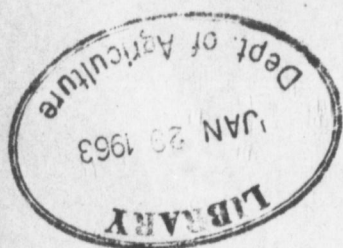


EIGHTH REPORT
OF THE
MONTREAL
HORTICULTURAL SOCIETY

1881-2.

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EIGHTH REPORT
OF THE
MONTREAL
HORTICULTURAL SOCIETY

AND
FRUIT GROWERS' ASSOCIATION OF
THE PROVINCE OF QUEBEC,
FOR THE
YEAR 1881-2.

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DR. ANDRES,	VICE-PRESIDENT.

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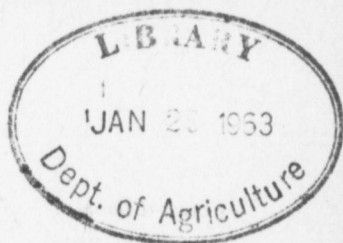
MONTREAL:

"WITNESS" PRINTING HOUSE, ST. JAMES STREET WEST.

1883.

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MONTREAL HORTICULTURAL SOCIETY.

ANNUAL GENERAL MEETING.

The Annual General Meeting of the Montreal Horticultural Society and Fruit Grower's Association of the Province of Quebec was held in the Natural History Society's Hall on the evening of the 4th December last. Mr. N. S. Whitney, the President, occupied the chair, and there were present Dr. T. Sterry Hunt, Major Latour, Messrs. R. W. Shepherd, jr., W. Evans, G. L. Marler, T. Davidson, R. Benny, Dr. Andres, R. Brodie, J. Doyle, E. J. Maxwell, J. Gardiner, W. O'Hara, A. Somerville, Mr. H. S. Evans, Secretary, and others.

The Chairman said that the past season had been most satisfactory, their membership had increased and the operations of the society had been extended very materially. There was one fact, however, which the list of members showed, and that was the scarcity of French-Canadian names. Every one who has travelled through the surrounding districts will have noticed the number of flowers, etc., displayed in French-Canadian homes, and this showed that the operations of the society could be largely extended in this direction.

Mr. Henry S. Evans then read the minutes of the last Annual Meeting, and the Annual Report as follows:—

The following report of the operations, present condition and prospects of the Montreal Horticultural Society is respectfully submitted. The year has been marked by great activity, coupled with an effort to make the society known, and its influence felt abroad.

The means taken to effect this object was by sending a copy of the sixth report, and at the same time writing to the gentlemen in charge of horticultural, botanical or experimental gardens,

in various parts of the world ; and requesting an exchange of reports when issued. This correspondence extended to England, Scotland, Russia, Germany, France, India, China, Australia, New Zealand, Ceylon, South America, &c., &c. In some cases no reply has been received, probably owing to the Society not having the proper address, but in other cases reports have been received, and also several friendly letters. In one instance, that of Natal, three or four varieties of tree seeds have been received, some of which have been forwarded to his honor the Lieut.-Governor, at Spencer Wood, Quebec, and also some to the Hon. H. G. Joly, and Col. Rhodes. These gentlemen have kindly promised to try these seeds, and let the Society know the result. What other good results may flow from these operations remains to be seen.

Mr M. H. Gault, M.P., kindly placed the sum of fifty dollars at the disposal of the Society last winter, for the purpose of encouraging window gardening among mechanics and working men. Every publicity was given to the fact, but only three entries were made, which was far from encouraging in view of the liberal prizes offered. The result of the examination has been already published in the seventh report, so that I need make no further reference to the matter, further than to say that the same gentleman has liberally promised a similar sum this winter for the same object, and it is hoped there will be less apathy shown.

The Society also offered book prizes for the best kept green-houses ; best kept window gardens, and best kept wardian, or fern cases, open to amateurs only. The result of this competition has already been published. I have only to regret, that owing to an error on the part of the proof reader, the third prize in the class of window gardens is made to read "awarded to Mr. J. Stevenson," whereas it should have read Miss J. Stevenson.

For the first time for a number of years, prizes were awarded the past summer for the best kept gentlemen's gardens, and best kept gardens for commercial purposes. The result of the competitions has already been published, but the full report of the judges appears in this Report.

The Society offered the past winter prizes for the best peck of seedling apples grown in the Province to be sent to the Secretary's

office on the 1st May, 1882. The special object in view was to try and find some native apples of fine quality and capable of being kept over from the fall till late the following spring, which would be a great consideration. Six or seven different kinds of apples were sent in, the first and third prizes were awarded to Mr. Edwards, of Covey Hill, and the second prize to Mr. J. Smith, Lachine. None of those shown, however, came up to the point desired, and the committee could not recommend them for cultivation. Mr. Hamilton, of Grenville, Que., seems to have found a native apple having some of the requirements sought for and I believe it is now being propagated in one or two sections. I am informed there are a very large number of native apples scattered through Rigaud and other districts; many of which are said to be good keepers, and of good quality, among which, if carefully sought for, might be found some valuable varieties. I would suggest that the shortest and most satisfactory manner to test this matter, would be to employ a competent man to go through the country at the proper season, and procure specimens of the most promising fruit, to test in a proper manner, at the same time taking careful notes of the appearance, character and age of the tree &c., for reference.

The opportunity of seeing choice plants during winter here being esteemed by many a great privilege, the Secretary wrote to several gentlemen asking if they would favor the members of the Association by opening their conservatories on certain afternoons during the winter. The following ladies and gentlemen most kindly acceded to the request. Mrs. Redpath, Terrace Bank; Andrew Allan, Esq., Iononteh; Andrew Robertson, Esq., Elm Bank; Edward MacKay, Esq., Kildonan Hall; Wm. Lunn, Esq., and H. A. Nelson, Esq. Thus on occasional afternoons from the 26th of January to the 25th of March, members of the Association were given the opportunity of visiting the finest conservatories in the city. It is hoped some similar arrangement may be made the coming Winter.

The event, however, most looked forward to, by members and exhibitors generally, is the Annual Show; which took place in the Victoria Rink, on the 18th, 19th, 20th, and 21st of September

last. Two reasons weighed with the committee in choosing this somewhat late date, first the Provincial Show would be then fully opened and the fruit more fully ripened the season being later than usual. As far as regards the weather, the time chosen was most unfortunate, as it rained the greater part of the time during that particular week, but cleared up on the last day (Saturday) after which followed weeks of delightful weather.

The number of entries made was over 1600, being considerably in excess of any previous year. The very large building used for the show was well filled, though doubtless some persons, owing to the heavy storm on the morning of opening, were unable to place all their exhibits in time. One of the great difficulties about a horticultural show, is to give it variety and change from year to year. Owing to the removal of the large platform at the end of the rink, the building was made more spacious, and by the erection of two large stands, it became possible to give the exhibition an unusually fine and pleasing appearance. The display of plants was very large, and certainly as far as foliage plants are concerned, nothing so fine has ever before been shown in Montreal—in fact, competent judges said that the *Coleus* plants shown were finer than they had ever seen even in Europe. It may, perhaps, be difficult for the visitor to note from year to year the advancement that is being made, but in some classes, plants that would have stood high 5 or 6 years ago, would receive no awards now. In no department is this fact more noticeable than in that of the amateurs. Some of the plants shown by them this year were particularly good. This department of the show, though, lost a large exhibitor by the removal of Mr. James Dickson, of Point St. Charles, to the United States, as he had been for several years one of the principal amateur exhibitors.

The display of cut bloom was probably the largest ever made here, in fact, so large, that additional trays had to be provided, in order that all might find accommodation. The Messrs. Bell, of Quebec, again made a very fine show of Dahlias and Gladioli, and were very successful in obtaining prizes.

The vegetable display was exceedingly good, but the exhibit of fruit was not nearly as large as that of last year, owing to the cold.

late season. Apples were under size and not up in color or appearance; but inferior as they were to what they usually are, gentlemen who were not familiar with our fruit were surprised at their excellence.

The show of pears and plums was unusually light. That of hot-house grapes was pretty large, but here again the unfavorable season greatly interfered with the display.

A good many entries were made for out-door grapes, but very few of those shown were ripe and several intending exhibitors did not show at all, owing to this cause. A small collection of grapes, consisting of Duchess, Poughkepsie Red, and Ulster Prolific, was shown by Messrs. A. J. Caywood & Sons, Marlboro, N.Y. Though sent only for exhibition, the latter grape particularly, seemed to have so much merit that a diploma was awarded the exhibitors.

Comparatively little change was made in the prize list the past year, except that a section was added for plants for table decoration, which succeeded in drawing out a few very nice specimens. A section was also added for native tree seeds. Mr. Jack, of Chateauguay Basin, securing first prize. Two collections of the foliage of foreign and native trees and shrubs were also shown by Mr. Wm. Evans and Mr. Jack, which secured 1st and 2nd prize respectively. In view of the interest now being excited this is a prize that it would seem advisable to continue.

A citizens' committee having been again formed this year to aid in providing attractions outside the general exhibition, it was thought by the Directors that this Society had a just and equitable claim to some consideration, as its show would certainly form a leading attraction. Accordingly a letter was addressed to the Committee, and the President, Vice-President and Secretary of this Society were placed on the Sports and Games Committee, and an opportunity given them to state their claim. The result was, that a grant of \$150 was passed to aid the Society in making their show more attractive to the general public. Under these circumstances the Directors felt justified in having the building well decorated, lit with the electric light and of obtaining the services of some of the best bands to be had. Had the weather been favorable the

financial result would undoubtedly have been better, as fully 3,000 people visited the Exhibition on the second evening it was open as the weather was fine. The total receipts were \$663, against \$668.95 last year, a falling off of not quite one per cent. Visitors at least were unanimous in their approval of the attractiveness of the Exhibition; and the promptness with which it was ready for opening at the hour named. The Society is much indebted to the Sports and Games Committee, for their courtesy in arranging the different outside attractions, so as to conflict as little as possible with the Exhibition. Also to the Directors of the Rink, for allowing the Society to erect stands before the time at which they were supposed to enter into possession of the building. Two days is really not sufficient to do all that is necessary in erecting stands and laying the building out. The Secretary, whoever he may be, has to personally direct the whole work or mistakes will arise, and things become confused. The services of one or two gentlemen to look after the interests of the Society with the press, and keep the Exhibition before the public would be of the greatest assistance, as at such times the Secretary should never be absent from the building, except for meals and sleep. I make this suggestion as a means by which a Secretary could be greatly aided and the Society benefited. Before closing my remarks on the Exhibition, I desire particularly to thank the exhibitors for their readiness to second the efforts made to accommodate them by doing all in their power to place their exhibits quickly and in the places assigned for them. The seventh report has been issued lately, and those who have perused it will, I think, agree with me that it does credit to the Society. I regret, however, to say that, so far at least, the Government has not contributed anything toward the cost of the last three published. The President and Secretary had an interview with the Hon. Mr. Mousseau lately relative to the matter, and the Premier seemed to sympathize with the Society and its work. At his request a letter was forwarded to the Commissioner of Agriculture at Quebec, but there has been no reply. The expenses paid so far on account of the last report is \$125, but this is exclusive of the printing, the account for which has not yet been received. There are, however, other indirect expenses incurred through the

report, viz., library expenses, this year amounting to \$83.42, and postage, largely for reports, \$74.80. The idea of publishing these reports originated, I believe, with Mr. Charles Gibb, but I certainly think it would be better to curtail in some other direction, rather than abandon their publication. They are needed, and it gives the Society a name and prestige, unattainable in any other way.

Not only the Society, but the country, may be proud of having among its citizens a gentleman so devoted to the advancement of horticultural pursuits as Mr. Charles Gibb. This gentleman has been for several months absent in Europe accompanied by Prof. Budd, of Iowa, with a view to examining the fruits grown in different parts of Russia, Poland, &c. Mr. Gibb has undertaken this important journey of his own accord, the Provincial Government, the High Commissioner and this Society giving him credentials to assist him in getting proper information and assistance in the objects he has in view. It is pretty certain that he has made some valuable discoveries of cherries, plums, pears and apples, likely to do well if introduced into some sections of this country, where such fruit has not hitherto been grown. It is probable that the results of his observations will appear in the next report of the Society. So much interest, however, has been excited in Russia by the visit of these gentlemen that it is probable a commissioner will be appointed to visit this country and the United States next year. The Society's affairs have been managed with as much economy as possible, consistent with its proper working, and though the apparent cash balance is small it is in a position to pay all liabilities, and if the amount of the claim for publishing the last three reports could only be obtained from the Government the Society would be in a first-rate position. The sum of \$133.26 has been expended this year on plant, and it almost seems as if nothing more of that sort was wanted. Owing to the constantly increasing size of the exhibitions it is impossible to conduct them without considerable expense for labor, &c. The careful manner in which the Society's property is put away and looked after, however, amply compensates for this.

The amount paid in prizes so far, this year, is \$1,447.25, being slightly in excess of any former year. The largest amount in prizes, paid any exhibitor, was paid to Mr. Laumaillier, gardener to Mr. Wm. Lunn, viz., \$82.50; Mr. Wm. Cook and Mr. J. Cameron coming second, each with \$76. In the amateur department Mr. J. McGregor comes first, carrying off \$66, being much ahead of any other amateur grower.

The membership this year is the largest in the history of this Society, numbering 835, and producing a revenue from this source alone of \$1,654. This is not owing to any fitful effort that has been put forth, as the membership has steadily increased every year for the last three years, and the average membership for seven years past has been 770, producing an average revenue of \$1,528.25. I again, however, have to note the lack of interest taken in the Society by people residing in the country districts. In spite of the liberal terms offered, only sixteen people have availed themselves of the advantages the Society offers. This is poor encouragement, still I believe the Society's efforts are being felt, though not yet so apparent as might be desired.

In view of the necessity of the Society keeping within its income if possible, I would suggest that, for a year or two at least, the winter prizes and the prizes for gardens be dropped. The Provincial Exhibition will likely be held in Quebec next year, and I would also suggest that the Society's show be kept open only three days instead of four. This would save considerably in labor, rent, etc., and for the last two years, at least, the fourth day has not paid expenses.

The books of the Society have been audited by Messrs. Morgan and Meyer and show a balance of cash on hand on the 30th November last of \$76.81, exclusive of fees received on account of the present year.

His Honor the Lieutenant-Governor and Lady being in Montreal at the time, again visited the Society's show and expressed themselves highly gratified at the splendid display made.

The Society, as in former years, are much indebted to the press of Montreal for their willingness to advance the objects the Association has in view, through the medium of their columns.

The feeling of harmony which seems to pervade the Society, both among the officers and ordinary members, has conduced much to the prosperous condition of affairs which has prevailed for several years past. The sole object kept in view by those having the direction of affairs, has been, what course will conduce most to the advancement of the objects for which the Association was founded. When this is done in any Association, success is almost assured, and having now completed my ninth year as Secretary, I can testify that this feeling has always existed among the gentlemen entrusted with the management of affairs.

The Report Committee are deserving of special mention for the pains displayed by them in the management of the Fruit Report, Mr. Shepherd, the Secretary, especially devoting a great deal of time to the work.

In conclusion I desire to thank all those members who have assisted me in various ways, not only this year, but since the commencement of my term of office.

HENRY S. EVANS,
Secretary-Treasurer.

After the Secretary had read the financial statement, the Chairman referred to the fact that if the Society received the \$600 promised to them by the Quebec Government they would be in a most satisfactory condition. Besides some \$150 for current expenses they held three shares in the Bank of Montreal worth over \$1,100. They were in that very satisfactory condition that if they did not take a dollar at their show they would be able to pay their expenses for the year.

