the growing of abundant grain crops. They have sharply suffered from hail storms and hurricanes, coming over their treeless regions, and been parched and frozen by winds which should have been moderated by passing through wooded sections, until they are ready for the work and cost necessary to protect themselves and their children.

It may also well happen, that they will secure favourable results not expected, in the steadier flow of their streams, and a larger average rainfall, for while not perhaps indisputably *proven*, there is much to confirm the belief, that large bodies of trees do sensibly increase the condensation of moisture and promote seasonable rains.

Farming in western New York, upon the newly cleared lands, and with favourable markets, has formerly been fairly remunerative, and may still be considered so, on good, well conducted farms of moderate size, whose proprietors are labourious and do not look for much interest upon the capital invested in land. We have now arrived at a place where it is plainly to be seen that *labour* and the capital invested in buildings, stock, tools and manures are about all that can be looked upon as productive, the large outlay required for these items renders it impracticable to use all the land of an average farm to advantage. This leads us to inquire seriously whether timber growing is not the use to which a portion of each farm should be put.

I think I am within bounds when I say that one-fifth to one-tenth of each farm of one hundred acres in western New York could safely be withdrawn from farm crops or pasture without reducing the annual income of the proprietor one cent, the farmer generally having more land than he has capital to use to advantage. If this portion can be cheaply brought into growing valuable, well located and well protected timber, it ought to be undertaken immediately.

Individual Effort.

The American form of government deprives the rulers of some of the powers and opportunities possessed by some of the foreign ones, and transfers the duty to the citizens.

Among these duties is the care of the forests. The care and preservation of forests is one of the serious duties of European governments and landlords; trained foresters are employed and careful supervision exercised over the woods. Here small power is left with the rulers to preserve in their beauty and usefulness the treasures of timber which the land strives to produce; the people must save the forests if they are saved at all.

We, then, being made aware of our duty, must exert ourselves and see if by the less conspicuous labours of the many we may not secure a larger and more perfect result in forestry than could be obtained by a despotic government. We are certainly in for the trial. It remains to be seen whether we shall prove equal to our opportunity. If we do our duty fully, the benefits will be greater and better distributed than under any other form of working. I know there will be a feeling with some that this is a work for Government, railways, large land-owners and corporations, but it is an error to suppose they can do it as well or as perfectly as it can be done in smaller quantities.

Preservation of Soil and Streams.

The preservation and planting of forests is now demonstrated to be a *necessity*, if we would save the soil for future generations. The history of other countries shows conclusively that if a land is for a long time robbed of all its forests it must become a desert, and unfit for human habitation. If the sun, wind and rain have complete possession, in due time the power of the soil to sustain man is lost. Trees play too important a part in the economy of nature to be exterminated without incalculable evils upon those who are so ignorant or imprudent as to do it.

If great areas are deprived of all the trees, the streams and springs must be unsteady in their flow, and at times dry up altogether, because the waters held back by leaves and shaded soil are given up too easily and suddenly to keep up continuous supplies. The deposits of leaves which forests grow and accumulate, cease to gather; the cold of winter penetrates deeply and severely into the wind swept earth; roots are frozen hard and killed, which a slight mulch of leaves would protect; various species of half hardy plants disappear; vegetables of all kinds grow spare. Man himself is unable to retain control of useful crops, and a treeless land becomes in due time a desert, even in a temperate climate and with a good soil.

In the old prophet Nehemiah's time, "Asaph had charge of the king's forests," and it was necessary, in reconstructing the Lord's house, to secure an order on him to "get timber for beams," so carefully did the Persian monarch guard the woods. Now, the Garden of Eden, stripped of its trees, has become a striking example of the truth of what I have said. Asia minor and the countries bordering the Mediterranean, once the most fertile portion of the whole earth, and supporting a population more dense than any modern country, are now poor and becoming yearly poorer, mainly through the one great mistake in failing to preserve a due proportion of forest growth, and increasing too largely the land devoted to pasturage, growing bread-stuffs, plants for the loom, and injurious articles of luxury, like tobacco and opium. Truly "man cannot live by bread alone."

Spain has suffered severely in this loss of trees. A recent writer in the *North American* says: "During the reign of Abul Hassan the forests of the Sierra Nevada were protected by stringent legislation, and in every district where the original woods had disappeared, the proportion of orchards and grain fields were no longer optional, but regulated by a code of "field laws." After the conquest of Granada these laws were abrogated, and the Moorish orchards and chestnut groves disappeared to make room for Christian vineyards. The Moslem inhabitants, who were hunted out of Europe like wild beasts, had created a paradise in southern Spain, but their Christian conquerors could not prevent that country from becoming a desert."

Sanitary.

Much has been said and written as to the sanitary effects upon the whole country of the extensive removal of the forests, and it is not to be questioned that these effects must be very considerable, but not easily arrived at. We seem to be most interested in making

our farms and homes healthy, trusting that the general welfare will be promoted alone with our individual good.

Every country house can be made more comfortable and healthy by so disposing a goodly number of evergreen and deciduous forest trees as to break the force of prevailing winds, without smothering it and closing completely the free circulation of air. This can also be accomplished without shading the buildings. Plenty of sunshine and plenty of air are quite consistent with each other, and with due protection from hurtful winds. Extremes are to be avoided, and in the judicious use of forest trees, we have the true protection from torrid heat and arctic cold, both of which are sure to visit us in this climate.

The destruction of a grove of trees is sometimes fatal to the comfort of a residence, and again the removal of trees is imperatively necessary before a house shaded by large ones is fit for a habitation. The folly of raising a grove of trees over our houses is equal to that of the men who cleared off *all* those within half a mile of home.

Beauty.

In the preservation and care of our spontaneous growths, and in making plantations of evergreen and other trees, a little timely attention to appearance will do much towards securing permanent beauty. Nature strives to clothe herself in beauty. The outskirts of all woodlands, if undisturbed for a few years, become handsomely furnished with various forms and colours. The mixed wild woods of some of our hillsides and river banks, where oak and pine, maple and hemlock, ash and spruce, chestnut and sassafras, mingle their several shapes, and contrasting colours, could scarcely be improved in beauty by the interfering hand of man ; but in other localities, the addition of a considerable number of species, not spontaneous, there would be both an additional charm and a large source of profit to the planter. Not unfrequently the sorts most needed for beautiful effects would be the ones most successful in growth. I do not expect practical farmers to plant largely for beauty, but no sensible man need to forget it either in clearing or planting. The beauty of a place is often the most considerable item of its market value.

Spontaneous Growth.

The careful preservation of the native growth of trees which are found here, and which are so often destroyed before they come to any useful size, should be one of our first cares. These woods will be for many years our chief reliance, and all we shall be able to do in planting must be a mere supplementary matter, mainly directed at furnishing a sufficient quantity of those desirable species and varieties of trees which are readily exterminated by cutting, and which do not replace themselves by sprouting from the roots, such as all the evergreen trees.

We have still many tracts of hilly, broken, swampy or rocky lands, upon which are growing mixed lots of young forest trees, as valuable as any we should be able at present to plant there. Let these be carefully thinned, so as to save for large growth such specimens as will become of considerable value in due time. Prune their bodies of side branches while small, that the stem may grow up clear and free from knots. Space them off with care, so that the better trees may have a healthy and full development, not too much room, but enough to keep them in rapid growth upward as well as with sufficient strength of trunk to bear the strain of winds. Keep the forest thick at bottom along the outside boundaries, and exclude all animals, and such woods will soon be in good condition for profitable growth.

Western New York has a soil and climate very favourable to the production of a large variety of deciduous and evergreen trees of the best description for timber. This whole country has been once cleared of a dense forest, much of which was burned up to get rid of it and secure the soil for the growth of farm crops. This was then a wise course, indeed the only thing to be done under the circumstances, and the men who did it were efficient in the work, but they were human, and went too far. They cleared too much land, more than we can now cultivate to advantage. Possibly they have only provided a way for us to secure a new growth of trees finer than the original forest, and far

better adapted to the use of intelligent American citizens, and which will not need to be burned up, but worked up into all manner of useful and beautiful articles, if we can but fill our opportunity as well as they did theirs. Every generation has its work. Ours seems to be to render beautiful, profitable and comfortable the lands which they made habitable and productive. They were labourious and thoughtful of their children; shall we be less so because we are not so hard pressed for subsistence? They needed fields from which to produce food and clothing. It did not and could not occur to them that the demand for grain, and for butter, cheese, meat and wool would one day induce their children to so destroy the sheltering forests that even the fields would become useless because there were no woods, and the clear, steady streams turn to muddy, destructive, temporary torrents because there were few leaves and limbs. The farmers who wanted more land from which to make money out of farming, have proved an enemy to trees ten times more to be feared than the lumbermen who selected the larger and useful trees for their purposes, leaving the young trees to grow and fill their places. The lumberman is a good friend to the forest, when compared with the farmer, who clears up, root and branch, a thriving wood, and secures an unproductive field, where man sweats in vain and beasts fail to thrive.

Farmers are the men who have laid low our noble forests, and they should be the first to enter upon their due restoration. Their haste to grow rich, rather than their real necessities, has hastened their own troubles (as this spirit often operates), and now the excess of their field and pasture land calls loudly upon them for speedy and wise reformation. Farmers unwisely disturbed the tree balance of forest and field, shelter and sunshine; they must restore the equilibrium. Speedy repentance will be profitable as well as honourable.