Mr. Hamilton moved and Dr. T. Sterry Hunt seconded that the report be adopted.—Carried.

ELECTION OF OFFICERS.

The meeting then proceeded to elect the Board of Directors, the Chairman appointing Messrs. Marler and Hamilton as scrutineers. On the first ballot the following gentlemen were elected :

—Messrs. W. Evans, N. S. Whitney, R. Brodie, R. Benny, J. Doyle, C. Gibb, Major Latour and R. W. Shepherd, jr. This leaving one short a second ballot was taken, resulting in Dr. T. Sterry Hunt being elected.

The Report Committee was then selected, the following being elected :—Messrs. C. Gibb, R. W. Shepherd, jr., J. C. Baker, Dr. Andres, R. Brodie, jr., and J. Doyle.

During the interval that occurred during the voting, Messrs. Hamilton and R. W. Shepherd, jr., exhibited some specimens of apples from the County of Argenteuil, which it is thought will supply the want of a good looking apple with good keeping qualities. The specimens exhibited certainly were magnificent, and if they are representative of their species they should certainly be well received.

The general meeting then adjourned, and the Board of Directors remained to select its officers.

A vote of thanks to Mr. H. S. Evans, for his services as Secretary during the past year, having been carried, Major Latour moved, and Mr. R. W. Shepherd, jr., seconded, and it was unanimously resolved that Mr. N. S. Whitney be re-elected President of the Society.

Dr. T. Sterry Hunt was then unanimously elected Vice-President on the motion of Messrs. W. Evans and R. Benny.

It was then moved by Dr. Sterry Hunt, seconded by Mr. R. Brodie, and resolved that Mr. H. S. Evans be re-elected Secretary. Mr. Evans accepted the office on the condition that if the state of his business compelled his withdrawal he would be allowed to give six months' notice of his intention to vacate the post.

The meeting was then closed with the usual vote of thanks to the Chairman.

FINANCIAL STATEMENT.

THE MONTREAL HORTICULTURAL SOCIETY AND FRUIT GROWERS' ASSOCIATION OF THE PROVINCE
OF QUEBEC, IN ACCOUNT WITH HENRY S. EVANS, SEC.-TREASURER.

Dr.

NOVEMBER 30, 1881.

Cr.

15

To balance cash on hand, November 30th,

1881	106.68
" Dividend on stock	60.00
" Donations.....	83.00
" Grant from Citizens' Committee.....	150.00
" Reports sold.....	5.50
" Government grant.....	1,000.00
" Receipts from September Exhibition.	663.00
" Members' fees, 819 at \$2.....	\$1,638.00
" " 16 at 1.....	16.00
	<u>\$1,654.00</u>

\$3,722.18

By paid prizes to 30th November,

1882	\$1,447.25
" Postage	74.90
" On account of yearly report.....	126.00
" Library expenses.....	83.42
" Judges expenses.....	90.25
" On account of plant	133.26
" Printing and Advertising.....	428.20
" Rent and Insurance.....	219.75
" Music and Decorating rink, etc.....	263.80
" Sundry account, including labor, carpenters bill, collecting, clerical assistance, etc....	379.54
" Secretary, on account of salary.....	400.00
" Balance cash on hand	76.81

\$3,722.18

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RUSSIAN FRUITS.

BY CHARLES GIBB, ABBOTTSFORD.

It may seem strange that the fruits of Russia are so little known in this country, scarcely known even in Germany, that the fruits of one part of Russia are often but little known in another.

Our fruits came to us, as it were, by chance. In the days of the old French Colony, the peasants of Normandy and Brittany brought with them the seeds, and perhaps the scions of the apples they loved most in their native land. Later, the Englishman introduced his favorite fruits and the Scotchman his; in time the matter became commercial, and we soon had under trial in Canada and in the Eastern States all the best fruits of the *mild humid* portion of Western Europe.

That not until 1882 we should have begun to explore our own *like climates* in the old world seems strange indeed!

The fruits of Western Europe and their pure offspring born on this continent, as a rule, are not long-lived upon the Western prairies above latitude $43\frac{1}{2}$, not a success above $45\frac{1}{2}$ in this Province, and that only in exceptionally favorable localities. In Eastern Russia we find fruit growing a profitable industry in climates decidedly more severe than that of the City of Quebec. Hence we may expect to increase the area of fruit culture northward upon this continent very largely.

The uncertainty of these fruit trees of Western Europe in the severer climates, had led to large importations by the State Agricultural College at Ames, Iowa. (See 7th Report Montreal Hort.

Soc., p. 151.) Prof. Budd had gathered there the largest collection of fruits for severe climates, which I know to exist; but such was the uncertainty of nomenclature, such the difficulty of getting exact information as to their probable value, that the work of sorting out the best seemed a work of many years. Northern horticulturalists were looking with great hope to the Russian fruits. The work could not be allowed to rest. Some one had to go to Russia. Mr. Budd and I went.

Those acquainted with Mr. Budd's work on the College farm at Ames, will readily see that several valuable lines of thought in this report are not mine but his.

To our Provincial and Canadian Governments I am indebted for the kind and hearty way in which they seconded my efforts by giving me such introductions to the Imperial Government as enabled me to follow up my work in Russia.

To the Department of Public Domains, and the Department of the Interior of the Imperial Government at St. Petersburg, I am indebted for the kind way in which they afforded us every assistance possible.

To our Botanical and Forestry friends my best thanks are due. In fact, one of the chief retrospective pleasures of my journey in Russia, was the kindness of my Russian friends, the kindness of my Polish friends.

Our work created some interest in Russia. Often, when speaking to people we happened to meet, we found that they knew all about our visit through notices in the Russian press.

At St. Petersburg it was intimated that a Commissioner would, most probably, be sent next year to Canada and to the United States, to do work similar to that which we had done in Russia. Our fruits he will find pretty well catalogued, pretty well looked up. As soon as we know of his coming, means must be taken to insure his obtaining all possible information, and that in as short a time as possible.

Nomenclature in Russia is hopelessly confused. Different names are given to the same apple in different localities, the same name to different apples growing in adjacent districts. So many

names, however formidable they may sound in Russian, mean merely round white, white sweet, white transparent, &c., names without individuality. Fortunately, a few names have been fixed by commercial demand, and are known by the same names throughout Russia.

One great difficulty in Russian nomenclature arises from the strong family likeness of seedlings of like parentage. A hardy race of the apple, seemingly more nearly allied to the wild form than the cultivated apples of Western Europe, has been grown for many centuries by seedling production, and has been reproducing itself from seed. Yet this is not strange news to us. Some families of apples, even when surrounded by apples of other types, have a strong tendency to reproduce themselves in their seedlings. The Gilpin or Little Romanite, Mr. Budd tells me, has been producing seedlings like itself in the West. The Calville family, too, is a striking example. Our Fameuse has a large progeny of strong parental likeness, and many think that two or more distinct varieties are commonly propagated under this name.

In Russia there is no standard of nomenclature, no authority that answers to the American Pomological Society or Downing, yet fruits received from that country must be propagated on this continent, as far as possible, under fixed, unchangeable names. The collections of apples on the farm of the State Agricultural College at Ames, Iowa, already number over 400 varieties, inclusive, no doubt, of many duplicates; additions, too, are being made from different parts of Russia. The collections received a year or two ago embraced most, not all, yet most of the best varieties grown in Russia. We must have, on this continent, one fixed standard of nomenclature, and it would seem best that it should emanate from Ames.

The converting of the Russian names into English needs some thought. We have not the sounds in English to render them exactly. In this matter our aim must be simplicity. We need names our farmers can spell and pronounce rather than a labored but more accurate rendering of the Russian sound. We have usually fallen in with the spelling in the list published by the Department of Agriculture at Washington, especially where

varieties sent out by them have become known. However, the sound "ov" or "off" positively must not be spelled "ou" or "ow" as in Antonouka, Titowka, and for convenience we have used "ov" as in Antonovka, Titovka.

But one book, I believe, has been written on Russian Pomology, that by Dr. Edward Regel, Director of the Imperial Botanic Gardens at St. Petersburg, and published in 1868. This book was criticized severely, at the time of its issue, by some of the European journals; but I cannot help feeling that the critics did not take in a full view of the situation. Dr. Regel, in the fickle climate of St. Petersburg, was unable to test very many of the varieties he described, able only to describe them as received, and under such names as they were received by. The fact is, Dr. Regel did his full fair share towards the doing of a great work, and, as Mr. Budd observed, had this been followed up by the organization of a National Pomological Society, Russian nomenclature would now be in a very different state.

Mr. Shroeder, of the Agricultural College at Petrovskoe Rasumovskoe at Moscow, has very complete notes compiled from specimens and information received from different parts of Russia. These apples were, for the most part, received for trial on the College Farm, but I regret to say, that the unusual cold of the winter of 1877 and the cold clay soil upon which they are planted has been against them.

This collection was very large and contained the greater part of the best apples of the steppe climates. It is much to be regretted that these notes of Mr. Shroeder's, the work, in fact, has not been published. Mr. Shroeder has not visited the orchards from whence the grafts and fruits were obtained, yet his notes we found singularly exact. Such was the opinion we gradually formed as we continued our work in the Russian orchards.

Pomology is a neglected science in Russia. What has been done seems to be local individual work, not united work. Strange this neglect on the part of a Government which has founded such Botanic gardens, a Government which has done such noble work for future generations in its Forestry Department.

ON CLIMATES.

The true index to a climate is the flora in its Botanic gardens; faulty only from the fact that these gardens are usually situated under the sheltering influence of some large town, and therefore, not a true record of what might be grown in bleak exposures in the same latitude.

The same is true of the meteorological stations. They, too often, like our McGill College Observatory, record the temperature and winds of a sheltered city rather than that of the open country.

We frequently heard of very low temperatures in Russia, which do not seem verified by the Government records. Thermometers often differ at very low temperatures, especially when below-forty. Yet the statements I quote in my report were made by careful observers, usually men on the Forestry Staff, and I therefore, with this caution, state the temperatures as given to me.

In this part of Canada we suffer from drought but not from diminished rain-fall. I must explain this apparent contradiction. England is a land of verdure, the lawns are like velvet, the trees and thatched roofs covered with moss. What a contrast to our dry climate, and yet the annual rain-fall of London is nearly thirteen inches less than that of Montreal. It is from aridity of air, and consequent rapid evaporation that we suffer.

In Russia we find fruit cultivated largely in climates where the conditions of extreme cold, dryness of air, and scanty rain-fall are greatly intensified.

In the Government of Kasan, above latitude 55 where the winter temperature is five degrees lower than in the city of Quebec, the rain-fall a good deal less than one-half, the evaporation as great, we find apple growing a great commercial industry, the industry, in fact, in twelve peasant villages. This is the coldest

profitable orchard region of the world, and the conditions of growth deserve study. The soil upon these exposed bluffs is a fine comminuted dusty clay, like a "loess." For retaining moisture, for absorbing it, for holding frost without injury to the roots, there is no better. The dry fall here causes perfect maturity of growth: the thick, fine textured leaf does not suffer from the dryness of the air. It was Mr. Budd, whose microscopic study of the leaves of these climates first showed their peculiar cell structure. Thus we see that the apple tree of Kasan is a tree thoroughly adapted to the climate it lives in. However, the cold of Kasan seems more uniform than ours. In this Province we suffer from the warmth of the sun in late winter and early spring, warmth followed by sudden cold. This results in "bark-bursting" and "sun-scalding" of the trunk and lower branches. Such injury is rare in Eastern and Middle Russia, but how much this is owing to climate, how much to the character of their hardy race of trees I cannot say. In Kasan, too, we find the cherry and the plum grown in fair quantity—that is, nearly all the peasants have some.

In the Government of Vladimir, a climate scarcely different from that of Kasan, the cherry is grown in vast quantity and shipped by the car load. Upon what kind of soil I cannot say.

At Simbirsk on the Volga, in lat. 54, a climate just like Kasan, a degree less cold, and about one inch less rain-fall, we find the pear grown in fair quantity though only of second-rate quality. These trees, too, are thoroughly adapted to that climate, trees of terminate growth, with very thick, close-textured, dark glossy foliage, just like the pears of Northern China. Simbrisk and Toulou seem to be the Northern limits of pear culture East of the Baltic Provinces.

At Saratof, on the Volga, in lat. 51, where the winter temperature is but one degree milder than the City of Quebec, we find very large orchards, one of 12,000 trees. A pear orchard, too, of 500 trees, and most of the varieties in good health. Yet here we were told that the mercury at times became solid. So near is Saratof to the desert steppes, so light the rain-fall, that irrigation is necessary for profitable orcharding.

Kursk and Voronesh, in lat. 51, are the most southern of the points of special interest in Middle Russia. I fancy their climate to be rather colder than that of sheltered city gardens in Montreal, about as cold, I should say, as our exposed mountain slope at Abbotsford.

Kiev is decidedly milder, more like Toronto.

St. Petersburg is in lat. 60, so far North that the stars cease to be visible during two months in summer, the sun is too short a distance below the horizon. A cold coast climate; a Gaspé or Anticosti climate, one would suppose. A cool short summer, a long changeable winter, not colder on an average than Montreal, but subject to greater extremes of sudden cold. Early terminate growth is the special characteristic needed here.

Warsaw is a cold North German, rather than a Russian steppe climate.

I have to tender my thanks to Mr. Robert P. Scott, Secretary of the Meteorological Office in London, for his kindness in having prepared for me a table of the temperatures, humidity, &c., of certain points in Russia and Germany, and by way of contrast, of Canada also.

These tables are a great help towards our forming a correct idea of those climates from which we may expect so many of our future fruits.

	MEAN TEMPERATURE.				Lowest Temp. in last Six Years.	Lowest Temp. in 1867.	Average Moisture in the Air.	Average Annual Rainfall.	Authorities.
	Years.	Wint'r.	Sum'r.						
		Dec.-Feb.	Jun. Aug.						
		Fahr.	Fahr.	Fahr.	Fahr.	%	Inches.		
St. Petersburg	{ 1743-1800 } { 1805-1875 }	° 17.2	° 61.2	° -35.7 xii.76	° -27.0 i.31	82 28	20.5 11	Verhättnisse des Russischen Reiches, Annales de l'Observatoire de Russie and Repertorium für Meteorologie (Kanitz.)	
Riga.....	{ 1795-1831 } { 1840-1875 }	24.0	62.6	-26.5 i.76	-12.8 xii.31	80 19	22.1 9		
Moscow....	{ 1779-1792 } { 1810-1875 }	14.5	63.6	-38.4 xii.76	-36.4 ii.1	80 11	23.4 11		
Kasan.....	{ 1812-1820 } { 1827-1875 }	9.0	64.5	-26.7 xii.75		77 9	17.3 8		
Simbirsk....	1855-1864	9.9	64.8	?-22.0 { ii.77 } { i.78 }		77 4	18.7 4		
Saratof....	{ 1836-1857 } { 1872-1875 }	15.3	68.6	?-26.7 xii.75		72 4	18.1 3		
Tula.....	1846-1847	15.4	64.9						
Orel.....	{ 1838-1845 } { 1851-1863 }	15.8	65.6				24.66 4		
Kursk.....	{ 1833-1837 } { 1840-1859 } { 1865-1868 }	17.2	65.0				16.81 18		
Voronezh..	{ 1862-1865 } { 1867-1869 } { 1873-1875 }	16.2	65.2	-34.2 i.80		78 11	27.7 7		
Kief.....	1812-1875	22.6	65.1	-23.6 ii.80		77 11	22.6 11		
Warsaw....	{ 1760-1763 } { 1779-1799 } { 1803-1875 }	25.7	64.2	-16.8 xii.79		80 11	22.2 11		
Berlin.....	16 years ? to 1868.	31.3	65.0	-2.2 i.81		73 8	22.9 6		
Vienna.....	1775-1874	30.9	67.5	-4.4 xii.79	7.9 xii.10	72	21.1 34		
Reutlingen.	2 years.	34.5	65.0						
Montreal...	1870-1880	18.4	67.4	-25.2 xii.79		*73.97 8	38.53 11		
Quebec....	1870-1880	14.2	63.9	-26.5 i.78			39.81 11		
Toronto....	1841-1881	23.8	65.3	-15.1 ii.81	-12.8 xii.13	77 41	34.75 41		
London....	.....	.....	.....	.....	.....	81 17	25.17 30

The figures entered under the Relative Humidity and Rainfall are the number of years from which the means have been obtained.

The spaces left blank indicate that no information is available.

* This item kindly filled in by Prof. McLeod, McGill College.

APPLES.

ANIS.—This is the leading apple of the Volga, the apple tree most highly prized, most largely grown. To the enquiry, which are your most profitable varieties? the reply invariably was Anis, I think, invariably, my notes show no exception nor do I remember one. Such was the verdict in all the orchards of the different towns and villages between Kazan and Saratof. We first met with it in that curious semi-oriental bazaar, the Nijni Novgorod fair. Here we find the Russian peasant orchardist bringing large quantities of it to the bazaar in bark boxes, usually willow bark boxes, holding about three bushels.

In the southern part of the Government of Kazan, in latitude 55, the same latitude as Moscow, but 430 miles to the east of it, in a continental climate, a climate of extremes, and yet 600 miles nearer the North Pole than the City of Quebec, there are twelve villages where the peasant proprietors are apple growers, the chief industry in fact is apple growing. When we were there the little trees were loaded with fruit, yet the thermometer had been down to forty below zero the winter previous. Five years before, during one day, the temperature on these exposed loess bluffs was—40 Reaumur, or 58 below zero by Fahrenheit's thermometer. These low temperatures, however, do not seem verified by the meteorological records in the City of Kazan. Hearing of these low temperatures I looked for winter injury to the trees, but did not find any traces of it.

In answer to the query, which is the hardiest apple tree you have, the tree that has stood best the most trying winters? the answer, I believe, always was Anis. The general idea there is that it is of all kinds known, the apple tree that can be grown the farthest North, except what they call the Chinese apple, or as we would say, the Siberian crab, and these crabs, which are not common, are true Siberian *Prunifolias*, and not less hardy hybrids. In these villages the apple is grown, in a good season, certainly to the value of \$50,000. In this, the coldest profitable orchard region in the world, the Anis is noted as their hardiest tree.

Many species of trees become dwarfed towards the northern limit of their growth. The most northern pines and spruces, birches and poplars, are but little shrubs; in the same way we find this Anis in Kazan, especially when growing on thin soil and without cultivation, loaded with fine fruit, and this, evidently, not one of their first crops, and yet the trees not more than six feet high. We find little trees planted two, three, and even four together in a clump like stalks of corn, three or four to a hill, and these clumps ten feet apart each way. This is strictly true of some orchards, not so of others; for upon richer and moister soil, the trees grew somewhat larger, and, as we went southwards, at each town we stayed at, we found the Anis larger, until, at Saratof, we saw Anis thirty-five years planted which had attained a diameter of trunk of ten inches. In nursery it is a slow and crooked grower such as nurserymen hate to grow and hate to sell after they have grown them. In orchard a slow grower. Trees in different places, pointed out as thirty years planted, seemed very small. In old orchards at Khvalinsk and elsewhere, it was considered the most long-lived tree. We saw there, trees seventy years at the very least. These were fourteen inches in diameter of trunk, branched low as the Anis usually is, and, though some large limbs had been removed some years ago, yet the trees were sound in trunk and top.

The Volga is a very old apple growing region. I am told that old poems, written about the time when Rurik was upon the throne of Kiev, about 850, allude to this. The maiden whose neck was like a swan, and whose lips were like cherries, had cheeks like a Volga apple. The high color of the apples of this dry region is very striking.

A wild rugged race of apple trees have been grown here for many centuries from seedling production, until we have a number of seedlings much alike in tree and fruit, and hence it is that the name Anis is but a family name.

As we used to gallop past these peasant orchards in our Tarantass, a basket on wheels without springs usually drawn by three horses abreast, we were always struck by the beauty, even

when some distance off, of one variety of the Anis. This is the Anis Alui or Pink Anis, and, I suppose, the same as the Anis Rosovoi or Rose Anis spoken of at Simbirsk and other places on the Volga. It is an oblate apple of full medium size, or about the size of the Fameuse, the color of our Decarie, mostly a deep pink with a light blue bloom. In these dry climates we may expect high color. When we were on the Volga it was too early to taste it in good condition, and besides this, it is often picked too early, perhaps, to reach distant markets by a certain time. Whether it will color and ripen on its way to market, like a Duchess, or whether, like our St. Lawrence, it will almost cease to mature after it is picked from the tree, I cannot say. The grain is fine, the flesh white and firm. It is really a dessert apple of fine quality. It often sells at two roubles per pood, that is one dollar per thirty-six pounds, when poorer fruit is selling at thirty cents, and under Russian care it keeps till late winter or spring.

On account of its beauty and hence its salableness this Pink Anis is the most valuable of the family, and, therefore, when importing let us be sure to get it. It would seem to be the Anis of Mr. Shroeder, at Petrovskoe, but would appear not to be the Anis Alui of Kazan, of Dr. Regel, which is described as acid, and valuable only for cooking, unless this is Dr. Regel's verdict of its quality when grown in the cooler and moister summer of St. Petersburg.

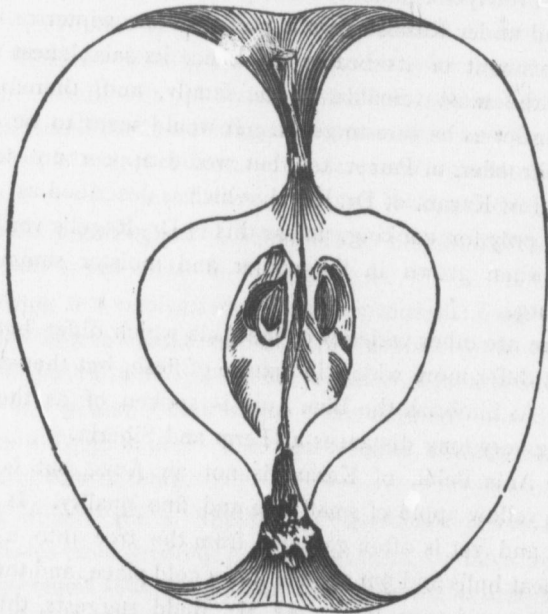
There are other varieties of the Anis which differ but little in tree, yet differ more widely in texture of flesh, but they are not so pretty. At Simbirsk the Blue Anis is spoken of as the best for shipping very long distances as Perm and Siberia.

The Anis Belui, of Kazan, is not an Anis, but is an early autumn yellow apple of small size and fine quality. It is not a keeper, and yet is often gathered from the tree into a barrel of buckwheat hulls and put at once into a cold place, and thus kept till mid-winter and even later. As Mr. Budd suggests, this possibly is the Anis Koritschnevoe of Mr. Shroeder.

ANISOVKA.—Under this name Mr. Shroeder tells us of a medium sized, flat, yellowish green apple, with bright red side,

grown a good deal about Moscow, and said to be a very good dessert fruit that keeps a long time, in fact all winter. Farther south it would not keep so long. Mr. Goegginger, at Riga, gives us a minute description of it, evidently the same apple, which he says is grown a good deal at Moscow, and to the south, and which proves hardy in these severe climates. However, he states its season to be from November to December. Its value to us would depend much upon its keeping qualities. The Anisovka, so named on the Volga near Kazan, is a sweet apple; that at Orel, Voronesh. &c., was thought to be same as Anis or same as Vosnikovka, a small yellow sweet apple said to be grown there in quantity. Such is the uncertain state of nomenclature.

ANTONOVKA.—This is the leading apple of the Russian steppes, the king apple of that vast prairie region from Tula to



ANTONOVKA.

the south of Kharkof, from Kozlof to Kiev, a vast prairie region unsurpassed in fertility by any region on this continent. It is the

leading apple over a larger section of country than any other in Europe, than any other apple I know of. No apple holds so high a rank above others in any large section of this continent; and yet if the Baldwin were equally hardy I would much prefer it.

We first meet with it in the cold climate of Tenki, in Kazan, where it is looked upon as the best of the "introduced" apple trees, and certainly the young trees we saw there were quite promising. In all the towns on the Volga we find the Antonovka noted as hardy as far as tried, and in some places, tried long enough to be thoroughly relied upon.

It is, however, in Central Russia that we find the Antonovka so highly prized. In the cold climate of Toula, in latitude 54, about 120 miles south of Moscow, yet 480 miles farther to the north than the city of Quebec, we find it considered their hardiest and most productive apple tree. A young tree, twelve years planted, is pointed out as having produced its eight poods, and old trees, long past their prime, twenty-five poods. In one peasant orchard we find the few scattered survivors of a previous orchard, nearly all of these were Antonovka; strange that this had stood while other kinds alongside of it, intermingled with it, had been killed, killed by a cold winter, I think in 1867.

In the Government of Tambof, half-way between Moscow and Saratof, there was a large orchard of 2700 trees, only 730 of which survived the winter of 1867, when mild warm rainy weather was followed by sudden cold. Antonovka, though injured, was not killed; it and Anis stood the best. That winter, at Orel, in February, the thermometer went down to 35 Rea., that is 46 Fahrenheit, and, in exposed places 37 Rea. or 51 Fahrenheit, and yet Antonovka there is above all others their leading apple, and the old trees we saw there were, as far as I can remember, in fine health.

At Veronesh we hear the same opinion, and hear of trees that have produced 27 *poods* or 972 *pounds*, nearly, half a ton, and are told that although "other apples have their faults this has none," It has its faults, but I quote this to show the widely spread opinion of those who grow it.

At Kursk we still find it their leading market fruit, and on the Bogdanoff estates, find it being planted in quantity as about the best investment the proprietors know of. Such investments scatter broadcast innumerable little dividends in the form of food and labor. What a blessing to a country is a horticultural aristocracy—it begets a horticultural peasantry, a home-loving, peace-loving, law-abiding peasantry. In Horticulture, we find the safest anchorage for a peasant population. We asked, at the Bogdanoff estates, why they specially chose Antonovka, and were planting it so largely, and were told it was because it was always a cash article, wanted in quantity for the northern market, for confections, for drying, for bottling in water, &c., and, a tree, in good soil, and in good seasons, can produce its twenty-five poods.

At the Forestry Convention, in Moscow, Mr. Budd asked one of the members, who was from Kiev, what were their best commercial apples. He called three others, also from the Government of Kiev, and after consulting together, named Antonovka first. The second upon the list was the Winter Citronen Apfel, a German apple of good quality, but not hardy farther north.

At Warsaw, where the climate is a cold North German rather than a steppe climate, we find the Antonovka one of their leading apples, but not their best, and there not a late keeper. Throughout this vast steppe region, the Antonovka is "the" commercial apple, noted for its average annual bearing, its hardiness in extreme climate, its length of life, and fruitfulness in old age in these climates. It is, also, a first-rate nursery tree, a good straight grower. In nurseries, when we found a number of rows of straight-growing healthy trees, all of the same kind, it was sure to be Antonovka. Hence it has "a nursery run," just as the Ben Davis had in Wisconsin a few years ago, and likely thus to be over-rated; but in Central Russia it has been a century on trial, perhaps several centuries, and the quantities of it to be found in the Russian nurseries are grown to meet a known demand. It is a prairie apple suited to rich prairie soils it would seem. It does well on clayey soils and likes moisture. On dry sandy soil the fruit is said to fall from the tree and to be small in size. The

fruit is large, sometimes very large, yellowish, oblong, somewhat conic, acid or sub-acid with slight sweetness, rather coarse in texture. When left upon the tree till fully ripe it is said to have a fine melon flavor, but then it ceases to be a long keeper. In quality it is not quite like any apple I know. It may, certainly, be rated as second quality for eating and, I hope, first for cooking. But few of the best commercial apples of this continent are of first quality as dessert apples. Its great fault is its color, though this does not prevent its being in active demand in all the Russian markets; it is the color to show bruises, yet it has the name of being a good shipping apple. At Warsaw it rarely keeps past Christmas. At Moscow, Mr. Shroeder cautiously says, till January or February. In Central Russia it was often said till March and, I think, even April was even mentioned. I doubt if it will prove a much better keeper than our Fameuse.

How long an apple keeps depends very largely upon how it is kept. The Russians handle their fruit, pack it and keep it, with more care than we do. They seem to look upon an apple as a living thing to be kept alive as long as possible. If allowed to ripen on the tree it has a rich melon flavor but then it will not keep. All apples in Russia picked for a distant market are picked rather earlier than we should pick them. When we arrived at Saratof, on September 11th, the apples were all picked and shipped to Moscow. At Tula, on September 18th, Antonovka was in huge piles in the orchards five feet wide, covered with basswood bark matting. At Orel we find what has not been shipped in an open shed in layers with straw between them.

This tree, on account of its good name and its good growth in nursery, is sure to become largely planted in this country. Its success will depend partly upon its suitability to our soil, but, and mainly, perhaps to the length of time it keeps under our method of picking, packing and shipping.

Has the Antonovka run into varieties like so many other apples by seedling production? The answer to this question was usually in the negative, yet with one or two exceptions, and at Tula, an apple was shown to us as the Doukavoya which

seemed to be none other than Antonovka, yet three fruit growers there each declared it to be distinct, and said it was as hardy and as productive.

Possart's Nalivia is said, at the Pomological School at Warsaw, to be a synonyme, Dr. Lucas, in one edition of his Pomology, held this view, and, in another edition, thought not, and this latter opinion is shared at Proskau and Riga.

Mr. Goegginger, of Riga, after a good deal of correspondence, rather thought they were not identical. Mr. Fritz Lucas now inserts it in his catalogue as a synonyme.

APORT.—This is the family of which our Alexander is a member, a large and widely scattered family and often of strong family type. No accurate notes seem to have been taken of the places where they live and thrive. We cannot in this country expect to do such work; the most we can do is to find out what is good there, import and propagate it here.

It is named Aport because imported long ago from Oporto in Portugal, just as another Russian apple which long ago found its way into Virginia, comes back to Russia *via* Germany under the name of Virginischer Rother.

Some of the apples we find under this name, show by their features that they are near relations of the Emperor Alexander, many others show no likeness whatever. Sometimes under other names, we find typical apples, like the Borodovka Belui of Orel, which is just like Alexander, but white. At Kursk too we find, under the name of Sklianka, a fruit of Aport form, but almost without color.

I am not sure that we saw the Alexander in Russia, though I believe it to be grown there. At Volsk we found a fruit very like it, only wanting in that slight flatness of the vase which our Alexander has. In the Kozlof market we find an apple just like it, though perhaps slightly larger in calyx, but it proved somewhat tough in texture, a sharp acid mingled with sweet, a fine apple, and it would seem a pretty good keeper. At Orel we find another, alike in look, but sweet, not as good as that in Kozlof or Veronesh markets.

Mr. Shroeder describes Aport as a very large, flat, conic apple with a red side, of aromatic flavor, not productive and too heavy and liable to be blown from the tree, yet grown a good deal to the South of Moscow, at Orel, Tula &c., the best of the Aports. This, I suppose, is our Alexander, but I cannot be certain.