Plantations of Forest Trees.

The work of forming a forest by planting out trees has a serious look to begin with, and the cost, time required for maturing the crop, uncertainties as to results, etc., may well cause us to look carefully before we go deeply into it; but many of its difficulties disappear before investigation, and after consultation with those who have tried it. There are great difficulties in the way of obtaining reliable facts in regard to expense, rapidity of growth, value of the crop, best varieties and species for planting, etc. This compels me to treat this part of my subject in too general and indefinite a manner to satisfy the practical men who compose this Society. The experience of foreign planters is not reliable (although abundant), either as to cost, time, best species, or value of crop. We have to rely mainly upon the result of nursery experience, observation of growth of trees here, and the knowledge we possess as to the finest trees, known to be valuable for marketing. With such a basis, we can reach an approximate estimate of cost, and select such varieties, and pursue such a course of management as will give us, I doubt not, a sound foundation for starting the work, and time will enable us to improve our methods and our selections. Doubtless the man who has good white ash, chestnut, cherry, oak, white pine or maple to sell twenty years hence will find it worth something.

It may be feared by some that a supply of best young plants is not to be had at low rates. This is true in part now, but would not be true long, in regard to all the best species, if planting were to go on in earnest. It would not be necessary to go beyond the members of this Society to find men competent and willing to supply all the plants required, at low rates, as soon as a reliable market is found. Foreign nurserymen keep large stocks of seedling forest trees, which can be imported safely and at moderate prices; and planters who wish can secure young plants from neighbouring forests, or sow seed and grow sorts to best advantage in that way. For instance, oak, black walnut, hickory, and perhaps chestnut, can be as well grown where wanted, without transplanting, as in any other manner. Planters who will take the pains can also secure specially fine stock by saving their own seed from trees which have an individual as well as a race superiority, for it is a noticeable fact that there are considerable variations in the size, thrift and excellence of the timber among trees of the same species. These points would soon be learned, as well as how to plant and prune, by an intelligent young man. Once interested

in this matter, abundant fields of thought, observation, labour, and profit would open up, and cheap supplies of young trees become abundant.

Locating Plantations.

An important point in forest tree planting is the fact that much additional comfort and beauty can soon be secured by planting in such a manner as to protect the exposed highways, buildings, orchards, stock and fields from prevailing winds, while we are supplementing our native growths with such rare and desirable evergreen or deciduous trees as we may lack, or deem most likely to prove profitable. A belt of evergreen trees forty or fifty feet wide will thoroughly accomplish this protection and give a beautiful face to the plantation. A belt or plantation of trees, ten years planted, would be an ornament and a security against winds which nothing else can equal. Lands of small value for any other purpose can be found upon many farms, where, by a judicious selection of species, excellent crops might be grown of trees not indigenous there. Evergreens often grow superbly where no evergreens were found in the old forest. Chestnut, oak, maple and ash will thrive where other species originally prevailed. In this judicious selection of species for a particular location must lie one of the most important and difficult matters to be decided, and in this, local experience will always be of paramount value. Every planter must decide for himself after securing such information as he can reach.

Best Species for Planting.

It would be a task quite beyond the reasonable limits of this paper to describe the best species of forest trees for plantations, and to give the best methods for growing them, several of the most valuable are native and abundant here, and well known to all of us. I need only to call your attention to the following as among those which I esteem eminently worthy of extensive trial, and easily procured viz.:

White ash, chestnut, black walnut, hickory, oak, cherry, elm, maple, locust, white pine, Austrian pine, Scotch pine, Norway spruce, European larch; also poplar, willow, ailanthus and catalpa for some special uses.

Facts of great interest and value in regard to the whole subject of forestry can be found in numerous foreign works, in the reports of our kindred societies, and in some few American authors. Also from the report of the U. S. Commissioner of Agriculture. But so new is the topic with us that we must depend mainly upon local experience and observation. My limited experience and reading will not justify me in offering you much advice, nor in giving figures which can be considered trustworthy, beyond an approximation, which may not prove wide of the mark, and likely to be below rather than above the good results to be expected, where good land is used and where rapid progress is secured by good culture and protection.

Time does not allow me to enter into the details of planting or culture, but the following hints may be of value:

Plant mainly our best native trees, and depend only upon them.

Plant in the spring, as soon as the ground can be worked easily.

Plant transplanted or nursery-grown trees, where they can be had at reasonable prices.

Plant evergreens a little later than deciduous trees, and never expose the roots to the sun or wind.

Cultivate carefully the first three years (just as you would corn or potatoes), with cultivator and hoe. After that the trees will need little cultivation of the soil.

Prune annually, either in the summer, after the first growth is over, or in the fall; never in April, May, or June. Keep the pruning attended to, so as never to have to cut a limb more than one inch in diameter, larger ones are liable to make a defect in the timber. Prune close to the stem and the scar will heal in one season.

Never allow stock to enter the plantation.

Keep the outside of the plantation close and dense at bottom, with a good number of evergreens, which should form a considerable share of all plantations. This is neces-

sary to secure a good mulching of leaves and to keep the winds from injuring both the soil and the tall trees. Large plantations will prove better than hedgerows, or very narrow belts or detached trees.

Estimated Cost per Acre of Forest Trees.

1st year—3,000 seedling, ash, elm, chestnut, cherry, larch, pine or spruce plants, at $5	$15 00
Planting, cultivating and care, 1st year, (plants set 4 ft. by 4 ft.)	10 00
2nd, 3rd and 4th years—Hoeing, cultivating and pruning, etc., $5 per acre	15 00
5th year—Plantation established and interest on stock and labour charged up	10 00
Cost of established plantation per acre	$50 00
Fifteenth year. (After ten years more the trees will become useful and saleable.)	
Fifteen years' use of land, $3 per acre	$45 00
Ten years' use of capital	50 00
Cost of forest per acre, fifteen years old	$145 00

Crop Estimate.

2,000 trees 3 to 8 inches in diameter, and 15 to 25 feet high, at 5 cents each	$100 00
500 trees left, 8 feet apart each way, to grow to larger size, 20 cents each	100 00
	$200 00

This result, I think, could be reached by using land of average fertility, and by the expenditure in cultivation named. A smaller outlay in cultivating and pruning, and the use of cheaper lands, would reduce the cost, but I think the percentage of profit would scarcely be greater. If this return is not very tempting, it is at least not an unwise use to make of some of the lands now even less productive, and considering all the advantages to be derived, I think the work well worth undertaking in western New York.

Railways and Forests.

An important item in the question of forests is the use made by the great railways of timber for sleepers, and the construction of cars, buildings, etc., and their protection from snow. Prof. Sargent says: "The amount of timber required to replace the ties once in seven years, on the 85,000 miles of track in the United States, is 34,000,000 sleepers annually, equal to thirty years' growth on 68,000 acres of the best natural woodland." These companies must, before long, be compelled to pay good prices for the timber needed along their lines.

Railway Protection.

The destruction of the forests along the line of the railways has led to serious evils in the way of delays, danger, and accidents to the trains, causing loss of life and destruction of property through the drifting of snows common in our northern climate. A forcible illustration of this fact has just occurred near by us, and within six miles of Rochester.

Friday, January 4th, 1879, a special train drawn by six powerful locomotives and preceded by a gigantic snow plough, endeavoured to force its way through the snow banks

east of here. This train was wrecked by a bank of snow drifted into a cut not over twelve or fifteen feet deep, but so hard and solid was this snow and sand, accumulated from the adjoining open fields, that it proved sufficient to wreck four of the locomotives, and destroy the lives of a brave engineer and his fireman, and cripple for life a valuable officer of the road, and delay the whole business of this great road four days. Nothing of this kind could have happened if such spots had been well sheltered by forests, for snow drifts are impossible in dense timber. This accident (along with others equally preventable) detained the passenger and freight operations of the New York Central road four days, at a loss to them in wreckage, extra labour and loss of business, equal to at least $200,000. It would cost the company $150 per acre to buy the land, plant in forest and care for it five years; at the end of five years the serious drifting would be stopped, and after ten years protection would be perfect; in fifteen years land so planted would commence to furnish useful timber and sleepers. From that time onward the protection could be maintained, and a steady increase secured from the forest, which would make the investment one of the best the company possess, for timber alone. The single storm of January 4th and 5th cost the company enough to buy land and plant 1,300 acres of forest, which, if set in a belt four rods wide, would extend (162 miles) over all the worst points between Albany and Buffalo, the embankments needing no such protection.

A belt of trees four rods wide might be made as follows, setting the plants four feet apart each way:

1st. Four rows on the windward side, of Austrian or Scotch pine. 2nd. Two rows of Norway spruce or white pine. 3rd. Four rows of chestnut. 4th. Four rows of white ash or wild cherry. 5th. Two rows of Norway spruce or American arbor vitæ outside to make the bottom dense.

Such a plantation as this would completely protect the road from drifting snow, and cost but a small sum compared with its immediate benefits, while the ultimate result would be largely profitable in the crop of timber, if judiciously managed. It seems as if want of information upon this subject must be the only reason why men so sagacious as the managers of this road have not entered upon this work vigorously, because there are several points at which much money has been expended inefficiently in building expensive fences to protect the road from snow banks.

A well planted belt of forest trees, as above described, costing $150 per acre, could be grown for 150 miles in length for less than this one single delay and extra expense.

NEW AND RARE FRUITS FOR 1878.

By Wm. C. Barry.

The year 1878 has been rendered memorable in the annals of American pomology by reason of the large number of new native fruits which have been originated or introduced during that time. The list of peaches especially has been wonderfully augmented. Descriptions of about thirty seedlings, never before described, have come to our notice, and we may safely estimate that as many more have fruited, but have not as yet been made known to the public. In connection with this remarkable array of peach novelties, their places of origin are interesting. The State of New York offers several candidates for popular favour which appear unusually promising. From the great metropolis even come two new varieties which apparently possess many valuable qualities. In western New York, there are several seedlings which will undoubtedly prove very desirable. One of them is believed to be the largest and earliest of all the very early peaches. In the neighbouring State of Ohio, several excellent early and late varieties have originated. Passing over a vast extent of country we find a large nnmber of new kinds in Missouri, Kansas and Nebraska, and a correspondent of the *Gardeners' Monthly*, writing from Kansas, says that "the whole list of early peaches known to the public, so far as fruited in Kansas this year, is surpassed both in earliness and size by at least fifty new seedlings of Kansas origin, many of which have borne their first fruit this year." At the south,

too, some promising new sorts are spoken of. Thus, as if by magic, the same year, and in various portions of the country, new peaches have sprung up in such numbers as to astonish and almost perplex the fruit culturist. Of the progress made and the success achieved no more convincing proof could be desired than the fact that on the 19th of July, 1878, we had upon our table large, ripe, luscious peaches, grown in the open air in the vicinity of Rochester. This is indeed a remarkable fact, and indicates wonderful progress. Our Society and all similar organizations are to be congratulated upon the successful issue of their efforts in creating and fostering a taste for the beautiful and useful in nature, and the extraordinary improvements effected in the past should encourage renewed efforts and greater exertions in the future. It is to be regretted, however, that while we must in justice award great credit to the originators of valuable new fruits for the energy, zeal and industry displayed in the production of the same, it becomes our duty to criticise severely those who would offer to the public, knowingly, a new fruit of inferior quality, or intentionally disseminate an old or discarded variety under a new name. Too much carelessness has been evinced in this regard in the past, and it seems to me that this is a proper time for this Society to consider the matter, and to adopt some measures to remedy this evil.

A List of the New Peaches of 1878.

In the following list I have endeavoured so far as possible, to include all of the new peaches which have been noticed during the year. I am aware that this list is far from being complete, but I trust that the information herein afforded will enable those who are interested to prosecute their inquiries with greater facility the coming season. Nearly all are such descriptions as I have received, some few have been described from personal observation.

Beckwith's Early—Raised by Mr. Beckwith, Olathe, Kansas, in 1877. It is a clingstone peach, large, showy, firm, and it is thought will make a fine market variety. Ripened at Olathe June 20th, 1878.

Wyandotte Chief—Originated by George Krop, Wyandotte Kansas. It is large, handsome and a clingstone. Ripened June 22nd, 1878, at Wyandotte.

Bledsoe's Early Cling—Ira L. Wood, of Pleasant Hill, Mo., is the originator of this seedling. It is claimed to be five days earlier than the Amsden, in the same locality, and of better quality.

Seedling No. 1—Raised by James A. Storm, Mo. A very handsome free-stone, measuring eight inches in circumference. The originator says it possesses more fine qualities than any peach he has seen, and that it is at least ten or fifteen days earlier than the Amsden, and superior in size, colour, flavour, and durability.

Seedling No. 2—Raised by the originator of the above. This variety is said to ripen about the same time as the Amsden, is eight inches in circumference and the flavour is good.

Brice's Early June—Dr. S. M. Brice, of Kansas, is the originator of this variety, which fruited for the first time in 1874, and ripened on the 20th of June of that year. Frost and grasshoppers prevented any further fruitage until 1877, when it ripened again from the 20th to the 25th of June. In 1878 it ripened June 18th. Dr. Brice says that in a test in 1877 with the Amsden, Alexander, Early Louise, Early Rivers, and several others of the earliest and best varieties known, Brice's Early June proved its superiority in size, flavour, beauty, and early maturity.

Hyne's Surprise—Originated by E. F. Hynes, West Plains, Mo., 1877; said to be large, highly coloured, very fragrant, a prolific bearer and a good keeper. Ripened in 1877 June 28th, in 1878 June 14th.

Hape's Early—A Georgia seedling, raised by Dr. Samuel Hape, of Atlanta. It is said to equal if not surpass any early peach now known, in flavour, size, hardiness, capacity for shipping, and beauty.

Ashby—Discovered in Texas among a lot of seedlings in 1877. It is said to be a large, handsome peach, with firm flesh, of excellent quality, and ripens about ten days before the Amsden.

Baker's Early May—A seedling which made its first appearance in 1872 in Texas; resembles Hale's Early. It is a free-stone and its originator claims that it ripens six to ten days before the Amsden.

Seedlings Nos. 1, 2, 3, 4, 5, from Ohio, fruited for the first time in 1878.

No. 1 is a handsome peach, of about the size of Hape's Early, measuring seven inches in circumference, colour creamy white, nearly covered with dark purplish red, adheres to the stone; said to be two weeks earlier than any other variety.

No. 2—Similar to No. 1, but ripens a week later.

No. 3—Large, measuring eight inches in circumference and weighing 5½ oz.; skin creamy white, streaked and mottled with light red, deepening into dark crimson, flesh juicy, sweet, vinous and of first quality; ripe in August.

No. 4—Yellow and red, flesh yellow, small; ripens in September.

No. 5—A white peach, of medium size; late.

Bower's Early—Raised in Frederick, Md., in 1876. It is a freestone, of good size, measuring nine inches in circumference, and considered earlier than the Amsden.

Seedling—Originated in Rochester, N.Y. A fine peach, of medium size, round, with a dark red cheek; of excellent quality; ripe September 4th, 1878.

Seedling—Another Rochester seedling. Large, handsome, white fleshed peach, of first-rate quality; skin creamy white tinted with pale rose; matured September 4th, 1878.

Seedling—From New Brighton, Staten Island. Another large, round peach, with pale creamy white skin, flesh free, white to the stone, like Morris' White.

Seedling—Raised in New York. Very large, measuring nine inches around; skin yellowish white, flesh white, red at the stone, and a cling like Heath Cling. A splendid peach; ripe October 5th, 1878.

Gov. Garland.—Raised in Arkansas, and said to be the largest and best very early peach.

Harper's Early.—Originated in Missouri. The originators claim that it is the earliest of all peaches.

Waterloo.—The first very early peach ever raised in western New York. It was originated in Waterloo, by Mr. Henry Lisk, and fruited for the first time in 1877, when it ripened several days earlier than the Alexander or Amsden. In 1878 the first specimen ripened July 14th, and all the fruit was gathered July 19th about a week in advance of the Alexander and Amsden. The fruit is medium to large size, good specimens measuring nine inches in circumference and weighing five ounces. The skin is whitish green in the shade, marbled red, deepening into dark purple crimson in the sun. Flesh greenish white with an abundance of sweet vinous juice, adheres considerably to the stone, like Hale's, Amsden, etc. It is a remarkable keeper, and will undoubtedly be of great value for distant as well as home markets.

Conkling.—Among fifty varieties which we had the pleasure of seeing in fruit the past season, I think this might be justly regarded as the most attractive of them all. The fruit is large, good specimens measuring 9¼ and 9½ inches in circumference, and weighing 6½ and 6¾ ounces. Skin beautiful golden yellow, very juicy, vinous and of very good quality. It succeeds Crawford's Early. This is another western New York peach, having been raised in the town of Parma, N.Y., and fruited for the first time in 1873.

Kinnaman's Seedling.—Originated with Samuel Kinnaman, of Delaware, ripened 20th June, 1878. Fruit of medium size, roundish, skin pale brownish red on a pale greenish ground, flesh greenish white to the stone, juicy sweet and of very good flavour. Adheres partially to the pit. It is said to be some days earlier than the Alexander or Amsden.

Burns' Peach.—Raised by Thomas F. Burns, Mount Palaski, Ill., who claims that it is the earliest peach known, being a month earlier than the Alexander.

Thompson's Orange.—Raised at Wilson, N.C., and said to be one of the earliest yellow peaches. It has a beautiful colour, somewhat like a yellow apricot, is a free-stone and has a good sub-acid flavour.

Sallie Worrell.—Was found on the ground of Mrs. Worrell, near Wilson, N.C. It is regarded by good judges as the finest flavoured peach in the Carolinas.

Callie Scaff Peach.—A seedling of Early York raised in Water Valley, Ky., said to be earlier and better than Amsden.

The above list comprises thirty varieties all more or less new. How many of them will prove real acquisitions it is impossible to predict. We intend to watch them closely the coming season, and trust at our next annual meeting to be able to furnish much valuable information about them. Our notes on this subject would hardly be complete without a few remarks on the newer peaches which have been tested the past season.

Alexander's Early and *Amsden's June*, in which a great deal of interest has been manifested, have proved so nearly identical as to make it impossible to distinguish one from the other. They are the largest and earliest of the very early sorts, not taking into consideration the introductions of 1878, of which the "Waterloo" is thought to be nearly a week earlier. The time of ripening of the newer sorts has also been satisfactorily determined. Alexander, Amsden, Honeywell and High's Early Canada bear such a striking resemblance to each other as to be considered almost identical, and all ripen at about the same time. Then follow in the order named, Brigg's Red May, Early Beatrice, Early Louise, Early Rivers, Rivers' Early York, Early Silver, Magdala, Dr. Hogg, etc.