In the report of the Royal Hort. Soc. of London for 1822, the Alexander is mentioned as having been received from Riga and is stated to be a native of Southern Russia. It was most probably received from the late M. Wagner, grandfather of M. Chs. Henri Wagner.

The Aport Ossemie or Winter Aport, Mr. Fischer, at Voronesh, says, is like Titovka, in fact often difficult to tell apart, although the one is a summer and the other a winter fruit. This seems like the apple we saw under this name on the Volga at Tenki, at Prince Gagarine's, and very like the colored print of the Aport ossemie given by Dr. Regel. It is a large oblong handsome winter apple. It and what we saw in Kozlof market I should think the most valuable of the apples known there as Aport. Of the summer Aports I seem to know nothing. On the Volga we saw several kinds, always large, usually well colored, and of fair quality, but none that specially struck me as of special value to us. I do not know that they have any just right to the name Aport, yet that name seems to be thought applicable to large apples.

ARABKA (*Arabskoe*). Under this name there are one or more apples of decided promise. At Moscow, Mr. Shroeder tells us of a large conic apple of very deep color which is a long keeper. The tree he finds a little tender at Moscow, but says that it is grown a good deal in central Russia. In the market at Kozlof, we find what would appear to be this apple, in fair quantity, and known as Arabka, and specimens taken to Voronesh were recognized by Mr. Fischer, Director of the Botanic Gardens, who considers it a valuable cooking apple that keeps till May; but he added that, that which he had received from Riga, under that name, had proved to be Gros Mogul. At Volsk, on the Volga, in latitude 52, we found in an orchard, about 12 trees in profuse bearing, of an apple known there as Tchougounka, which means cast-iron; the fruit was

roundish, of a dark purplish red, covered with a light bloom, much like the Blue Pearmain. It was above medium in size, although the trees were so overloaded; a firm solid acid fruit said there to keep two years. It also has the merit of holding on to the tree so firmly, that I could hardly find a windfall. It and Steklianika were the only varieties in this orchard not yet picked, on 8th Sept. At Saratof on the Volga we visited an orchard of 12,000 trees, where a week or two before, they were employing 300 pickers and 85 packers to ship to Moscow 25,000 poods of apples. In a good year they either did (or could, I am not sure that I understood correctly) produce 85,000 poods, which is equal to 1530 tons. From our description of the Tchougounka at Volsk they supposed it to be the Arabskoe—which apple they thought highly of and placed upon their list as *third* for profit. This Arabskoe has been long known at Saratof. The query is whether the trees I have spoken of as growing at Volsk and Saratof, are the same as the Arabka of Kozlof and of Mr. Shroeder; if so, the Arabka is likely to prove a valuable late keeper. A specimen picked at Volsk on 8th Sept. was eaten by us at Warsaw on Oct. 4th, a crude juicy sharp acid. It had been carried for nearly four weeks in a leather bag, which was usually full of books and apples, a bag which had its full share of rough usage, except when used for my pillow, and yet this apple had received no injury. This Volsk Arabska is really a remarkable keeper.

On the Bogdanoff estates near Kursk, we are shown a Tchougounka, a large round apple not quite as dark as at Volsk, and looking rather more like what we saw at Kozlof. This is found there to be a good cooking fruit, and a good keeper, but the tree is only fairly hardy, not ironclad as we would say.

The Arabka, and Arabka Polasatof of Regel are altogether different apples; so, too, is that shown to us at Nijni Novgorod, an egg shaped, fair sized, hard, long keeper.

ARCAD. I am not sure that there is any apple in this family of special value. They are a family of early apples, sweetish, and of but medium size, but the trees have proved very hardy.

In Moscow in 1877, during one week the thermometer ranged

from -32 to -34 R. that is from -40 to -44 Fahr., and one day it fell to -35 R, that is to -46 $\frac{3}{4}$ Fahr. This was the register on the college farm at Petrovskoe, and caused sad injury to the young orchard, for here Mr. Shroeder had a heavy soil which tended to produce late growth, as well as a severe climate to contend with. Of all the varieties in the orchard which stood the best? The Koritschnovoes and the Arcads; and of the Arcads the Dlennuui or long arcad seemed about the best. At Voronesh Mr. Fischer tells us of six kinds of Arcad, all much alike, early and sweet; but he says that the tree though apparently hardy does not live anything like as long as Antonovka, of which latter he shows fine healthy trees 40 years planted, whereas the Arcads usually die at 20; that is, they die by degrees, branch by branch, one might suppose like our Canada Baldwin, on warm soils from sun scald caused by early flow of sap, so that perhaps it needs heavier soil.

Dr. Regel in his work describes a Red Arcad, which is an apple of first quality that keeps all winter. The colored print of it is perhaps the most strikingly beautiful in the book. I enquired in many places about this apple, but could get no information about it. An apple of such beauty is worth looking after.

BERESINSKOE. Mr. Shroeder speaks of this as a large whiteish apple with yellow side, flesh firm but breaking, not able to bear carriage well, but a very fine autumn dessert fruit.

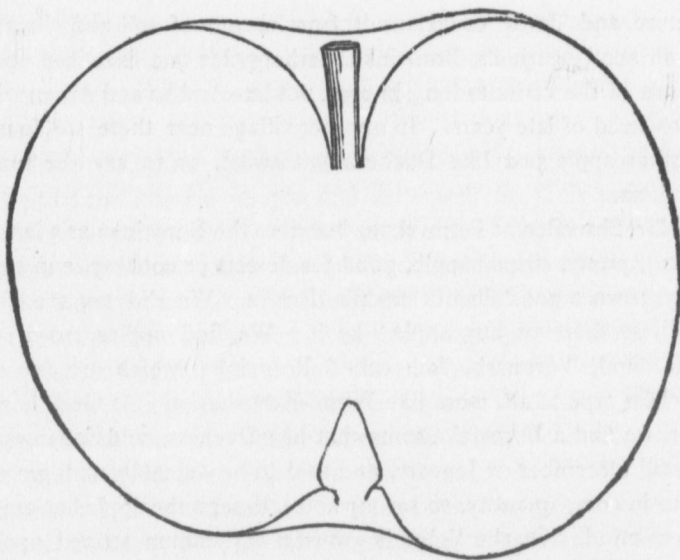
BERIOSOVKA. This we met and took a great fancy to in the Kozlof market. As we saw it there, it was a fruit of full medium size, oblate, red on one side in splashes and specks; very firm, yet breaking, very juicy, with a fine mingling of sub acid and sweetness. The seeds were black on 13 Sept., yet it seemed likely to keep two months. At Voronesh, we showed a specimen to Mr. Fischer who pronounced it true to name, and moreover said it was a good hardy and productive tree and a fine fruit. Season late autumn.

BLACKWOOD (*Tchernoe Derevo*) is a tree long known upon the Volga. At Khvalinsk we saw trees of it at least 70 years old, and at Kazan trees 30 years of age. It is a heavy bearer but not a tree of extra hardiness. It does not sun-scald, but its upper

branches are sometimes killed, and this, no doubt, sometimes owing to exhaustion from heavy bearing. On the Volga it is the favorite late-keeping apple for home use. Were the tree hardy enough to be grown at Quebec it probably would prove valuable as a long-keeper. Mr. A. Webster, of East Roxbury, Vermont, who has kindly given us, in the last report of the Montreal Horticultural Society, his opinion upon thirty-eight varieties of Russian apples, tested by him, says of the Tchernoe Derevo, "fruit good, but not of special value—fall." Grown at the north it is a fruit of very fine quality and a pretty good keeper, such was our opinion as we tasted it on the Volga. It is one of those mild apples which seem specially to please the Russian palate. In the Volga region and in central Russia, its quality is first-rate, and thus it is, that, although of small size and unattractive color, it sells at extra prices, and becomes very profitable. At Saratof, in the two largest orchards we visited, one of 12,000 and the other of 4,000 trees, the Blackwood was named second on their list for profit, second only to Anis. In Russia it sells at $1\frac{1}{2}$ roubles per pood, 75 cents per 36 lbs., when other apples are selling at 40 kop. or 20 cents per pood, and it even has been sold up to 5 roubles per pood. Only, if picked early and kept in cool place would it be a keeping apple with us, and if so, possibly a valuable apple for home use.

BOGDANOFF.—This is an apple which has been grown upon the Bogdanoff estates near Kursk, probably for two centuries. Hitherto it has been known under the name of Pipka. There were about 300 trees of it in the orchard we visited. It is a stout, upright grower. Taking an average of years, the Antonovka produces more fruit per tree, but it does not keep so long. A large number of varieties have been tried, yet, next to Antonovka, they consider it their most profitable winter apple. As a late-keeping apple for home use they much prefer it to any other. The fruit is large, and in form, size and striping, much like our St. Lawrence.

The flesh, when tasted on 21st Sept., was whitish, firm, juicy, crude, unripe, rather fine grained, a mixture of sweet and crude sharp acid. As a long-keeping apple of fine quality, I have every hope of this being a very valuable variety.



BOGDANOFF.

A good, late-keeping apple would be a perfect God-send to our province and its like climates. Bogdanoff is a most promising variety, well-worthy of its name, which means God-given.

BOHEMIAN GIRL, (*Tsiganka*, *Zuiganka*). — We saw this beautiful apple in the Voronesh Market, a medium-sized semi-oblate fruit, blushed all over with deep pink. The flesh is white, but quite past season when we tasted it. It is a great beauty, and Mr. Fisher says a hardy tree. A summer apple well-worthy of trial.

BOROVINKA (*Borovitski*) must be looked upon as a family name. It was a member of this family that, long ago, migrated to this country and became known everywhere as the Duchess of Oldenburg. This apple we did not see in Russia. At Tenki, in the Government of Kazan, in a peasant orchard, we saw trees in full bearing of a fruit which both Mr. Budd and I looking carefully at it thought to be Duchess; but on tasting it we found it so fine in grain and so mildly acid, that we felt that no such difference in

The cut of Bogdanoff was taken from a rather large specimen. The other cuts are of fair average size. Antonovka, Titovka and Sapieganka, are copied from the "Sad i Ogorod" by Prof. Jankowski, of Warsaw. The others I traced from specimens.

texture and flavor could result from change of soil and climate. At Prince Gagarine's, Borovinka, perhaps this one, is looked upon as one of the varieties long known, not like Arabka and Antonovka introduced of late years. In another village near there we found another apple just like Duchess but sweet, or to say the least sweetish.

Mr. Shroeder, at Petrovskoe, describes the Borovinka as a large, round, pretty, striped apple, good for dessert or cooking, and says it is grown a good deal in middle Russia. We did not see the Duchess there or any apple like it. We find apples grown at Tula, Orel, Voronesh, &c., called Borovinka, which are not of Duchess type at all, more like White Koroshavka. At Orel, however, we find a Borovinka somewhat like Duchess, acid and in season till December or January, and said to be valuable and grown there in some quantity, so say my notes, though the apple has gone out of mind. On the Volga is grown a flat autumn striped apple which finds its way in quantity into the Kazan and Nijni markets also called Borovinka, an apple, I think, worthy of being introduced.

CHARLAMOVSKOE.—Mr. Shroeder speaks of this as a large, flat cooking apple with a red side, a variety he thinks highly of, Whether this may be that grown by Mr. Webster, in Vermont, and described in the Montreal Horticultural Report, page 53, I cannot say.

Mr. A. G. Tuttle, of Baraboo, Wisconsin, has an apple received by him under this name, which Mr. Tuttle says, "has the beauty of Duchess and quality of Domine and keeps through winter." Mr. Tuttle, I believe, has got hold of a valuable fruit.

CRIMEAN APPLE (*Krimskoe*).—This is the name under which we find, in different places, apples believed to have been brought from that region,

On the Bogdanoff estates, near Kursk, we find an oblong, egg-shaped, red apple, below medium in size, firm in flesh, and sharp acid, mingled with sweet; the tree is pretty hardy there, and, if I remember rightly, the fruit is a long keeper. At Volsk, the Krimskoe, though good in color, keeping and quality, was too small and conic to be valuable. At Kluchiche, near Kazan, at Mar-

quise Paulucci's, we saw a large, roundish stripped apple, something like Duchess, not ripe ; the tree was said to be fairly hardy in that extreme climate, and farther south noted for its immense fruit.

GOOD PEASANT (*Dobryi Krestianin*).—This apple is highly prized by the Russian people, and sells well in their market in spite of its unattractive color and small size. Our Pomme Grise, though long valued for its fine quality, does not sell at extra prices in the Montreal market, and, I fear, this Good Peasant would fetch but small prices when placed alongside better looking fruit. The tree, both in leaf and bud, is crab-like ; its leaf is prunifolia in form, yet slightly pubescent. Near Kazan we saw trees more than 30 years old of it. At Volsk, Khvalinsk, Tula, Voronesh, everywhere almost we went, either on the Volga or in Middle Russia we found it a great favorite. People seemed to go into ecstasies over its delicious flavor. Mr. Shroeder, at Petrovskoe, does not find it quite hardy, though at Tula 120 miles further South, we saw a few fine old trees of it. Let us look upon it as a crab, a large sized green crab of fine quality, for it certainly is as hardy as some of our hybrid Siberians, and I think we shall find it a useful crab for home use for rather severe climates.

GRAND MOTHER (*Baboushkino*) is described by Mr. Shroeder as a beautiful bright red medium sized oblate apple of fine quality. At Voronesh, Mr. Fischer says it is a good and productive tree, and an excellent large sized apple that keeps till March. Mr. Regel describes it as an apple of first quality that keeps till May. What we saw under this name were above medium size, flat rather, with a large thick stalk ; flesh white, firm, breaking, juicy, fine grained, unripe, but showing every sign of fine quality, and of being a long keeper. Its appearance is against it, yet these hardy long keepers deserve thorough trial.

GRUSHEVKA, or pear apple tree is probably so called from its pear like pyramidal form of tree. It is spoken of by Mr. Shroeder, as a hardy and productive tree, planted a good deal for market in central Russia and bearing a small early white fruit. On the Bogdanoff estates we see trees of it, with their pubescent leaves of

prunifolia form like the Good Peasant. Here it is spoken of as their earliest apple, white, sweet, of medium size, and good quality. At Tula we are told it is their earliest apple. Evidently from all we hear rather a favorite. The German Grushevka Mr. Shroeder says is much like it, but a little better in quality, and a week later. That called Grushevka at Kazan was a hard, yellow, fall fruit; neither must we confound it with the Gusevka of Regel which is described as a large winter cooking apple, but it is without doubt the Grushevka Moskovka of Dr. Regel.

KALAMAS.—Under this name we saw in one of the Peasant villages, in the Government of Kazan, an apple of medium or large size, deep red, with a light bloom, the beautiful color of the pink Anis, but larger, and marked with little dots. The flesh was greenish white crude and unripe. Such a beautiful fruit, thriving in so cold a climate should not be lost sight of.

KORITSCHNOVOIE ANANASNOE (literally the Cinnamon Pine-apple).—This Mr. Fischer says is a small flat fruit of dark brownish red color, and very fine flavor. The tree, too, has proved very hardy at Voronesh. Mr. Shroeder speaks of its hardiness, its earliness, and aromatic flavor. At Orel, too, we hear it well spoken of. A fine flavored early apple it would seem. The Kor. Anan. of Regel seems very different.

KORITSCHNOVOIE POLASATOE.—This is the tree that stood the extreme cold in 1877, at Petrovskoe, when the thermometer went down to 44 below Zero. Mr. Shroeder says that it is much like Ananasnoe but striped, and ripens a month later, and keeps longer. This apple we saw to some extent in Central Russia. In the markets, when piled in pyramidal form, stalks upwards, they looked like small Duchess. However, the basin is more shallow, the form more conic. It has a peculiar flavor, and is quite good. A fall fruit which has proved quite profitable in cold climates.

LEAD APPLE (*Svinsovka*).—Mr. Shroeder says is a small, hard green cooking apple that keeps till the New Year, or till new apples, I am not sure which. We hear of it at Orel and at Voronesh, and as Mr. Fischer says, it is much like Zelonka.

MALITE (*Malt*).—This name has been given to a number of

apples on the Volga, grown in quantity from Kazan to Saratof. In the Government of Kazan, a little red Malite is one of their favorite market apples. It is medium or small in size, flat and often ribbed. The flesh is white, crisp, tender and juicy. Many of the peasants in the villages near Kazan, place it among their five best for profit, and grow it in quantity. At Simbrisk a Malite has the same bright dark color, but with a bloom like pink Anis and yellowish flesh; a fine grained, juicy apple, with firm but break flesh and sprightly flavor. At Saratof, Malite, I know not what kind, is named among their few best apples, and is one of the kinds grown there for a very long time. We find other apples, too, more or less of this type. At Simbrisk we find a large fall fruit somewhat resembling Duchess, and of good quality, quite unlike other apples named Malite, and perhaps worthy of trial.

RED KOROSHAVKA (*Koroshavka Alui*) is one of those strikingly beautiful apples one cannot forget. It has the color of our Victoria, a bright deep pink, and any part not so colored is as nearly as possible pure white. It is usually of medium size, often above, regular in outline, and never ribbed like Pink Anis. Like Victoria, its flesh is a pure white, and on 29th August, firm, crude acid, not ripe enough to fairly judge. This tree, like the Anis, when grown in the North is dwarf in habit, and where broken down by weight of snow, sound at the heart, and evidently a young and abundant bearer. At Tenki it was said to keep till January.

At Simbrisk we hear of a Koroshavka Alui which may be this. The Koroshavka of Regel is a long stalked little fruit very different from this or White Koroshavka.

REINETTE KURSKI.—Mr. Shroeder describes this as a medium-sized, flat, irregular, ribbed, yellow apple, named from the town of Kursk. Not hardy at Moscow, but a good tree further South, and a really good dessert fruit that keeps till Spring. The query to my mind is whether this may not be the Reinette Russki which we saw at Kursk, but which they would not admit to the Reinette Kurski. It is a five-sided apple of the size of our Fausse, with red on one side. A fruit of fine quality, apparently a keeper, and perhaps valuable.

ROSHDESTRENSKOE.—I can only quote Mr. Shroeder's opinion that it is a medium-sized or largish apple of high conic form, much like a Gilliflower; a dark, dull green with a dark red side. A good table and cooking apple, and a pretty good keeper. The tree is not hardy at Moscow, but does well farther South.

ROMNENSKOE, named from the town of Romna.—This Mr. Shroeder says is a round, solid, olive green fruit, with dark red side. Not hardy at Moscow, but valuable farther South. It is pretty enough to sell, and is a fair dessert and good cooking apple that keeps till Spring.

SERINKIA (*Sierianka*).—This is said to be the Lehmapfel (or grey apple) of Germany, and is a very popular apple in the Baltic provinces, where it has been grown some say for a century or two. In Livonia, Courland and Poland, it has been planted in large quantity, and evidently is a favorite fruit. It has been propagated in quantity by the nurseries in Riga. It is a stout, straight and moderately vigorous grower. The fruit is of medium size, yellow with a little red, and is said by everyone to be of excellent quality. Unfortunately we did not see the fruit. In middle Russia, too, at Orel and Voronesh, we hear it spoken of as a good, hardy tree, and an excellent dessert fruit.

SKRUISAPFEL.—Dr. Regel speaks of this as an excellent table apple that keeps until the following Summer, and says that the tree endures the coldest Winters at St. Petersburg, and has been grown at Moscow, Tula, &c. Mr. Shroeder says it is a medium or small-sized apple, striped (but perhaps this only on one side, I am not sure), a very hardy tree, an apple of really good quality; good for dessert and cooking, that keeps sometimes till August. The tree has branches like a Scott's Winter, which cannot easily be torn out. The fruit, as we saw it, green, with a little dull red, beginning to appear on one side, and very heavy. Flesh greenish, juicy, rather tender, crude, and but very mildly acid, when ripe lacking acid one would think, otherwise quite good. A good late keeper for cold climates.

SKRUTE (*Beel Skrute*) is a profitable apple on the Upper Volga. A good-sized white apple, with red marblings, showy and very

popular, but so variable in quality that I have thought there must be more than one apple in the markets under this name. Often its cavity is very shallow, and the stem like a peg that has been driven in, but this is not always so. Though fine-grained and juicy, it is sometimes woolly and flavorless, so that I cannot recommend it, in spite of its wide popularity in those cold climates.

SKLIANKA (*Steklanka Zelonka*). In this family there are some apples of the Rhode Island Greening type which promise to be very valuable.

Mr. Shroeder describes the S. Ostrovkaya, as a small conic green apple with a dull red side, long stalk and corrugated basin, good for cooking and dessert. It keeps till Summer, and is a good hardy Russian tree grown more in the south-west, a variety considered valuable by Mr. Shroeder. The S. Pestru, or Sandy Sklianka, Mr. Shroeder says is a sour cooking fruit of medium size, greenish yellow, with some red that keeps till or into Winter. We probably met with both these apples, and yet we cannot be sure.

At Volsk we saw trees of this Sklianka type, bearing profusely, and yet full medium in size; surely the fruit would be large when bearing in moderation. It was green, rarely with some red on one side, very firm, crude, acid, with some slight sweetness. The tree seemed quite hardy at Volsk, and there seemed no doubt as to its bearing or keeping qualities. I believe we saw this same fruit in the Saratof market.

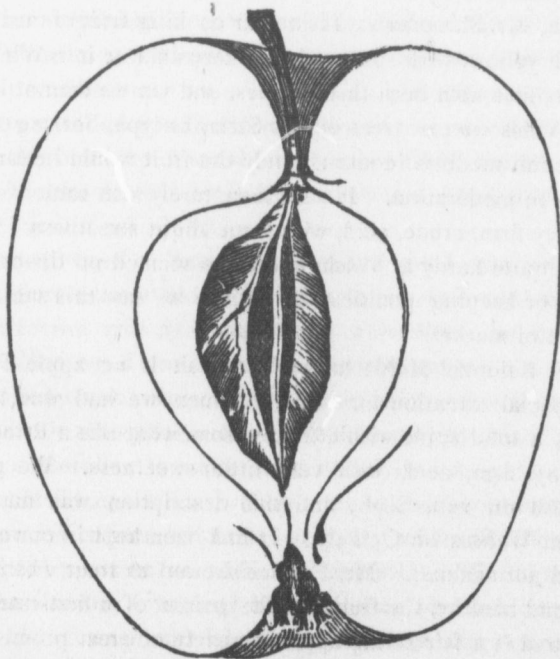
The Zelonka Moldavka of Voronesh is an apple I wish to draw special attention to. The specimen we had was large and oblong, a solid apple with a texture somewhat like a Rhode Island Greening, firm, acid, with very little sweetness. We got it at Voronesh on 13th Sept., and this description was made when tasted at Warsaw on Oct. 4th. It had been kept in our apple bag but had not suffered. Mr. Fischer showed us trees which seemed hardy and healthy, the fruit has the points of a first-rate cooking apple, and is a fair eating apple, a variety of great promise.

Dr. Regel describes several varieties of Sklianka, among other the Sklianka Revalskaya, a yellowish fruit with a little red on one side, grown at Pskov, Petersburg, and other places, usually hardy,

but sometimes injured in severe winters. The S. Zelonka a small, green, very productive, cooking apple, grown near Dorpat and the Baltic provinces, generally. S. Medovka, (or Reinette Voronesh) received from Voronesh, green and later a greenish yellow, an excellent table apple, roundish, and of full medium size. It keeps all winter, and the tree is hardy at St. Petersburg in severe winters.

At Tula, Orel, Voronesh, &c., we see or hear of long keeping greenings, under the name of Sklianka and Zelonka, which are considered valuable in these cold climates. Of those we saw the Zelonka Moldavka of Voronesh, and the Sklianka of Volsk would seem the most promising.

TITOVKA, (*Titus apple*).—A large handsome fruit to be seen in quantity, in all the markets of the Volga, and of Middle Russia.



TITOVKA.

It looks like a large ribbed, elongated Duchess, and on account of its large size and attractive color, very salable and therefore

valuable. At Simbirsk it is considered one of the most profitable. At Tenki, near Kazan, it is a success, both in nursery and orchard, and from what we saw would seem to have been grown there for many years. At Tula we see one very old tree of it, a survivor of an ancient orchard, killed by a severe winter many years ago. It is therefore a tree that thrives in the severest climates. It would not be safe to assume it to be quite as hardy as Anis or Antonovka, yet it is not very far from it. The flesh is coarse, but juicy and mildly acid, quite good, not at all disappointing, rather better than Duchess, because less acid. In season it is not one of the earliest, yet is a summer or late summer fruit. We might reasonably expect this to become one of the great commercial apples of our country.

UKRAINSKOE.—I was very much struck by a young tree I saw at Vilna, in full bearing. It looked as if bearing a crop of uncolored Northern Spy. At Orel we hear of it as a hardy tree, and a good apple, but not as productive as some other kinds. Mr. Shroeder also notes it as a light bearer, but says the tree is hardy, and that it is a good cooking and second quality eating apple which ships and keeps well. At Saratof, we are told of an apple under this name that has been grown there for a very long time, said to be quite hardy in that climate, and to keep till March, and it is noted there as one of their profitable market fruits. In the milder climate of Warsaw, our friends say, why grow Ukrainskoe a green apple, when you might as well grow a red one. Color in an apple is a very good point, yet I feel that any good late keeping apple that thrives upon the Russian Steppes is worthy of trial.

VARGUL.—A firm flatish conic apple of yellowish color, with some red on one side of extra quality, and keeps till May or June, so says Mr. Shroeder. I do not think we saw it, yet we heard of it often in Middle Russia. At Tula an amateur friend puts it among his five best varieties. At Orel, at Voronesh and Kursk, we hear an apple well spoken of under this name.

VARGULOK (or little Vargul) is often confounded with Vargul, and said by some to be the same. Mr. Shroeder has both, and describes this as a medium sized yellowish green apple, good for cooking or table, a long keeper and tree hardy at Moscow.

VIRGINISCHER ROSENAPFEL.—It is strange how a fruit may wander to distant lands, and generations after, return to its native land unrecognized. We first saw this in the nursery of the Pomological School at Proskau, and Mr. Budd declared that it must be the "Fourth of July." We then looked up the cast of the fruit in the museum and so it seemed to be. Why should it have the name Virginia unless it had been there, and how in those early days get there except *via* England. Yes, we may suppose it to have been included in those importations from Russia, made during the lifetime of the late Andrew Knight, and thence found its way to Virginia. Its name becoming lost, it was grown westward and northward in America as the Fourth of July, and returns to Russia, the land of its ancestors, even if not the land of its birth, as the Virginischer Rosenapfel.

WHITE KOROSHAVKA.—This is a favorite apple in the markets at Nijni Novgorod and Kazan, and is grown in fair quantity along the Volga for market purposes. It is an early apple, yet not one of the earliest, a fair sized white fruit with little marblings and stripes of red; tender, rather juicy, and so mildly acid as to incline to be almost sweet, but nice and pleasant, invariably good, and therefore better in quality than Skrute, though perhaps hardly grown in as great quantity. We find it grown largely in the villages in Kazan, and apparently quite hardy there, so that its hardiness one need not have doubts about; yet a friend at Simbrisk in a trying soil and situation finds in the long run that neither the White nor Red Koroshavka are equal in hardiness to the Anis and Antonovka, yet for all that a hardy tree, and I would say, a good summer apple lacking neither in beauty nor in good quality.

Of the coast apples in Russia I seem to know very little. We had no opportunity of seeing them in bearing. The climate is not our climate, yet their experience is valuable. Dr. Regel selected out of a longer list 41 kinds which he recommended, and out of these he marked ten kinds with double stars. These ten kinds are Antonovka, Aport (autumn), Borovinka, Belui Naliv, Red Summer Calville, Koritschnevoe (Zimmetapfel), Koritschnevoe Ananasnoe, Polosatoe Novgorodskoe, Skvosnoe Naliv, Skriusapfel, Titovka.

ON FRUITS IN CENTRAL EUROPE.

Our work in Russia was an endeavor to find out what fruits had stood the test of climates as severe as our own.

In central Europe another field of work presented itself, viz: what varieties, valuable in these milder climates, are worthy of trial here?

Our journey from London onwards was a constant succession of visits to Horticultural and Botanic Gardens, Pomological and Forest Schools, steady, rapid work, without time even to arrange our notes.

At Verrieres, near Paris, in the gardens of M. Henri de Vilmorin, gardens full of botanic rarities, we specially noticed that the apple trees which had been selected for cordon training, included many kinds whose leaf and early terminate growth betokened northern ancestry. We noticed this, too, in the nurseries of M. Simon Louis, at Metz.

At the Jardin des Plantes, in Paris, we had a grand opportunity to study the different races of the pear. A large collection, botanical as well as horticultural, including different races from China, from Japan, India and different parts of Europe, and their hybrids. Mr. Budd is the one man who has taken up this botanic question of races, and applied it practically to northern horticulture. By noting certain characteristics of race one might collect in the milder parts of Europe, varieties of the apple and the pear, with the assurance that a large part of them would prove hardy in severe climates.

At Reutlingen, in Wurtemberg, we visited the Pomological School of the late Dr. Lucas, so well-known to Pomologists by his works and his life-long labors. At the time of our visit he was fast declining, and on our arrival at Proskau we heard of his death. From Mr. Fritz Lucas, his son and successor, we received lists and notes of those fruits which had stood uninjured during their late trying winters.

At the late Pomological School at Kosteneuberg, near Vienna, we met Prof. Stoll, who has also a thorough knowledge of the

fruits best adapted to the colder and more elevated parts of Silesia and Transylvania.

At the Pomological School at Troja, near Prague, in Bohemia, we found a very large collection of fruits adapted to mild climates.

At Proskau, near Oppeln, in Silesia, is the Pomological school of Eastern Prussia. The climate here is more severe, its elevation is 720 feet, its soil is cold, its south winds passing over the Carpathians are cold, and, I believe, dry. Most of the tender plants we had found further south are wanting. Director Stoll finds it necessary to study the question of hardiness, and hence we find his opinion very valuable for North Germany.

At Warsaw, the Pomological School, under Prof. Jankouski, is doing a grand, good work; in fact the best pomological work we saw in Russia. The climate, however, of the city gardens is but very slightly more severe than at Proskau.

After leaving Warsaw, we scarcely found any tree or shrub which would be likely to prove tender in Montreal or even at Abbotsford, until, on our return westwards, we reached Kiev.

For the present, I will merely describe a few of the best late-keeping apples of Germany.

BATULLENAPFEL ROTHER.—This belongs to a family almost new to us. We saw it, for the first time, at the Pomological School of Dr. Lucas at Reutlingen, and were at once struck with its small, thick, plicated leaf. A singular fact, too, in regard to it, is that it grows readily from cuttings. We saw cuttings of it treated just as currant cuttings usually are, growing well at Reutlingen.

At the Kosteneuberg Pomological School, near Vienna, Prof. Stoll draws our special attention to it, and says it has been grown for at least one hundred years in Transylvania. It is of medium size, often largish, whitish or yellowish, with red side, pretty good quality, a very healthy, hardy tree in those climates, and a very abundant bearer. At Proskau we hear further good opinions of it. Its keeping qualities are variously stated. At Proskau they say till February. At Kostenenberg till April. At Troja they say till June.