Rivers' Seedling Peaches.—Of these Rivers' Early is now recognized as one of the finest peaches, and particularly deserving the attention of the amateur. Its delicious flavour places it at once at the head of the list. For distant markets, however, it is doubtful whether it will be of value, as both skin and flesh are tender, and it will, therefore, not bear much handling, (This remark may apply to all of Mr. Rivers' seedlings.) Another handsome and excellent peach is the

Early Silver, which, although introduced at about the same time as Beatrice, Louise, and Rivers, has not been widely disseminated, and therefore is comparatively unknown. The fruit is large, larger than the Rivers, of a beautiful silvery colour, flesh melting rich, vinous and white to the stone, like Morris' White. It ripens about the 1st of September, and is well worth the attention of fruit-growers.

Large Early Mignonne is another which bids fair to rank high in popular estimation so soon as known. It is large, skin of a pale, straw colour, marbled with red, flesh melting and very good. This fine peach was raised from the Belle Beauce, and ripens latter part of August.

Dr. Hogg is a handsome free stone, of medium side, skin pale white with crimson cheek, flesh with red around the stone, and very good.

Early Albert is a clingstone, of medium size, skin white, mostly covered with light red, flesh white, melting and very juicy.

Crimson Galande is a large peach, free-stone, flesh tender, melting, rich and of a delicious flavour; ripens in the latter part of August, and should never be omitted in a collection for the garden.

Magdala.—Of medium size, colour, creamy white, marbled and blotched with crimson, flavour quite original, being a combination of peach and nectarine.

Princess of Wales.—Very large and one of the most beautiful of peaches; colour creamy white, with a rosy cheek, melting rich and excellent; is justly entitled to be numbered among the best.

River's Early York is of a medium size, skin marbled with red, flesh melting and juicy; ripens after Early Rivers.

Several choice peaches, about which there seems to be little known, may be named as follows.

Belle de la Croix.—A large variety, remarkable for its rich, sweet flavour.

Belle Beauce—large and handsome, skin pale white, with crimson cheek and marbled with light red; flesh white, red near the stone, free, melting and of first quality.

Belle Doue.—Medium, or rather small; flesh white, red at stone and very good.

Royal George.—Large, melting and delicious.

Walburton Admirable.—Large, skin creamy white, with delicate marbling of red around base; flesh greenish white to the stone, free, juicy, sweet, delicious; ripe, end of September. One of the finest late varieties.

Royal Kensington.—Of medium size and the finest quality.

Malta.—A fine peach, though rather small.

Belle de la Croix, Royal George, Royal Kensington and *Early Rivers* are peaches of the highest flavour, and cannot fail to satisfy the most delicate tastes.

Among the older sorts raised in this country, Atlanta, of the style of Hales, and one of Dr. Sylvester's Seedlings, is a delicious fruit and ought to be extensively cultivated. Foster is another which should not be overlooked. It resembles Crawford's Early, but is superior in texture and flavour. Cooledge's Favourite, although rather small, is a fine peach, and deserves to be better known.

New Apples.

But few really new apples have been brought to notice the past year. Of the Russian apples which we have had under trial for some time, several have given evidence of value, and while they can hardly be compared in quality to our best apples, still they are fair, and will undoubtedly prove valuable in those localities where only hardy varieties succeed. The following are worthy of particular notice:

(*Season of ripening, August and September.*)

Titouka or Titus Apple.—A large, handsome fruit, resembling Twenty-Ounce, Skin smooth, greenish yellow, striped and splashed with red; flesh a little coarse, sub-acid; ripens, middle to last of August. This is the largest and showiest of the newer Russian varieties which we have thus far tested.

Arabskoe (Arabian apple).—Another beautiful fruit of medium size, roundish oblate form, with dark red skin, covered with a rich purple bloom; flesh white and juicy.

Belborodooskoe.—Of medium to large size, rather flat, tapering slightly to stalk, skin yellowish green, with light dots and a browny tint on sunny side; flesh a little coarse. juicy, sub-acid. A good apple.

Groskoe Selenke Gruner.—Of medium size, roundish conical form, skin smooth yellowish green, colour of Sweet Bough; ripens early in August. Promises to be one of the most valuable.

Ostrowskoe.—Of medium size, round, regular, skin smooth, greenish yellow, with red cheek, and covered with white dots. Very distinct and handsome.

Repka.—Size medium; roundish oblate form, regular and smooth; skin pale straw colour, transparent; flesh fine grained, crisp, juicy, sub-acid, good; ripe early in August; tree a free grower and very prolific. For this variety we predict great popularity.

Roschdestwenskoe, or Christ Birth Apple.—Large, roundish, stalk short, stout; skin green, mostly covered with purplish red. A handsome apple.

Tschernoe Drewo.—Of medium to large size, roundish; skin yellow, with a beautifully mottled red cheek. Very attractive.

Waskaroe.—Size medium, roundish, slightly conical; skin yellow, striped and marbled with crimson, about the colour of Duchess of Oldenburg; flesh crisp; ripens in August.

Grand Duke Constantine.—Although we have had this variety in our collection for several years, we have not as yet had an opportunity to test it entirely to our satisfaction, owing to the imperfect condition of the fruit when examined. The conclusion we came to, however, was that it would prove identical with the well-known Alexander. The following description is Mr. Scott's, the celebrated English pomologist, and we quote it because, if correct, this variety deserves to be placed in the front rank among the Russian varieties. Mr. Scott says: "This is a noble fruit, in size and appearance. It is, perhaps, as handsome and beautiful as any existing variety, not excepting Alexander and Northern Spy. It is of the largest size, roundish, somewhat flattened; skin clear, bright yellow, almost entirely covered with streaks of dark crimson on the side exposed to the sun; flesh white tender, juicy, sweet, slightly sub-acid; ripens in August.

Grand Sultan.—Another variety represented to be of first size and quality; skin whitish yellow, covered with a beautiful bloom and striped and shaded with red on the sunny side; flesh white, and, when ripe, transparent. A very fine fruit; rich and juicy; ripens in August and September.

New Pears.

The year has not been prolific in new pears. An American variety, one of the Messrs. Clapp's seedlings, has been introduced, and gives promise of great excellence. It is called the

Frederick Clapp or Clapp's No. 22.—We are indebted to the Hon. Marshall P. Wilder for the following description: "Form generally obovate, but somewhat variable, size above medium; skin thin, smooth and fair, clear, lemon yellow; flesh fine grained, very juicy and melting; flavour sprightly acidulous, rich and aromatic; season October 15th to November 1st, remaining sound at core to the last; quality *very good* to *best*, and will be highly esteemed by those who like acidulous pears. It has been exhibited for many years by the originators, Messrs. F. & L. Clapp, of Dorchester, Mass. Of this pear the Committee of the Massachusetts Horticultural Society have reported favourably for years. Of its quality they state in 1873: "It was pronounced decidedly superior to Beurre Superfin, and is regarded by all who have seen it as the highest bred and most refined of all the many seedlings shown by Messrs. Clapp." It is probably a cross between Beurre Superfin and Urbaniste, the tree resembling in habit the latter variety, and may safely be commended as worthy of trial by all cultivators of the pear."

Kieffer's Hybrid Pear is another novelty, raised from the Chinese sand pear, crossed with a cultivated variety supposed to be Bartlett. The fruit is large and very uniform in size; skin greenish yellow; flesh white, buttery, juicy; quality good. It ripens in October, when pears are scarce and high. The tree is a strong grower, and is claimed to be blight proof.

Champion Quince.

Champion Quince.—A new variety, which originated in Georgetown, Conn., in 1865. It is described as being superior to all other varieties now known. The fruit is said to be larger than the Orange, fair, smooth and of fine quality, and a late keeper. Tree bears large crops, early and regularly. We will look toward this variety with a great deal of interest.

New Strawberries.

During the past few years a large number of varieties have been introduced to public notice and are now offered for sale. For the purpose of reference, I have prepared the following list, which is still incomplete. The name of the variety is given first, then the name of the originator and date of introduction. As a record it will be found convenient and useful. I am indebted to Mr. Wm. Parry, of Cinnaminson, N.J., for information regarding the origin of several varieties:

Belle, Moore, Mass., 1876; Black Defiance; Caroline, Moore, Mass, 1876; Centennial, Durand, N.J., 1876; Crescent Seedling, Parmelee, Conn., 1870; Champion, Reisig & Hexamer, N.Y., 1872; Capt. Jack, S. Miller, Mo., 1874; Continental, Felton, N.J., 1876; Damask Beauty; Duncan, Lucas, N.J., 1875; Duchesse, Hexamer, N.Y., 1874; Cumberland Triumph, Miller, Pa., 1874; Essex Beauty, Durand, N.J.; Forest Rose, Fetters, Ohio, 1877; Gen. Sherman, Moore, Mass., 1877; Great American, Durand, N.J., 1875; Golden Defiance, Miller, Pa., 1874; Gertrude, Miller, Mo., 1873; Hervey Davis, Moore, Mass., 1878; Kerr's Late Prolific, Kerr, N.Y., 1875; Matilda, Tillson, N.Y., 1873; Miner's Great Prolific, Miner, N.J., 1877; Maud Miller, Miller, Mo., 1873; Mary Stewart, Miller, Mo., 1873; Monarch of the West, Brady, Ills., 1871; New Dominion, Biggar, Ont., 1873; Panic, Peck, N.Y.; Pres. Lincoln, Smith, N.Y., 1875; Photo, Crawford, Ohio, 1876; Pioneer, Durand, N.Y.; Patuxent, Washington, D.C., 1876; Rappahannock, Washington, D.C., 1876; Springdale, Miller, Pa., 1874; Success, White, Mass., 1876; Susquehanna, Washington, D.C., 1876; Seneca Chief, Merrill & Son., Mich., 1874; Seth Boyden, Jr., Crawford, Ohio, 1876; Sharpless, Sharpless, Pa., 1877; Turner, ——, N.J., 1872.