The Weisser Batullen is said to be just like this except that it has less color, and some think they are the same.

BAUMANN'S REINETTE.—At Warsaw, Proskau and Reutlingen we hear high opinions of this fruit. Mr. Lauche, of Potsdam, Berlin, in his *Deutsche Pomologie*, says that its bearing, beauty and quality makes it deserving of very extensive cultivation, and says farther that it is fine grained, crisp, juicy apple, of characteristic, acidulated, spicy flavor. A valuable apple for family use, in season from January till March or May, but too small for market.

BOHNAPFEL GROSSER.—This has been long grown by the peasants on the Rhine and in Wurtemberg, yet Mr. Lucas does not mention it among his favorite kinds, probably from its lack of fine quality. It has the same thick, plicated, pubescent leaf as the Batullen, and would seem of the same race, and like it unusually productive. It is valued for drying, baking and cider. It is a medium-sized apple with a red side, harsh and sour until spring, when it becomes sweeter, but without aroma. Its long keeping and heavy bearing alone merit its extensive cultivation.

BOIKENAPFEL has been long known in the neighborhood of Bremen, long grown and highly esteemed, and has been recommended for general cultivation in Germany.

It has a snow white, firm, fine grained flesh, good fair size, though mostly green in color. An excellent table apple for family use, in season from January till June.

CHAMPAGNER REINETTE.—A little dessert apple of rather fine quality which has been planted rather largely, says Mr. Lauche, in Germany since 1857, when it was recommended for general cultivation. It keeps till June. Dr. Stoll, at Proskau, gave us a specimen on July 28th. The tree, I fear, is not quite as hardy as some others. At Riga, not at all hardy. This, therefore, cannot be the Champagnskaya Pipka we heard of as hardy and valuable at Orel and other places in Central Russia. Mr. Shroeder describes a Champanskoe as a rather large, flat conic, greenish yellow apple somewhat striped. A winter fruit of very fine quality and a hardy, though a crooked growing tree.

DANZIGER KANTAPFEL has been grown, says Mr. Lauche, in Germany and Holland under many names. "A fine-fleshed juicy apple of aromatic, acidulated sugary flavor." A valuable home use table fruit that keeps till January.

GULDERLING LANGER GRUNER.—A largish green apple tinged with red, grown in quantity in Silesia. It keeps till May and is then a fairly good eating apple. Earlier in the season it is too acid.

GRUNER FUSTENAPFEL, (*Green Princes' Apple*), is grown largely about Hanover and Berlin, in Pomerania, and on the Rhine near Coblenz, and in cold districts among the Carpathian Mountains; a small or medium-sized green apple that keeps till May or June, and, though lacking beauty, yet very productive and, therefore, largely grown. The tree seems hardier than some others.

LANDSBURGER REINETTE.—A rather large yellowish fruit with dull red side, second quality or almost first, some say, for table; it bears abundantly, and keeps till January or, some say, till March. Mr. Goegginger, says not hardy at Riga.

MUSCAT REINETTE.—This is one of the best of the German apples. It is highly prized and largely cultivated in Germany, Holland and France. It is a medium-sized yellow fruit, splashed with red, distinguished by its strong aromatic and sugary flavor. It keeps till spring. The tree is hardy in North Germany, but, Mr. Goegginger tells me, not at Riga.

PURPURROTHER CUSINOT.—Prof. Stoll, of Kosteneuberg, tells me that this tree is grown in very large quantity in Bohemia and Silesia, and is said to prove very hardy and productive in the colder parts of these districts. Oberdick called attention to its wonderful productiveness, says Mr. Lauche, and since then it has been recommended in Germany for general cultivation. A dull red fruit of medium size, of a slightly cinnamon sugary flavor. It is in season from December to May, and is said to be "the" apple of its season in some of the German markets. I regret to say that Mr. Goegginger has found it not hardy at Riga.

STETTINER GELBER.—This is said to be a finer and preferable apple to the Stettiner Rother. It is a medium-sized, sometimes largish apple of good quality that keeps till spring and is grown largely for market in some districts in North Germany. A specimen of it was given to us to taste, by Dr. Stoll, at Proskau, on July 28th; of course at that late date it had lost flavor.

STETTINER ROTHER has been grown somewhat at Warsaw, and in great quantity in the North Eastern Baltic provinces of Germany, whence it is shipped up the Vistula, and is the commonest apple in the Warsaw market in March and April.

WINTER CITRONENAPFEL (*Citronat*).—At Kiev, where it is slightly colder in winter and where the winter changes are more extreme than at Warsaw, this is considered their best winter apple next to Antonovka. Such was the decision of four members of the Forestry Association, residents of the Government of Kiev, who consulted together and gave this as their decision to Mr. Budd at the Forestry Convention at Moscow.

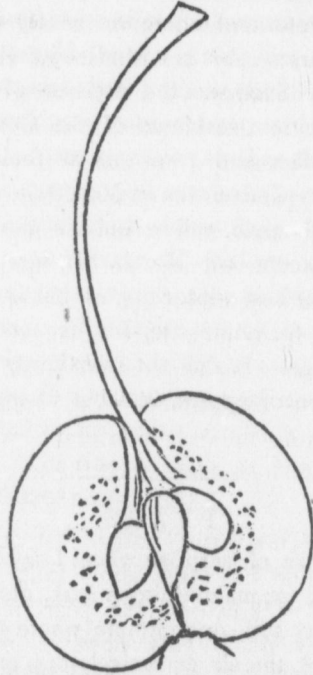
It is a large red apple, yellow only in the shade, a fruit of high quality, that keeps till March. It was not mentioned at Proskau among their best winter apples, but is a great favorite at Warsaw, especially for home use, for its tender flesh does not bear distant carriage. It did not seem hardy at Kursk, yet, like many of these German apples, valuable where the climate is not too extreme.

PEARS.

It may be a cause of surprise when I say that the pear is the best tree I know of for maintaining a dark, glossy, healthy foliage when planted on dry soil, in a climate where the summer sun is hot, the nights cool, the air excessively dry, and the winters very cold. Yet such is the case. In the public square at Simbirsk, in latitude 54, on the Volga, a climate as severe as the City of Quebec, the wild pear is a fine ornamental tree, and seems *the* tree which suffers least from dryness of air and diminished rainfall. I must add, too, that the one tree of largest diameter of trunk which I happened to see during a journey of nearly 1,000 miles on the Volga, was this wild form of pear; a tree at Saratof nearly 3½ feet in diameter of trunk measured near the ground.

At Simbirsk it was that we first met with extensive pear culture in extreme climates. Here there must be in orchard, I should think, 10,000 trees, and these mainly of two wild forms,

one a Bergamot, usually about the size of the cut, or somewhat smaller, usually sweetish, perhaps with slight acid, usually lacking in juice, sometimes very slightly astringent and fair for cooking; sometimes very rough and quite unfit for cooking. The tree is a good upright



WILD BERGAMOT OF THE VOLGA.

grower, and its dark glossy foliage is very ornamental. Mr. Budd picked a leaf off 30 trees, and really could not distinguish one from another. The leaf is smooth-edged with scarcely a trace of crenation.

The other wild form of pear found here, bears a small pyramidal fruit, which it yields in quantity. Sometimes it is fit for cooking, but usually quite too astringent. It also is a fine tree. Its leaves are serrated. These two wild forms promise to be of great value to us, as the stocks upon which to graft our future pear orchards. These pears should be grown, if for nothing else,

to produce seeds for growing hardy stocks, for it is an undoubted fact that a hardy stock increases the hardiness and early maturity of growth of that which is grafted upon it.

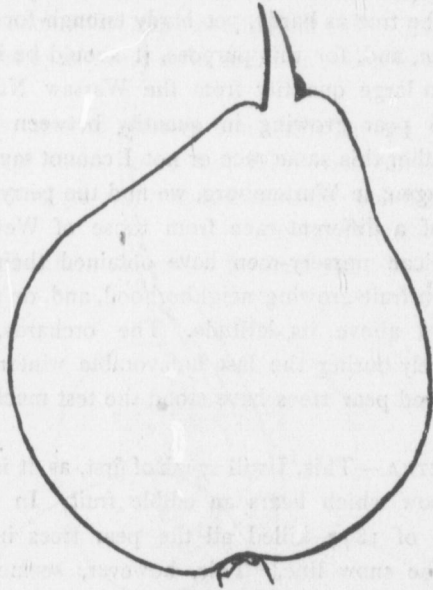
In Poland we find another wild form of pear, a common tree and a tree of large size. The leaf is fine in texture, though not very thick, and sharply serrated upon its edges. Its foliage is not as well adapted to a very dry climate as that of the Volga pears, nor is the tree as hardy, yet hardy enough for a good stock for our climate, and, for this purpose, it should be imported into this country in large quantity from the Warsaw Nurseries. We saw the wild pear growing in quantity between Kharkof and Kiev, but whether this same race or not I cannot say.

At Reutlingen, in Wurtemberg, we find the perry and cooking pears to be of a different race from those of Western France, whence American nursery-men have obtained their pear roots. Reutlingen is a fruit-growing neighborhood, and, on account of its elevation, cold above its latitude. The orchards, here, have suffered severely during the last unfavorable winters, but these pubescent-leaved pear trees have stood the test much better than the apple.

TONKOVIEKA.—This, I will speak of first, as it is the hardiest pear tree I know which bears an edible fruit. In Moscow, the severe winter of 1877 killed all the pear trees in the college grounds to the snow line. This, however, seemed about the hardiest, hardier even than Bessemianka. We find trees of what is said to be it in some peasant orchards in the cold climate of Tula, 120 miles south of Moscow. We again hear of it at Simbirsk as a pretty good pear that bears well. Mr. Shroeder who looks at fruits from a high standard of quality, says it is a fairly good eating pear, but not equal to Bessemianka. The Tonkovietka shown to us at Saratof was not the same; a larger and better fruit, but tree not hardy there. The name means slender stalk, a name which possibly may be applied to more than one pear.

BESSEMIANKA is known also by the German name of *Kerlnose*, which means without seeds. It is by far the best pear grown in the severer parts of Russia. At Moscow it suffers during winters

of extra severity, yet, in sheltered places, it sometimes does pretty well. At Tula they say it stands their usual winters, now and then they have a winter when it is injured. There we saw a number of trees looking quite healthy. It is "the" pear there, and yet they say not as productive there as it is fifty miles farther south. At Simbirsk, it is considered not quite hardy. It grows for about ten



BESSEMIANKA.

years, bears fairly, and is injured or killed by some severe winter. At Saratof, we find trees seven or eight inches in diameter of trunk, which appeared quite hardy, and said to bear good crops. We find an orchard here of 500 large pear trees, all but one variety in good healthy condition, and this in a climate as cold as the city of Quebec, and so dry that irrigation is necessary for profitable orcharding. Here the Bessemianka was considered one of their best.

Again, in central Russia, at Orel, we find a great many trees, both young and old, and find it considered the best because the most reliable. The same story at Voronesh. At Kursk, in the

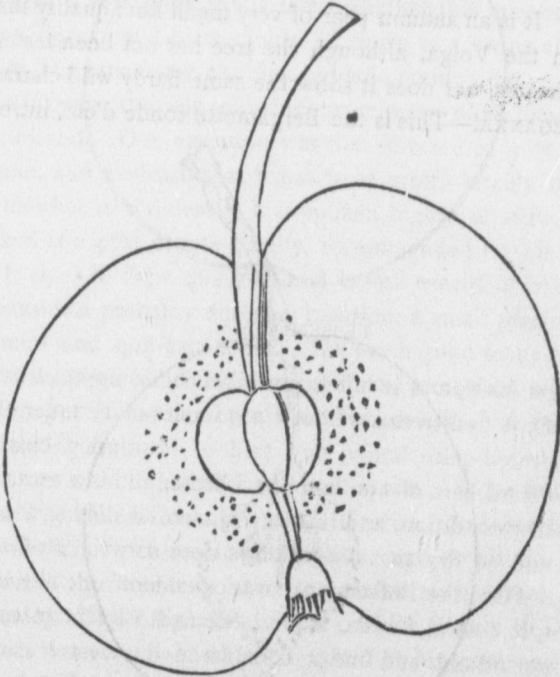
peasant gardens and nurseries near the town, we see large old trees of it, we see large numbers of young trees and a large supply of it in their little nurseries.

It is the most widely known, and the most largely grown pear in central Russia.

The tree is an upright grower, has large, dark, thick leaves, but very slightly crenated, almost smooth-edged, a leaf that stands aridity of air well. One fault this tree has, its branches easily break off from weight of snow, and thus often leave large scars upon the trunk.

The fruit is green, with some russetly brown, tender, rather juicy, gritty at the core, with few or no seeds, quite free from astringency, mild and pleasant, though not to say buttery. Season, I should think early October.

BERGAMOT.—Of this family I will speak next. In the markets



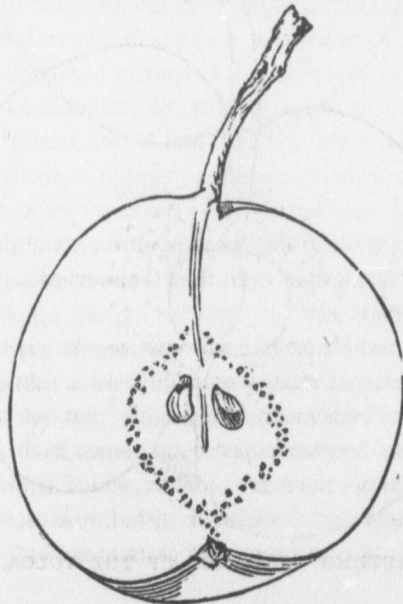
AUTUMN BERGAMOT OF THE VOLGA.

on the Volga below Simbirsk, we find a small, round, early bergamot, but it rots at the core so badly that I cannot recommend it. There is, however, a large winter, or rather fall Bergamot, worthy of trial, and perhaps this may be the Bergamotte Osenii of Regel. At Simbirsk, we saw eight or ten trees of it, about four inches in diameter. At Khvalinsk and Saratof we also saw healthy old trees.

The fruit is green, with tendency to a little color on one side, and on an average it is about the size of our fameuse apple. The flesh is sweet, rather lacking in juice, but quite free from astringency. It has a tendency, though slight, to rot at the core, but if picked carefully and early, it may be kept into winter.

At Warsaw, we find in the market in fair quantity, a small, round pear, which, on enquiry, we are told, is the *Common Bergamot*, and that there are large old trees of it in exposed situations near there. We also saw large healthy trees of it in the Warsaw gardens. It is an autumn pear of very much finer quality than that grown on the Volga, although the tree has not been tested in as severe climates, nor does it show the same hardy wild character.

SAPIEGANKA.—This is the Bergamotte ronde d'été, introduced,



SAPIEGANKA.

I believe, from Italy, about the 15th century, and named after a Polish nobleman. There are a good many trees of it about Warsaw. I am told that in one garden not far from the city, there are 185 old trees, of which the largest are two feet in diameter of trunk.

At Vilna, where the climate is more severe than at Warsaw, we saw ten or twelve old trees about one foot in diameter and one two feet. At Riga, some say "as hardy as an oak," others say pretty hardy. At Voronesh, Mr. Fischer spoke strongly of its hardiness there, although I have forgotten if we saw any trees there. At Orel it has not proved hardy. The verdict generally is a hardy tree and a long-lived healthy tree and a good fruit, but not capable of bearing quite as low temperatures as Bessemianka.

RED'BERGAMOT (*Rothe Bergamotte, Bergamotte d'automne, Leroy.*)—From the engravings of this pear given in Lauche's *Deutsche Pomologie*, it is a query in my mind whether this may not be the common Bergamot I have spoken of above as growing about Warsaw. At any rate I saw one fine old tree pointed out as this Bergamotte Rouge, and was told there were many more like it in the neighborhood. Our attention was first directed to it by Mr. Stoll at Vienna, and we learn that it has been grown largely in Silesia, and somewhat in Sweden. It is spoken highly of at Proskau and Riga, and is a pear of fine quality, recommended for all kinds of soil. It ripens in Sept. and Oct. and is well worthy of trial.

MOSKOVKA probably deserves mention, a small pyraform pear, juicy, mild and non-astringent. We saw a good many trees of it at Simbirsk, large old trees, some of them, somewhat injured, yet some thought it hardier even than Tonkovietka. A good, little, early, cooking fruit.

Of pears without names I will next speak. If the fruit is long in shape it is called Doula, if small, Grusha. Another is named Dolgostebelka, which means long stalk, but as all the Russian pears except the Bergamot have long stalks, such names have no individuality. Under the name of Gliva, which is akin to Doula, we find great variety; one which I tasted at Moscow, and which I was assured was grown there, was as rich and buttery as a Bartlett.

At Orel, under the name of Doula Doukavoya, we find good healthy trees bearing a large, but uneven-sided, very sweet pear, juicy, and very nice. The same tree we saw at Simbirsk; the same unmis-takable fruit again on the Bogdanoff estates, near Kursk. A valuable pear for cold climates.

BEZI DE LA MOTTE (*Wildling Von Motte*).—In Iowa, it has been stated by Swedes, that this pear grew far north in their native land. At Burlington, Iowa, Mr. Avery has been very successful in growing what he called the Crassane Bergamotte, a pear known at Warsaw and in the Baltic Provinces, but said there not to be very hardy. It would now seem that Mr. Avery's trees are, as Mr. Downing has positively affirmed, the true Bezi de la Motte.

The fruit is medium, and sometimes large and tolerably round, buttery, melting, and of delicate sweet flavor. Mr. Goeschke, of Proskau, in his book, "*Der Obstbau*," says, a delicate dessert pear, but needs good soil, sheltered position and favorable weather to bear well. It ripens about 18th Oct., and keeps a long time. At Burlington, Iowa, this variety is promising, yet must not be ranked among the ironclads.

DELICES DE JODOINE.—In the Pomological Garden at Warsaw, we find one tree of this variety, erect in growth, leaves very dark in color, thick, pubescent, and in fact just like some inferior, but hardy Doulas and Glivas planted along side of it. The fruit, says Dr. Hogg, of London, in the "*Fruit Manual*," is three inches long, and the flesh is "half-melting, sweet, sugary and aromatic." All authors agree that the fruit is good. The foliage of this tree will not suffer from aridity of air; if of early maturity of growth, then a tree of decided hardiness. This tree is well worthy of a trial in the north.

CONFESSELS BIRNE is a tree with a large, close textured leaf, grown in quantity in the colder parts of Silesia where the thermometer goes down to 20 and 22. The quality of the fruit I do not know. I only know that it is grown chiefly for drying.

FONDANTE DE BOIS (*Holz farbige Butterbirne*).—This pear we saw bearing heavily in the garden of the Pomological school at Warsaw, and in other gardens in the neighborhood; also in the

colder climate of Wilna. At Warsaw, it is one of the few that have stood the test of trying winters, and one of the best for planting in open exposure.

Fondante des Bois is a synonym of the Belle de Flandres, or, Flemish Beauty. In the catalogue of the Royal Horticultural Society of London, published in 1842, it proved so. Another pear, however, introduced from the continent, proved different, and yet the description of it is not like this. Different climates work wide differences in the appearance and quality of fruits. Still, Mr. Budd says, surely not Flemish Beauty nor anything like it. I, too, have known the Flemish Beauty in different climates, have grown it in quantity in Southern Pennsylvania in a garden I once owned there, have eaten some bushels of it in my lifetime, and cannot believe it to be the same as this Fondante des Bois.

Considering the value of this pear in Poland it ought to be introduced.

FUNTOVKA.—This is said by some to be the hardiest of the German or Polish pears. It has been scattered about a good deal and seems to maintain better health in the colder districts than any other. It bears a large pyraform fruit, good for cooking, but whether fit for dessert I do not know. Keeps till November.

GRUMKOWER WINTERBIRNE.—This pear has been long known in Eastern Prussia, and about eighty years ago was sent westward, and in 1857 was recommended for general cultivation. It is spoken well of at Warsaw as a tree that has stood the test of trying winters, not merely in the sheltered city gardens, but in exposed places. It is a long pyraform pear, green, but mottled light and dark, with but slight color; the flesh is tender, buttery, but somewhat lacking in sweetness, not equal to Flemish Beauty I would say. It is in season in October and November, and the tree requires moist soil.

LIEGEL'S WINTERBIRNE.—This, I am told, has been planted very largely in the colder parts of Bohemia, among the mountains, where it has become a large export product. It is sent in large quantity to Berlin as a winter dessert pear. It is, says Mr. Lauche, probably of Bohemian origin, and in 1853, at Naumberg, it was

recommended for general planting. It has fine-grained, melting flesh, of agreeable, and somewhat spicy flavor, and is in season from November to January. It has not yet been planted outside Bohemia as largely as it deserves.

LEON GREGOIRE is another of about equal hardiness. It is hardier than Zepherin Gregoire, which is one of the hardiest of its class. Mr. Lauche says it was grown in Belgium by Xavier Gregoire from seed of Napoleon, and says it is melting, rich in juice, and of an acidulated, sweet and slightly spiced flavor. A good sized pear of fair quality which keeps till November, or later.

PASOVKA is one of the hardy Polish pears, long known and planted to a fair, or rather, large extent. The fruit is long and narrow, yellow, often with a red side, of fair size, very pretty, pretty good quality, and very good for cooking. It ripens in August.

POUND PEAR (*Pfundbirne*).—There are many pears of this class. At Riga, the nurseries speak of the Pfundbirne as a hardy and productive tree, which bears a large, green cooking fruit, in season in September and October.

SALZBURG.—We were struck with the healthy growth and thick leaf of this tree when we first saw it in the Pomological Gardens near Prague, in Bohemia. At Proskau, Director Stoll kindly drove us to where it had been planted as a road-side tree; large, healthy, upright trees.

However, as we follow northward, we find this tree is not as hardy as others. At Riga, it is somewhat tender; at Warsaw, it has been grown a good deal, yet it suffers at times. It is a pear of medium size and rather fine quality. The tree is possibly hardy enough for a sheltered city garden in Montreal, but is more likely to be of use in climates like Brockville, Kingston and Toronto. It is said to be a pear of fine quality.

SUGAR PEAR (*Zucherbirne, Zaharna, Saharnaya*).—Under these names, which mean the same, we find many varieties of a healthy, hardy race, well worthy of trial. Wurtemberg, Warsaw, Riga, Orel, &c., all have their sugar pears. They are usually productive, fair quality for eating, good for cooking, and would be very salable upon our markets.

CHERRIES.

The cherries of Northern Europe best adapted to severe climates belong to a family which is scarcely known upon this continent. I will describe a few of those that have been found of greatest value at the north.

VLADIMIR.—First in importance are the cherries known all over Russia under this name. Like the Ostheim and the Brune de Bruxelles, they are usually bushes rather than trees, and have narrow, small, but finely textured thick foliage. It has been named Vladimir, I suppose, because in that Government its culture has attained such vast proportions. The fruit we saw not only in the markets, but sold in the streets in all the larger towns, where the consumption of this cherry is very large. We did not visit the cherry districts in Vladimir, as the crop had been already picked and marketed when we arrived there. We tried, however, to get some estimate of the extent of its culture there. Are there 10,000 trees? I ask. More than 100 men have 15,000 each, and such was the tenor of other statements from those who know the country well. What is the amount shipped? I ask. In reply I am told that entire cars, and in some special instances, entire trains have been loaded with this one product. At the village of Viazniki the chief industry of the neighborhood is cherry culture. We find it in all the Northern markets in great quantity. It seems to be cut off the tree with scissors, leaving about an inch or less of stalk attached to the fruit, and thus picked it stands carriage well, and then keeps for some little time after arrival.

In the peasant villages in the Government of Kazan, and in all the towns we stayed at on the Volga, wherever a peasant had any apple trees, he was sure to have also a patch of this Vladimir cherry, sometimes carefully thinned, seldom in a high state of culture, and often grown into a thicket; everywhere it was grown in fair quantity, and in all the markets, though past its season, a few were still to be found. Again in Central Russia, everywhere it is the most largely grown variety, the popular market variety, although at Voronesh and Kursk we find fruits more of the Guigne type, not quite hardy, yet bearing finer fruit. As far South even as

Kharkof and Kiev, it is the popular kind, and in the more Southern climate of Kiev, still reclaims its dwarf habit of growth. In one garden there, we saw it planted under plum trees, just as currant bushes in city gardens often are with us.

The tree, if I may so speak, is of bush form, and when it becomes too old to bear profitably, the older parts are cut away, and new sprouts take their place. It is usually grown in sod, and under such lack of culture brings good returns, hence its great value to us as a tree for careless cultivators. It can be grown from seed, as it often is, but as it varies somewhat, it is better to propagate from the best by sprouts. Sometimes, though rarely, it is grafted. Some trees are erect in growth, others weeping; both forms are widely scattered. The weeping is usually considered the best, but not invariably so. Some have red flesh, but as a rule the flesh is deep, purplish red; the skin, when fully ripe, reddish black, and when fully ripe, almost over-ripe, a rich mingling of acid and sweetness. When quite over-ripe it loses its acidity, and combines with its sweetness somewhat of the peculiar but pleasant bitter of the commoner kinds of Guigne.

If the cultivation of this Vladimir cherry proves such a profitable industry to large numbers of people in Russia, in a climate as severe as the city of Quebec, why might it not prove equally profitable in like climates here? It certainly should be introduced, and that in quantity for immediate trial, and if successful there is no reason why we should not have several Canadian Vladimirs, with their millions of cherry bushes, and their canning establishments, and good cheap cherries in all our markets.

OSTHEIM (*Ostheimer Weichel*).—I am told by Director Stoll, of Proskau, that this is a native of the Sierra Nevada Mountains in Spain, where it was found at elevations of 5,000 and 6,000 feet, and that it was brought to Germany in 1687 by a German Professor, whose name is known, though I cannot give it, and who grew it in the neighborhood of the town of Ostheim, whence its present name. Those who assign to the cherry an oriental origin, and cite Pliny that it did not appear in Italy until after the defeat of Mithridates, King of Pontus, in B. C. 65, hold that it must have

come to Spain from the East, but this is mere conjecture. In foliage, and in habit of growth, it is much like the Vladimir, and must be nearly related to it.

In Germany it has been largely grown in some places for the manufacture of cherry wine, or cherry brandy, and it seems strange that a cherry, so largely grown there, should be almost unknown on our Continent. In the catalogues of Canadian or U. S. nurserymen, it is not to be found. However, Mr. E. Myer, a German colonist, who settled in Minnesota, at St. Peter, about 50 miles South-West of St. Paul, brought with him the sprouts of this cherry, which have been fruiting in that severe climate. (See Iowa Hort. Soc. report 1881, p. 371.)

In color the Ostheim is like Vladimir, a dark red, becoming, when very ripe, a dark purplish red. When we tasted it at Warsaw, we found it but mildly acid, and rather rich. Dr. Hogg says; "Flesh very dark, tender, juicy, with a pleasant, sweet and sub-acid flavor." M. Goeschke, in *Der Obstbau*, says: "An excellent, agreeable, sweetish-sour flavor. A first-class dessert fruit, and particularly in demand for preserves." M. Simon-Louis, in his *Guide Pratique*, says: "de première qualité à parfaite maturité," and "extraordinairement fertile."

There seems no doubt as to its hardiness, productiveness or quality, and like the Vladimir it is worthy of extensive trial.

BRUNE DE BRUXELLES (*Brüsseller Braune*. *Ratafia of Hogg*.)—This is another of dwarf habit of tree, and like foliage. The fruit is large, what we saw, I might say, very large, but it was upon a young tree bearing one of its first crops. It is dark brownish red in color, and a rich acid, which tones down but little except when over ripe. On account of its large size and good color it sells in the Warsaw market at one-fourth more than Ostheim. The tree is hardy, but not as hardy as Vladimir or Ostheim.

DOUBLE NATTE (*Doppelte Natte*) is another often recommended to us. It is, I think, of similar foliage, but not quite as hardy as some others, and yet reported hardy at Orel. Usually not a heavy bearer, but very delicate in flavor, and a great favorite with many,

In Central Russia we find many varieties superior in fruit, though not so hardy nor such reliable bearers. At Tula, varieties known as the rose, white rose, dark rose, black and white Spanish are recommended, and yet the query suggests itself whether they may not have been planted on an incline and bend down as the Reine Claude plums are. At Voronesh, many have been selected, but not under known names. Among them the Proseratchnaya Rosenia, a rosy cherry of transparent type, propagated by grafting. At Simbirsk, we hear of a cherry almost black, and larger than Vladimir, known as Roditelskaya. At Khvalinsk, a cherry known as the Turkish, seemed hardy, and said to bear very large fruit.

Among the cherries grown in Russia, at Kursk and Voronesh, and southwards, we find trees whose foliage would appear to be crosses between the Griotte or sour cherry, and the Guigne or sweet cherry of heart or brigarreau type. As a class they are not equal in hardiness to Vladimir or Ostheim, yet most valuable in climates of moderate severity.

Of other German cherries, I would mention Szklanki, or Glas-kische doppette, a Polish seedling, said to be a hardy and good bearer, of fruit the size of Ostheim, and much like it in flavor, but red in color, and with yellowish flesh. Leigel's Fruh Weichel, a fair-sized tree of Ostheim foliage, dark-purplish skin and flesh, and much of Ostheim character. The Kleparovska, another Polish cherry, from Gallicia, near Lemberg, has proved very hardy at Warsaw. Shatten Amarel, a large dark red cherry of mild flavor, and of Ostheim foliage. A short stalked Amarel, of which I cannot give the proper name, which is coming into great favor about Berlin and other places. Amarel Tardive, a weeping tree of Ostheim leaf, dark purplish red, and somewhat acid. Rose Char-meux, a large, red, mild, delicate, watery, mild-flavored fruit. Lutovka, a large, good, yellow fleshed, red cherry, and a hardy tree.

In the German or Amana colonies on the Iowa River, in Johnson County, Iowa, colonies which moved to their present place from the State of New York, Mr. Budd tells me that there is grown in quantity, in each of their seven villages, a variety of the bird cherry, which bears young and abundantly a fruit which they value

for cooking. It has thick dark foliage, and pendulous branches, and does not sprout after it commences to bear heavily. The fruit is about as large as a good-sized black currant, with a stone no larger than an ordinary bird cherry. It is a pleasant acid, rather too acid to eat raw, but so valued for pies as to be grown largely.

Dr. Hogg, also, mentions a variety of the native *Cerasus Vulgaris*, under the name of *Peramdum*, which has been grown in one place in Lincolnshire for 200 years or more. Dr. Hogg has himself a tree of it 100 years old, and yet not more than seven feet high. A small round fruit, half an inch in diameter, pale red and of agreeable lively acidity. Its hardness, of course, I know nothing of.

Our wild red cherry, or pigeon cherry (*Prunus Pennsylvanica*), has been recommended as a stock for the cultivated cherry. If suitable, certainly no stock could be hardier or more readily procurable. Botanically, it is said of all our native species to be that most nearly related to the European cherry. We are greatly in need of a hardy, cheap stock. The experience of Mr. W. G. Waring, of Tyrone, Pa., as given in Report Iowa Horticultural Society, 1880, is very encouraging.