What portion of these varieties will prove worthy of general cultivation, it is as yet difficult to say. Another season's trial, we hope, will enable us to give more definite and

reliable information concerning many of them. Of the large number of kinds which we have personally examined and tested the past summer, the Sharpless claims the first place. It first gave evidence of value in Mr. Barry's private garden in 1877, Mr. Sharpless, having kindly sent a few plants for testing. At the last annual meeting of this Society your President referred to the Sharpless as very promising. This was the first public mention made of it. In June last, we had ample opportunity to give it a thorough trial, and it pleased us exceedingly. Its vigorous habit of growth is one of its distinguishing characteristics. No other variety that we are acquainted with produces such strong, thrifty plants, or has such large and handsome foliage. It is very productive and yields immense crops, even under ordinary treatment. The trusses are remarkably strong and well-proportioned for the burden they are intended to support, although in many cases the fruit is so large as to bend them to the ground. The berries average large to very large, are generally oblong in shape, narrowing to the apex, but sometimes irregular and flattened. The colour is a clear light red, with smooth shining surface. The flesh is moderately firm, with a fine aroma, and may be rated as first in quality. A bed of this variety, when the plants are loaded with fruit is well-worth visiting. The rich, dark green foliage at once arrests attention, even from a distance, and if we will take the trouble to approach and examine the fruit, it will not be possible to repress our surprise and admiration. If it proves as great a success generally as at Rochester, Catawissa, and Cinnaminson, we predict for it great popularity.

Among the other varieties Cumberland Triumph promises to be an acquisition for the the garden. Crescent Seedling is becoming a general favourite, and bids fair soon to be recognized as a standard variety.

New Grapes.

Rochester and Monroe, offered for sale for the first time the past year, have been received with great favour on all sides. Moore's Early, Burnet, Prentiss, Pocklington, Amber Queen, Early Dawn, Lady Washington, Highland, Duchesse and Niagara are now on trial, and we hope to be able to report favourably upon them at the next meeting.

New Raspberries.

Gregg.—During the season we were the recipients of several boxes of fruit of this new raspberry. Judging from the samples, we would not hesitate to pronounce it a decided improvement on the older varieties of Black Caps.

Reliance and Early Prolific gave us their first crop of fruit the past summer. Both varieties appear to be wonderfully productive, but the fruit is soft and hardly of first quality. They will probably be esteemed for home markets.

Pride of the Hudson, Henrietta, Cuthbert, Florence, Caroline, Queen of the Market —have not been sufficiently tested to report upon.

Wachusett Thornless Blackberries.

Although an old variety there seems to be considerable interest manifested in it. A sample was sent us during the summer, and, although three days *en route*, the fruit was in perfect order when it arrived. It seems to possess several qualities which recommend it. It ripens thoroughly, the fruit is sweet and good and less acid than any other blackberry we have seen ; the plant is very hardy, free from thorns, and said to do equally well on light and heavy soils.

NEW FRUITS IN 1879.

By Wm. C. Barry.

Referring to my report of last year on New Seedling Peaches, I suppose the question will now be asked whether any of the many varieties then enumerated and described

have proved to be acquisitions. You are, of course, aware that in so brief a period it is not possible to obtain much reliable information on matters of this character ; but it gives me great pleasure to furnish such facts as have been communicated to me, and I hope that the list may serve in some degree to avert the confusion which must necessarily arise from the introduction of so many new varities at one time.

New Peaches.

Relative to *Beckwith's Early*, which heads the list, we have nothing new to report, as the tree did not produce any fruit the past season.

Wyandotte Chief failed also to bear any fruit. Its history and description, as given in my last report, was incorrect. Mr. Kroh informs me that it originated on the farm of Mr. Matthew Mudeater, near Wyandotte, Kansas, and he describes it as a dark red free-stone, rich, juicy, and fine flavoured. Average specimens have measured eight and a half inches in circumference, and in 1878 it ripened ten days in advance of Amsden.

Bledsoe's Early Cling.—The severe winter of '78 injured the fruit buds. Mr. Wood has changed its name to "Advance," and he describes it as a delicious peach ; superior to Alexander or Amsden, and five to eight days earlier.

Respecting the Seedlings Nos. 1 and 2, raised by Jas. A. Storm, of Missouri, I have not been able to obtain any new facts.

Brice's Early June, according to reliable authority, is remarkably early, but Prof. Vandeman, of Geneva, Kansas, says that "Vandeman's Early" is destined to excel it in many particulars. As this Seedling has not been before described, I give the following description as sent to me by the Professor:

Vandeman's Early.—Originated by H. E. Vandeman, Geneva, Kansas, and named Vandeman's Early by the Kansas State Horticultural Society, bore its first crop in 1878, and ripened June 13th, the fruit measuring seven to eight inches in circumference ; colour bright purple and crimson on white ground ; flesh white, adheres slightly to the stone ; in flavour equal to Hale's. Prof. Vandeman says that he has twenty other promising seedlings. In that vicinity there are also the following seedlings, for the description of which I am indebted to Mr. Vandeman :

Nugent's June—Originated by E. J. Nugent, Ottawa, Kansas, very promising.

Town's Early—Originated by Mrs. Towns, of Garnett, Kansas, and perhaps the largest of these very early peaches.

Emporia—Originated by Mrs. L. Burns, near Emporia ; resembles the other very early kinds. Rev. S. M. Irwin, of Geneva, Kansas, has twelve seedlings, all very early.

Ashby's Early, which in my report was described as having originated in Texas, was raised by G. W. Ashby, at Charrute, Kansas, and is said to be ten days earlier than Amsden, and of better quality.

Simon Bucher, of Emporia, Kansas, is reported to have twenty kinds earlier than Amsden; and Mr. C. C. Kelsey, of Humboldt, Kansas, has some five or six seedlings that ripened ten days in advance of Amsden.

Of *Hynes' Surprise*, the Hon E. F. Hynes writes me that the late cold weather in spring injured the buds so much that there were but few peaches. He describes his several seedlings as follows : "Hynes' Surprise has fruited four years. In size it is medium to large, very highly coloured, flesh white and red, fine flavoured, and a free-stone when fully ripe. It is an excellent keeper."

Hynes' Nectar—My latest new peach is a free-stone, and delicious. In 1878 ripened five days in advance of Surprise.

Early Lydia ripens with Hale's Early. Skin rose-coloured, and a free-stone. None of these have shown any indications of rot, while the Hale's Early and Early York on the same ground rot badly.

Early Rose, a free-stone ; Gov. Phelps, a large yellow clingstone ; Howard, Gen. Custer and La Belle are all seedlings raised by him.

Hape's Early—Raised in Atlanta, Ga., and of the same season as Alexander and Amsden, is said by Mr. Berckmans to be superior to either in quality, and preferable because it is more of a free-stone.

Baker's Early May—Raised by G. W. Mosteller, Girard, Ka., did not produce any fruit in 1879.

Bowers' Early—The original tree did not bear in 1879, but a few specimens were produced on young trees; these ripened two or three days earlier than Amsden and were larger than that variety, and of finer quality. The disseminators, Messrs. Morris & Miller, say that it is so much superior to Amsden in flavour, that it would be valuable even if it did not prove any earlier.

The Rochester Seedlings may be regarded as still on trial, although one of them ripens with Crawford's Late, and resembles it so closely as not to be worthy of a distinct name. The other is quite promising.

The Very Large Seedling Peach raised in New York, ripens too late to be of value at the North, but would undoubtedly prove desirable at the South.

Gov. Garland is described as a large clingstone peach, resembling Amsden in appearance, but larger, earlier and superior in flavour. The original tree is growing six miles from Bentonville, Arkansas, but the fruit buds being injured by severe weather last winter, no fruit was obtained this season. Prof. Wm. Hudson of Tehuacana, Texas, who is experimenting with the new peaches, had a young tree which bore a single specimen that ripened five days before the Alexander.

Harper's Early, originated in Wilson Co., Ka., is, according to reliable authority resident in Kansas, not so large nor so early as Amsden.

Kinnaman's Early—Regarding this variety I have not been able to learn anything new.

Burns' Peach—I have not received any new facts relative to this variety.

The Sallie Worrell, raised in Wilson Co., N.C., is described as very large, sometimes measuring 14 inches in circumference; colour creamy white shaded with pale red; flesh juicy, vinous and very good; one of the finest peaches; ripens with Stump the World.

Bustion's October, *Harris' Winter* and *Albright's Peach* are late varieties of value at the South, but too late for cultivation at the North.

Callie Scaff is said to be a seedling of the Early York, one-third larger than Amsden, and adheres slightly to the stone, same as Hale's. In the same orchard with Amsden and Alexander it ripened in 1878 eight to ten days earlier. In '79 the fruit buds were injured by frost, hence no fruit.

The Davidson Seedlings raised in Painsville, Ohio, were carefully compared with other very early sorts by Mr. M. B. Bateham, the well-known horticulturist; and he has reported the following reports:

Seedling No. 1, ripened in 1879 two weeks later than it did in 1878. Mr. Bateham, however, believes it to be a few days earlier than Alexander or Amsden.

Seedling No. 2, which last year ('78) ripened a week later than No. 1, was not more than three days later this year ('79). Both are of fair size, brilliant colour, and equal in quality to any of this class of peaches. No. 2 ripened with Amsden and Alexander.

Mr. Bateham says that the Allen Peach, which ripened very early in 1878, matured ten days later this season ('79), and the fruit was smaller than usual. This variety was raised by A. T. Allen, of Willoughby, Ohio, and in 1878 the first ripe peach was taken from the tree on the 6th of July.

Honeywell, which was supposed to be considerably earlier than Alexander and Amsden, ripened in 1879 at the same time as these varieties, but was inferior to both in size and quality.

Briggs' Early May, which was regarded as very early, ripens with Alexander and Amsden, and is not so large nor of such good quality.

Waterloo.—In 1878 the Waterloo ripened a week before the Alexander or Amsden. In '79 the difference in time of ripening was slight, owing in a considerable measure to the overloaded condition of the tree and its unfavourable location. By actual weight and measurement we found the Waterloo to exceed in size all the very early peaches which we tested.

Wheatland is a seedling raised by D. E. Rogers, of Wheatland, N.Y. Fruit large, flesh yellow, juicy and of excellent flavour; ripens between Early and Late Crawford. Mr. Rogers, who is looked upon as one of our best peach growers, esteems this variety highly.

Wager was originated by Mr. Wager, of Miller's Corners, Ontario Co., N.Y. It is a bright yellow peach shaded with red on the sunny side; flesh juicy and sprightly, and of fair quality. Tree very hardy and productive; ripens about the same time as the Crawford.

Conkling, which is undoubtedly one of the handsomest peaches known at the North did not produce any fruit the past season.

Alpha is a seedling raised by T. V. Munson, of Dennison, Texas, and is thought to be a cross between Early Rivers and Foster. Mr. Munson says it has ripened twelve days before Alexander, and is higher coloured and firmer than Early Rivers. Among the many very early sorts this seems to be the first representative of a new type, and we sincerely hope it may prove worthy of dissemination. We have now, too many seedlings of the Hale's and our efforts should be directed towards originating peaches like the Alpha.

Mr. Munson says that the following seem to be real acquisitions for the south.

Family Favourite, originated by W. H. Locke, Bonham, Texas; a seedling of the Chinese Cling, but ripening two weeks earlier.

Bogy's Leviathan.—Raised by Mr. Bogy, of Bonham, Texas, very large; of fine quality, and ripening three weeks later than Crawford's Late.

Miss May, originated by Mr. Carroll, of Dresden, Texas, of large size, first quality and very late.

Infant Wonder.—Raised by Capt. Daniel Webster, of Dennison, Texas; very large and fine; late.

Mr. Munson, who is making a specialty of peach culture says, that according to his observations, those varieties with reniform and notched glands are the most robust and healthy. Those with globose glands rank next in vigour, while such sorts as have serrate or glandless leaves are unreliable as to time of ripening, and are disposed to rot and mildew. He has classified the following:

To the first section belong—Early Beatrice, Early Louise, Early Rivers, Brice's Early, Waterloo, and Alpha.

To the next—that is those with globose glands—Wilder, Musser, Early Canada, Alexander, Amsden, Baker's Early May, Hynes' Surprise, Hynes' Nectar, Bowers' Early.

To the last belong—Downing, Climax, Cumberland, Saunders, Honeywell, Brigg's Early May, and Early Lydia.

I am indebted to Mr. Munson for the following list of of new peaches, the names of which are now given for the first time:

Williams.—Discovered in Delaware some years ago by Lewis Williams, of Hillsboro, Md., said to be earlier and finer than Alexander.

Larkin's Early.—Raised by D. F. Larkin, Hunt's Station, Ten., is represented to be as fine as Large Early York, and ten days earlier than Alexander.

Eureka.—Disseminated by M. W. Samuels, Clinton, Ky., is said to be as good as Alexander, and earlier.

Kelley's Early.—Raised by H. M. Kelley, Irving, Ill., is said to be very large and to have ripened twenty-one days before the Amsden.

Ramsey's Early Cling.—Originated by A. M. Ramsey, Mahomet, Tex., is described as an improved Alexander.

Seedlings No. 1, 2 & 3.—Raised by Mr. Sharp, of Wooster, Ohio, are all said to excel the Alexander.

Sherfey's Early.—Raised by Raphael Sherfey, Gettysburg, Pa., who thinks it will eclipse all others.

Brown's Early.—Originated by W. L. Brown, Ashley, Ill., and is said to be very early.

Sleeper's Dwarf is the name of a dwarf variety originated by W. M. Sleeper, of Oxford, Indiana. It is described as of remarkable dwarf compact growth; the original tree having grown only three feet in eight years. Fruit of medium to large size, greenish white tinged with crimson; flesh juicy, sweet, rich; season, October. In our nursery the tree of this variety has not grown more than two inches in two years, and we have therefore rejected it from the list as unprofitable to cultivate. It is, however, a curiosity, and will be considered desirable by some as an ornamental tree.

Schumaker is a seedling originated by Michael Schumaker, of Fairview Township, Erie Co., Pa. Borne for the first time in '77. Described as large, round, bright yellow splashed with crimson, and is said to ripen three to four weeks earlier than Alexander or Amsden.

Graves' Semi-cling.—Originated by Mr. Wm. Graves, Hazelhurst, Miss. ; is believed to be a hybrid of the apricot and peach. It is described as one of the largest and finest of the very early peaches, and five to six days earlier than Alexander.

Thus you see how extended has become the list of new peaches. It is to be regretted that so many sorts ripening almost at the same time, and so closely resembling each other should have been named and offered for sale. We trust that in the future no one will attempt to introduce a new peach until they are perfectly satisfied that it has superior qualities not common to any other variety. At the North, generally, and in western New York, in particular, the past season was remarkably favourable for the peach. We had ripe specimens of the Waterloo sent to us August 2nd, and on the 1st of November we gathered from our own orchard, ripe fruit of Comet, one of Mr. Rivers' Seedlings. At the West, however, the severe winter of '78–'79, and late spring frosts at the South ruined the peach crop in many localities ; otherwise I should have been able to submit a much more complete and interesting report. Another favourable season will, I hope, enable us to fix definitely the value of many of these novelties, and then the list will undoubtedly be greatly reduced. I will add that the following varieties of Mr. Rivers' seedlings ripen at the same time with Mountain Rose and Crawford's Early, and being only of medium size and fair quality are hardly worth retaining. They are Dagmar, Dr. Hogg, Early Albert, Early Alfred. Early Beatrice is superseded by Alexander.

New Apples.

Novelties in this class of fruits are remarkably scarce.

Highland Beauty, a seedling apple of medium size, good quality and a long keeper has been brought to notice by Mr. E. P. Roe.

Kirkland is the name of another handsome seedling apple, resembling the Yellow Bellflower ; of large size, good quality and a late keeper. Both have been described in our horticultural journals, and it is not necessary to refer to them here.

New Pears.

The "Hoosic."—Some nine or ten years ago, we received from the Hon. A. Foote, of Williamstown, Mass., several varieties of seedling pears. Among them were seedlings of Hacon's Incomparable, Seckel, Marie Louise, Washington, etc. They all possessed a certain degree of merit, but up to this time only one of them developed sufficient character and quality to be worthy of dissemination. This is a seedling of Hacon's Incomparable, which Mr. Foote first sent us as "Hacon's No. 3," and subsequently named "Hoosic." This variety we have fruited several years, and we believe that its many good qualities fully justify us in calling particular attention to it. Fruit large, obovate, having considerable exterior resemblance to Beurre Diel. Stalk 1¼ inches in length, moderately stout, and set obliquely in a slight depression; calyx large, open, in a shallow basin ; skin, greenish yellow, dotted and marbled with russet ; flesh fine graned, melting with a rich almond flavour like that of the Edmunds ; in quality ranking as best ; season, October. Tree, an erect, free grower, very hardy, and remarkably prolific.

Herr's Late Winter is the name of a new seedling pear raised by A. G. Herr, of Louisville, Ky., and brought to public attention by Messrs. Nanz and Neuner. It is described as of medium to large size, good quality and a long keeper ; specimens having been kept in perfect condition until May and June of the following year.

New Cherries.

Mr. D. B. Wier, of Lacon, Ill., who has been experimenting with seedling cherries for several years, offered for the first tims last autumn 45 new varieties of the Early

Richmond type. We have several of them on trial. We have also in our collection a fine seedling resembling the Elkhorn or Tradescant's Black Heart. It equals that variety in flavour and firmness of flesh, ripens a week later, and shows no disposition to decay. For home use and market it must prove valuable on account of its good quality and lateness. I cannot permit the occasion to pass without referring to the choice sorts of *Montmorency*, now in cultivation; one of them in particular deserves special mention. This variety came to us under the name of "Montmorency Longue Queue," but did not prove true. We have called it "*Montmorency Large Fruited*," as the fruit is of large size, and for one of that class of very fine quality; preferred by many to the sweet cherries.

Dyehouse Cherry, figured and described some years ago in the *American Agriculturist*, has proved to be a valuable addition to the list of hardy cherries. It was found some thirty years ago growing wild among some Morello cherries, by a Mr. Dyehouse, in Lincoln Co., Ky. The fruit is of medium size, bright scarlet, with a very small stone, and is produced in great abundance at the strawberry season. The tree is of dwarf compact growth, and very hardy, surpassing in this respect the Early Richmond.

New Plums.

I can only recall one variety which seems deserving of special notice. This is a foreign sort, not new, but quite rare, and called *Decaisne*. It is in form, size and appearance exactly like Coe's Golden Drop, but it ripens in August and promises to be very valuable.

New Grapes.

The new white grapes, *Niagara*, *Prentiss*, *Duchess* and *Pocklington* have been so frequently noticed and described that I will not occupy your time with any reference to them. We are now testing Miner's and Pringle's seedlings, which are quite numerous, and we hope to find among the number some varieties worth keeping. I have received a circular in which the *Cortland* grape is described and recommended as a remarkably early black variety. I will be obliged for any information regarding it.

New Raspberries.

Within the last few years many seedlings of the Philadelphia type have been raised. They are all hardy but of different quality, not fit to eat, but being coarse, dry texture they can be handled successfully and are therefore valuable for market. Let us hope that the new ones that are to come may prove more palatable.

The Montclair, raised by the Messrs. Williams, of Montclair, N.J., is said to be a promising new sort; hardy, productive, and of good quality.

Norwalk Seedling, disseminated by Mallory and Downs, of South Norwalk, is also said to be valuable.

Belmont is the name of a new black cap raspberry raised by Mr. John Scobs, of Barnesville, Ohio. It is described as larger than the Mammoth Cluster, more productive, and is said to ripen its main crop five to seven days later.

New Blackberries.

Warren.—Said to be very early, ripening six to eight days before the Kittatinny.

Duncan Falls.—Said to be very hardy, productive, and free from rust. Berries of a large size, good flavour, and ripens before the Kittatinny.

New Strawberries.

Crystal City, raised by E. Williams, of Crystal City, Mo., is said to be one of the earliest varieties. It is of fair size, colour bright scarlet, and of good quality. Plant vigorous, running almost as freely as the Crescent Seedling.

Marvin's Seedling was originated by H. Marvin, of Ovid, Michigan, in 1874. Berries large, roundish, conical, bright red, juicy, sub-acid. The plant is said to be very prolific, and the fruit of such a texture as to fit it for shipping; very late.

Huddleston's Favourite, a seedling of the Wilson, raised by D. Huddleton, Dunreith, Indiana, is described as larger than the Wilson, and of better quality; in short, it is said to possess all the good qualities, and none of the bad, of that berry of world-wide fame.

Success, a seedling of Jucunda, raised by N. B. White, of Norwood, Mass., is said to be large, firm, of excellent flavour, and very late; plant vigorous, hardy and very prolific.

Longfellow and *Warren*, raised by A. D. Webb, of Bowling Green, Ky., were produced from a mixed lot of seed from Seth Boyden, Black Defiance, Champion and Monarch.

Longfellow is described as very large, long; colour dark red; flesh firm, sweet, rich and of first quality; ripens early and ships well. Plant vigorous and very productive.

Warren, large and of fine flavour; colour dark red; flesh firm and of good quality. Plant vigorous, and as productive as Cumberland Triumph.

Mr. Durand sends out a new sort called *Black Giant*, said to be very large, and of good quality.

Glendale was found growing wild in Akron, Glendale county, Ohio; fruit is of large size; colour bright red, and is said to be of excellent quality when fully ripe; it ripens very late and is said to ship well. I saw a sample of the fruit last season, at Cleveland, but it seemed only to be of medium quality.

The Garden, raised by P. H. Foster, of Babylon, N.Y., is said to be a seedling of Monarch of the West. It is described as large, of fine flavour and very handsome.

Shirts is the name of a new variety raised at Shelby, Michigan, and is said to be promising.

Cetewayo, raised by A J. Caywood & Son, Marlboro, N.Y., is described as large, irregular, firm, sometimes measuring six inches in circumference. It ranks with Chas. Downing in flavour; fruit stems eight to ten inches long, foliage a foot high; quite prolific.

Mammoth Bush.—Of same origin, described as making remarkably large plants, having twenty to thirty fruit stools; foliage standing fifteen inches high, more productive than the Wilson; fruit a third larger than Wilson, uniform, and equal to Triomphe de Gand in flavour.

PRESERVING FRUIT.

There are three methods of removing the natural juices from fruit—sun drying, kiln or oven drying, and evaporating.

The method of drying in the sun is well known, kiln or oven drying is better than sun drying, as the operation is more rapid. The fruit, also, is kept from the action of flies, so numerous during the fruit season, and much less liable to be infested with worms. Many of our driers are only large ovens or kilns used to deprive the fruit of moisture by the action of heat. By this method the surface is first dried—nearly charred—while the inner portion of the fruit is soft. When pressed together, the moisture from within is absorbed by the charred surface, and when not over-charred the pieces of fruit become soft and pliant.

Evaporation is based on entirely different principles. The surface is kept moist while the entire process is going on, whether the evaporation of it is in a hot-air chamber or in melted sugar. When the evaporation of the natural juices is effected in melted sugar, the process, however, is usually called conserving.

Evaporation in a moist hot-air chamber is based upon the well-known scientific fact that a volume of air at the freezing point absorbs the one hundred and sixtieth part only of its own weight of moisture, and that every 27 additional degrees of heat doubles its absorbing power. Hence, if air at 32° Fahrenheit, the freezing point, absorbs the one hundred and sixtieth of its own weight of moisture, at 59° Fahrenheit it will absorb the one-eightieth of its own weight of moisture; and at 80° Fahrenheit, the one-fortieth; and at 113° Fahrenheit, the one-twentieth; and at 140° Fahrenheit, the one tenth; and

at 167° the one-fifth ; and at 194° the two-fifths ; and at 221° Fahrenheit, the four-fifths, or nearly its own weight, while at 248° Fahrenheit, heated air will absorb one and three-fifths its own weight.

Now, put this heated body of air, charged with more than its own weight of moisture, in motion at the rate of 20 miles an hour, or 880 feet per minute, and the reason of evaporating fruit so rapidly is apparent. Every 100 cubic inches of air at 60° Fahrenheit, and 30 inches to the barometer contains about 30 grains of water ; at 212° Fahrenheit, not far from one-fourth of an ounce of water. A drier chamber of the capacity of 225 cubic feet, according to this estimate, will contain at a temperature of 212° Fahrenheit fully 60 pounds of water, 50 pounds of which has been absorbed from the heated fruit. If the circulation is sufficient to empty this chamber every thirty minutes, 150 pounds of water is abstracted and carried away from a drier (full of fruit weighing 803 pounds) every hour, or 750 pounds are carried off in five hours, about the time necessary to evaporate apples or peaches when in good condition.

It will be seen from this that heat alone is not sufficient to produce evaporation. It will not do it, however great, either on the earth or in an evaporator. Stormy winds fulfill the pleasure of the Creator quite as effectively in drying up the surface of the earth after a heavy rain as do the burning rays of the sun. The sun's heat alone on the moist earth would fill the air with a dense, damp vapour, destructive alike to the health of animals and plants. So, in the philosophic drier, the fruit is put in at the bottom of a heated air chamber, where a stream of cold air containing the fortieth part of its weight of moisture is introduced and driven through the fruit at the rate of twenty miles an hour, and out of an "escape," loaded with more than its own weight of moisture. The air in motion, more than the heat, causes the fruit to dry so rapidly ; and the rapidity of the process, and the moisture in which the fruit is enveloped, prevent oxidation or decay, and give the evaporated fruit, when not over-ripe, so much of the colour of fresh fruit. The shorter the time the fruit is in the drier, the more perfectly the oxygen is excluded, and the brighter the colour.

But the colour of the fruit, however strongly it may recommend it to consumers, is by far the least practical benefit in the process of evaporation. The nutritive value of evaporated fruit, in consequence of the chemical changes during the process, is its chief recommendation.

It is still an open question whether the rapid change of starch into grape sugar in the hot-air chamber of a philosophical evaporator may not be attended by the further change of grape into cane sugar, though no actual analysis demonstrating the fact has yet been made.

Crystals of sugar exist often in great abundance on the surface of the well preserved specimens of evaporated peaches and pears, and possibly on apples, though I have not observed it. It certainly takes much less sugar to suitably sweeten evaporated than sun or kiln dried fruit of any kind.—*San Francisco Daily Evening Bulletin, Jan. 30, 1878.*

Directions for Preparing Evaporated Fruits and Vegetables for the Table.

Apples.—For sliced apple pies, soak the apples in cold or tepid water until soft, then use the same as if they had not been dried; when baked you cannot distinguish any difference between the pie and one made *the same* from fresh apples, except that the one made from the evaporated fruit is the richer, and if properly made, contains the most nutriment ; one pound of evaporated apples will make 5½ large pies. For mince pies, fruit cake, fritters, rolypoly puddings, apple butter, etc. Soak in cold or tepid water until soft, then use same as if they had not been dried.

Peaches.—Soak in cold water until soft ; sweeten to taste, the same as you would fresh fruit ; if very ripe before dried, use without cooking ; be careful not to add more water than will be required for dressing ; if you wish to have a cream dressing, use less water ; if not ripe enough before evaporated, stew them after soaking.

Pears.—Soak in cold or warm water until soft, stew in the same water ; if they are sweet pears, they will require but little or no sugar.

Plums.—Prepare same as pears.

Lima Beans.—Soak in cold or tepid water until they are soft; cook the same as fresh green beans in the same water, and they will be in every respect the same as fresh beans taken direct from the garden.

Sweet Corn.—Soak in three times its weight in cold water, an hour or more; boil it in the same water without washing about thirty minutes, or until it is tender; season with butter, salt and milk or cream; serve while hot.

Squash and Pumpkin Flour, for pies, custards, etc., is an excellent, delicious and healthful food, and cannot be made by any other process.

Recipe for making Pumpkin or Squash Pie.—Three heaping table-spoonfuls of the flour, with boiling water enough to dissolve it; ½ teaspoon butter; 3 tablespoonfuls of light brown sugar; 1 fresh egg; ¼ teaspoon ginger; ¼ teaspoon cinnamon, mace or nutmeg; milk enough to properly thin it; *mix well* and bake in a slow oven, if the pumpkin or squash is not ground, cook it same as dried pumpkin; stew it down and force through a cullender and use *with the above recipe* the same as you would fresh pumpkin, but cook in a *quick oven.*

Statement of the Cost and Profit of one Season's Working of one of No. 3 Pacific Evaporator.

Alden, Erie Co., N.Y., Feb. 10th, 1880.

Messrs. Tiffany & Curtis:

Gents,—Yours of 2nd instant at hand, asking for statement of what we had done with the No. 3 Pacific Evaporator, bought of you last September. We append the following summary of the business done:

No. bushels apples bought	6,755
" " " shrinkage	337
" " " evaporated	6,418

Average cost of apples per bushel 17 cts.
No. pounds made from above 382.79.

Total received for sale of fruit	$4,598 00
Total expense for fruit, storage, handling and manufacturing	1,989 00
Leaving net profit	$2,609 00

Average number lbs. per bushel, five ninety-six one-hundreths; average cost of drying and preparing per bushel, 11c.

The skins and cores were utilized for vinegar to December 1st, after which time we dried them, and sold them for 3½c. and 4c. per lb. delivered on cars. During the time we dried them, the cores and skins paid all running expenses. Have sold vinegar to the amount of $138, and have enough on hand to make the amount reach $200 which added to the profit on apples with the cores and skins will make a total net profit for 1879 of over $2,800.

ROGERS & BUTLER,

B. S. Butler, *Manager.*

REPORT OF COMMITTEE OF THE FRUIT GROWERS' ASSOCIATION ON SEEDLING FRUITS SHOWN AT PROVINCIAL EXHIBITION.

Your Committee appointed to examine the seedling fruits shown at the Provincial Exhibition, beg to report as follows :—

Apples.

Prenyeu.—This is a seedling from Prince Edward County, and one very much esteemed by fruit growers about Belleville. It is a medium-sized fall apple of a greenish-yellow colour, sometimes tinged with reddish; flesh close-grained, yellow, mild, sub-acid, juicy and very highly flavoured,an apple which we think deserves to be widely disseminated.

Grimsby Beauty.—One of the handsomest apples on exhibition, medium in size, well formed, whitish yellow with a brilliant red cheek. Flesh white, fine-grained, juicy, sub-acid with a pleasant flavour, maturing late in the fall. This is a fruit so very attractive in appearance that it would command a ready sale anywhere.

J. G. Ten Eycke, of Grimsby, shows a fall seedling, a pretty apple above medium size, of a yellowish green colour, with a fine blush cheek, flesh fine-grained and sweet; a good sweet apple.

Mr. Wm. Roy, of Owen Sound, exhibits four varieties of seedling apples, one a fall dessert apple of medium size and good quality. The others are winter apples, which we suggest should be submitted for examination at the next winter meeting of our Association.

A number of other winter seedlings were on exhibition, but it was impossible to judge fairly of their quality in so immature a condition.

Mr. McCulloch, of Sault Ste. Marie has on exhibition a number of seedlings of Fameuse, raised by him at the Sault, all fall apples, several of which are very promising, and from their hardiness will, we hope, prove to be valuable additions to our list of very hardy apples, suited to the more northern districts of Ontario. We hope Mr. McCulloch will have several of the best of these propagated, so that opportunity may be afforded of testing them in other northern localities. Since none of these seedlings were either named or numbered we are unable to designate those which we esteemed most highly.

Pears.

Mr. R. M. Wanzer shows a fine fall seedling pear, above medium size, not fully ripe, but which we believe will prove to be a variety worthy of more extended cultivation. In form it resembles the Duchess d'Angouleme; flesh rather coarse, pleasantly granular, sweet, juicy, and of good flavour.

Mr. P. C. Dempsey, of Prince Edward County, exhibits a small sized fall pear, a cross between White Doyenne and Josephine des Malines, yellow in colour with a fine-grained, melting flesh and high flavour; a pear which will be highly esteemed by amateurs, but of little value for market on account of its small size.

Grapes.

Mr. Rickett's seedlings, from their size, number and handsome appearance, attracted much attention, and we shall first refer to some of these.

Secretary.—A black grape, bunch large, berry above medium size, sweet, juicy, with a melting pulp and high muscat flavour. If the foliage of this variety proves good, and the vine hardy, it will well deserve a place in the front rank among the best varieties.

Lady Washington.—A white grape, tinged with pink when fully ripe; bunch large and heavily shouldered; berry above medium size, sweet, with a melting pulp and pleasant flavour.

Naomi.—A pale amber coloured grape; a good sized bunch, slightly shouldered; berry medium sized, sweet, juicy with a melting pulp and very good slight muscat flavour.

Concord Seedling.—A very large bunch and unusually large berry, black, round, sweet, juicy, with a melting pulp and good flavour; a very promising grape.

Clinton Seedling.—Bunch a little above medium; berry, large, black, round, sweet, rich, juicy, with a delicious flavour. We regard this and Secretary as the two highest flavoured grapes we have seen in Mr. Rickett's collection.

The *Prentiss Grape.*—This new seedling white grape is exhibited by Mr. Hubbard, of Fredonia, N.Y., and is claimed to be a seedling of Isabella. The bunch is medium sized, or rather under medium; berry white, round, nearly medium in size, sweet, with a melting flesh and pleasant flavour. From the appearance of the branches shown, laden with fruit, we judge this to be a very productive variety.

Moore's Early.—A promising black grape, similar in quality, size and flavour to Concord, but claimed to be two weeks earlier.

Niagara.—A handsome grape of a greenish yellow colour. Bunch of medium size, very compact; berry above medium, oval, with a sweet, readily melting pulp and pleasant flavour, much superior to Concord and claimed to ripen earlier than that variety. Odour of Concord but much stronger. We believe this grape will prove to be a very popular market variety. The foliage exhibited with the fruit is very good, much resembling Concord but deeper lobed. The fruit also possesses good keeping qualities, and would bear shipping well.

Mr. Wm. H. Mills, of Hamilton, exhibits several seedlings, and after examining the fruit we visited the vines, so that we might better judge of their value.

Sultana.—A black grape. Bunch large and heavily shouldered; berry large, round, sweet and juicy, with a tender, meaty flesh, nearly melting; skin thick and firm; berry hangs very firmly to the stem. This grape will probably prove a valuable one for shipping, market or keeping. The foliage resembles Hartford Prolific, is thick and leathery, and was in good condition at the time of our visit, September 30th. The vine is a good bearer.

Tena.—A first class grape as to quality. Berry black, oval, about medium in size, flesh very tender and melting, with a rich muscat flavour. As to the bunch, we could give no opinion from a fragment of the last remaining bunch. The foliage resembles Delaware, and was about in the same condition as Delaware growing along side of it.

Lavega.—A red grape. Bunch and berry medium in size; berry red, juicy and sweet, with a melting pulp; skin rather thick; an abundant bearer; foliage not very good at the date of our visit.

Mr. Wm. Haskins, of Hamilton, exhibited some promising varieties, and his vines were also inspected by us.

Abysinia.—A black grape. Bunch large, berry above medium size, sweet, juicy, with a melting flesh and good flavour; said to ripen earlier than Hartford. We believe that this grape from its earliness and good quality combined, will prove a desirable acquisition, the foliage is tougher and thicker than Delaware; it is a good grower, and the wood ripens well.

Albino.—A yellowish-green grape. Bunch and berry above medium, sweet, juicy

and pleasant flavour. A promising grape, with a foliage equal to Delaware; vine ripens its wood well.

Both Messrs. Mills and Haskins have a number of other seedlings of more or less promise, but those named appeared to us to be the most valuable among them.

Peaches.

Several handsome seedling peaches were shown, which your Committee intended to examine, but amid the pressure of many other duties they were overlooked.

Wm. Saunders.
P. C. Dempsey.