What I would urge in this matter is the introduction in quantity of the Vladimir and Ostheim into this country for extensive trial.

PLUMS.

In all our most northern rambles in Central Russia, we find the plum grown in fair quantity, and supplying a certain amount to the local markets. In the severe climates of Moscow, Vladimir and Kazan, we find plums, and some of them of really fine quality; and we are told that in the village of Gorbatovka, forty miles from Nijni Novgorod, they are grown in large quantity for the Nijni and Moscow markets. These plums belong to a family more or less nearly related to the Quetche or Prune plums of Germany and Hungary. Like the Vladimir Cherry, these northern forms of the

plum are dwarf in habit of tree, often bushes, and this seems to be a provision of Nature ; for, in these cold climates, if a plum bush is killed to the ground new shoots soon grow and bear. Of these plums there is great variety ; some are red, others yellow, but mostly blue ; they differ widely in flavor, some, I would say, equal to Lombard, some are early, some late ; they are usually without any astringency of skin, and usually free stone. I was not prepared to find such plums in the cold climates of Russia. The improved varieties of the wild plum of the North-Western States, I had expected to be the future plums of the Province of Quebec. I have some of them, heavy and reliable bearers, but of medium quality only. There are much better varieties than those I have, for instance, the Desota and others, yet, these non-astringent, fleshy, free stone Russians, have a combination of good qualities which entitle them to extensive trial in our cold country. I would say, however, that they will prove as easy a prey to the curculio as other European kinds, while the North-West Chickasaw, though not too thick-skinned to prevent puncture, is, as Mr. Budd observes, so juicy, as usually to prevent the inserted eggs from hatching.

These Russian Plums are grown, no doubt, sometimes from stones, but usually from suckers. Most of the horticultural gardens or nurserymen have made small collections of the best they have found. By thus obtaining roots of the best, from a number of points, we may, more or less, get the best of these Russian seedlings.

One of the commonest in the northern markets is a long, dark, dull red, prune-shaped plum, tapering toward the stalk, not rich, but non-astringent, and a really good cooking fruit. The Skorospelkaya Krasnaya, at Petrovskoe, is said to be about the best of these red kinds, and the tree one of the hardiest, but season a little later than some other red. Mr. Shroeder has six kinds he recommends, three of which we saw in fruit, but before they were ripe. The Volga Valley, too, has its plentiful supplies of plums. Especially at Simbirsk, we find them in great quantity and variety. At Voronesh, Mr. Fischer specially recommends the Moldavka, a large violet plum, not to say juicy, but of medium quality, rather a large

tree, grown from suckers, and found to be very productive ; I counted 150 plums on one branch. Here, too, we find the Yellow Egg, whether our old Yellow Egg or not I cannot say ; tree seemingly hardy, but either from want of proper ripening of wood, or from some other cause, not a good bearer.

At Tula, we find quite a variety in the peasant orchards, and among them Reine Claude. Yes, in Russia, we find a family of Reine Claudes, red, white and blue ; and Mr. Lauche, in his *Deutsche Pomologie*, describes such varieties. They are of very fine quality, extra quality, but in the cold climate of Tula, they are planted at an angle of 45 degrees or less, and bent down to the ground before the snow falls. Thus protected by a covering of snow they often bear bountifully. When too old to bend down they are allowed to take their chances, often bear a crop or two and then die. A whitish plum, known as the White Hungarian, has also proved successful, as well as the White Otschakovskaya and the White Vengerka. At Orel, we find a collection of the best under names which mean large blue, large yellow, &c. At Kursk, we find the Reine Claudes planted more freely, but unless laid down, they are not reliable, though they may sometimes bear a good crop in the sheltered peasant gardens around Kursk. At Kiev, we find more of the German and French varieties, and, therefore, notes from that climate are less valuable to us.

The *Prunus Spinosa*, of Russia, is very interesting, and quite common as far north as any other plum. The peasants always said it was not a plum, but called it by the Russian name for thorn. There is a large fruited variety of it, round, blue and really good for cooking, far better than our Canadian wild plum for that purpose. We saw it bearing heavily in many places.

A dwarf variety of the *Spinosa* should be introduced into our gardens as an ornamental curiosity. The fruit is quite small, blue, covered, with a bright blue bloom. I have seen it for sale in the markets, but fear it would be very sour. The bushes are seldom more than three feet in height, and I have seen little round-headed bushes, not more than eighteen inches in height, loaded with lovely blue fruit. Strikingly curious and beautiful.

MELONS.

Russia has long been celebrated for its melons. The best we saw belong to types we have not.

MUSK MELON.—In the markets we used to find a melon about fourteen inches long, netted, the flesh very deep, and a creamy white in color, and of the highest quality, I call it a musk melon merely because I do not know what else to call it. Those who abstain from musk melons are not likely to object to these. Like the Khiva melons, which one of the Emperors of China always enquired about on the arrival of the caravans, this is a keeping melon, and may readily be kept till Christmas. It may be a little late in ripening. However, on September 2nd we found fine specimens in the Simbirsk market, said to be grown on the lower Volga, probably at Tsaritsim, Sarepta or Astrachan. In the Kursk and Voronesh markets we also find them sent from the south. These melons are grown in Russia, where the summer is longer than ours, yet not with such hotbed care as we can give them, and they seem to be picked early. They cannot, therefore, be so very late. Next autumn will test their value in this climate.

WATER MELON.—Nearly every barge that is being towed up the Volga has somewhere a small deck load of water melons. In all the markets we find them in great quantity. They are a great staple article of food. They are all alike, round, about 10 inches in diameter, a creamy white in color, with red flesh, and of fine flavor. Those who have grown the Russian netted cucumber alongside of the finer English frame varieties, may have noticed the hardy, take-care-of-itself character of the Russian plant. Just such a hardy nature I expect to find in this Russian water melon. It grows without care in vast quantity, apparently as readily as pumpkins do with us, that is at Saratof and Southwards. At Kursk and Voronesh it is not quite so large. It is a melon of fine quality likely to do well in the hands of not very careful cultivators.

FINIS.

Our journey to Russia has shown how necessary such a journey was. It has set us upon the right track, and will greatly hasten the introduction and dissemination of the best of the Russian fruits—a matter to which all our Northern horticulturists were so eagerly looking. We have but broken ground; the work will continue by importations, by correspondence, by the interchange of seeds and scions.

It was so fortunate, too, that Mr. Budd was himself able to leave his college duties for so long a journey.

Every useful point of knowledge gained will be utilized in Iowa. All promising varieties will be fairly tried in different localities, the most promising scattered broadcast as soon as possible. The other North-Western states will soon take action in the matter. Ontario will do something, especially for her colder districts.

When will our own Province have a propagating centre, where the fruits adapted to each county may be propagated and distributed to each county, as prizes by the County Agricultural Societies.

The action taken by our Provincial Government will be an accurate test of the interest taken by our Government in the people's welfare.



REPORT ON EXPERIMENTAL HORTICULTURE.

BY J. L. BUDD, AMES, IOWA.

MR. PRESIDENT AND FELLOW MEMBERS:—In our relatively new country with its peculiar inter-continental climate and rich drift or lacustrine soil the topic assigned this committee covers broad ground. At this time I will confine the report to a brief outline of conclusions reached in regard to the profitable introduction of varieties of the apple, pear, cherry, and plum, from the interior and northern portions of Europe.

Instead of giving time and space to theorizing on similarity of climate and soil I will offer a few notes on promising varieties, only promising that the few sorts singled out for special notice are those which I have found doing well through many degrees of latitude and on exceedingly varied soils.

I would respectfully ask the members of this Society to test the relative merits of the varieties noted as soon as practicable. In the meantime, our nurserymen need not hesitate to propagate and distribute them as rapidly as possible. If some of them do not prove superior to sorts now planted, for the sections indicated, little will be lost as none of them will prove decidedly tender in tree, and none of them will produce inferior fruit.

PROMISING RUSSIAN APPLES.

ANTONOVKA.—This has been sent out from the Agricultural College as No. 236 or 26 M.* It is in the hands of many parties in the State, and I advise its extensive propagation and dissemination in the central and northern districts. Judging from its behavior in Europe we have no approach to it in hardiness and

*The numbers following the names are those we have used on the labels in sending them out for trial. In this case it has been sent out as No. 236 according to Dr. Regel's system, or as No. 26 of the Moscow Agricultural College.

commercial value of fruit among the winter sorts we now try to grow on the northern prairies. It is known in the valley of the Moselle, in eastern France, and it has a ready sale under the name of *Possarts naliwia* in Poland, Bohemia, Hungary, and Silesia, in competition with the best German varieties. Over a large portion of Central Russia it is as common in the market as Ben Davis at this time in the central and southern parts of Iowa. As far north as Tula, Orel, and Simbirska, in central Russia, it is often found alone in its glory, and the trees of large size, in orchards nearly cleaned out by forty-five degrees below zero in the winters of 1872 and 1873 without snow.

It makes a better tree in nursery than the Duchess, and with us it has not blighted even when standing beside blighting crabs.

The fruit is from large to very large, oblong, bright yellow, sub-acid, and really good for either eating or cooking. The resemblance of small specimens to the Grimes' Golden is a thing of wonder even to the peculiar basin of the latter. That our Grimes is a seedling of the Antonovka is by no means improbable, as the latter has long been grown in Germany and France. If picked early it will keep until spring in the northern counties and fully as long as the Grimes at the south.

LONGFIELD.—This has been sent out as 161 or 56 M. It is favorably known in Poland and Hungary and over central and southern Russia. I think it is hardy enough for any part of Iowa, yet it did not stand the above-named winter as well as the Antonovka or the Arabskoe on the snowless steppes of the interior of Russia, and it utterly failed at Moscow. It will prove hardy, I think, where the Gros Pommier does well, as its place of origin is also the birthplace of the latter. The fruit is about the size of a large Jonathan and is as finely colored. At the north it will keep through winter, and at the south its season, if picked early, will be about that of Jonathan. I speak of *early picking* as all of the Russian sorts have a tendency to early ripening of wood and the fruit of all the winter sorts will bear even earlier picking than the Jonathan. Mr. A. Webster, of East Roxbury, Vermont, has fruited this variety and reports it as "a hardy, productive, handsome, and good winter apple that keeps until March; size, small to medium."

This corresponds with the apple as seen in Poland and Russia, except the size, which the condition, or crop, of Mr. Webster's tree might account for.

CROSS APPLE.—Has been sent out as 413 or 15 M. In bud and leaf it shows a cross with the wild race of apples of eastern Poland and central Russia. Old trees of it we found loaded with fruit beside the aged trees of Antonovka as far north as the province of Tula. It will be apt to prove hardy and blight-proof in all parts of the State, but like the Gros Pommier it will sometimes not start from the terminal buds. The fruit resembles a highly-colored and very large specimen of Limber Twig, but is much better in quality. Its fruit is kept in Russia until the new crop comes. It will be safe to propagate and distribute as rapidly as possible. The scions and trees have been freely sent out.

LEAD APPLE, 277 or 3 M.—This is largely grown in southern Russia and it is hardy as far north as Orel and Veronesh; fruit, medium to large, conical, yellowish green, with red next the sun. Quality about that of Willow, and season much the same. Number 277 of the Washington list is a different fruit, but if true to the name given, "Vargul," it is a valuable winter sort which should be distributed. We have sent it out as *Vargul* or 16 M. In Central Russia it makes a fine orchard tree, bearing profitable crops of large yellow apples with a blush of red and the usual bloom of the northern apples. Quality good to very good; season midwinter in central Iowa.

ARABSKOE, 257 or 55 M.—This is a very hardy, late keeping, winter apple grown over Russia. It will prove hardy on hardy roots, even in Minnesota. The fruit is much like Black Oxford in shape, color, and quality, but larger. On the Volga, in the great orchards of Simbirsk and Saratov, it is called "Chougouunka," which means "cast iron," on account of its weight and keeping qualities. The Arabian, of Rochester, New York, is wholly different. It is probably the Arabka Polasatoe of the coast section of Russia, which is a striped autumn variety of no great value. The winter Arabskoe is the most decidedly acid variety we found in Russia. It is valuable for cooking, and in May and June it is said to be a very good, mildly acid eating apple.

APORT, 252 or 23 M.—In Central Russia are found many apples of the Alexander class, most of them summer and autumn varieties. Two of them are fair keepers, and in quality they compare with the very best American or German apples of larger size. Our 252, or Moscow No. 23, is a large, conic, regular sub-acid variety with a fine coloring and bloom on the sun side. As it is grown to some extent at Moscow it will probably prove hardy in the northern counties where the fruit will keep through winter.

APORT FLAT, No. 34 M.—Is an apple of large size, fine color, and best quality, which by very early picking is kept till March. With us it would be very early winter at the south.

GRANDMOTHER, 469 or 6 M.—This has been sent out quite freely to many parts of the State. We saw trees loaded with its fruit as far north as Orel, Veronesh, and even Tula. The tree is a fair grower in nursery and a fine orchard tree. It will most likely prove much hardier than Plumb's Cider. The fruit in appearance and quality is much like the White Winter Pearmain, with a very peculiar thick, woody stem. Will keep through winter.

CHRIST BIRTH APPLE, 161 M or 477.—Grown in southern Russia, and probably not hardier than Belle de Boskoop, which is grown in the same soil and climate. Will be valuable in the Central and Southern districts. Fruit large, high conic, yellowish green, with dark red side. Table and cooking.

ROMNENSKOE, 599, No. 11 M.—This will most likely prove valuable in the Northern District. Fruit medium, round, yellow, with dark red in the sun. Eye peculiarly corrugated. A very pretty and very good winter sort, which should be widely tried.

STEKLANKA.—This is the name of a family of apples grown in central Russia, most of which are conical green fruits, with more or less blush or bloom. The two best we have sent out as 4 M and 24 M. They are much alike in tree and fruit. No. 24 has a Russian name meaning "sandy green," the word sandy referring to the raised dots on the surface. The varieties are very hardy, very productive, and valuable for the Central and Northern Districts. In quality they are about like Willow, but No. 24 is more acid.

RED ANNIS, 32 M.—This is a winter apple, much grown on the Upper Volga. It is not larger than Winesap and is much like it in appearance and quality. It will be popular when known in the most northern counties. I doubt its doing well in the Southern or even Central District, as it is a far northern sort, and decidedly a dwarf tree in nursery.

BLACKWOOD, 53 M or 407.—This is also a northern variety, yet it grows well in southern Russia. The fruit is medium to small, yellow, with some red and bloom; quality best. It sells at double price as a dessert apple to rich proprietors of the Volga cities. It is tender enough for eating in autumn at Saratov, but is kept through winter by packing away in buckwheat chaff. In my opinion this will be worth all the crabs we have in the State put together.

GOOD PEASANT, 31 M or 387.—This is much like Blackwood in tree and fruit. At the north it will keep well if picked early, and is not equalled in quality by any variety now grown successfully at the north.

REINETTE KOURSKE, 20 M or 447.—This is a popular winter sort in central Russia. Fruit medium, yellowish green, with glossy red on the sunny side. Flesh white, tender, very good; keeps through winter.

REPOLOVKA, No. 1 M.—Medium yellow with red. Grows far north, where it is a long keeper. Will only be valuable in the Northern District. Quality good for eating or cooking.

PRINCE APPLE, No. 5 M.—Medium size, red, pretty, heavy bearer, hardy. This is much grown in Poland and is a leading sort sent out from the great nurseries of Riga, Russia. If picked early keeps through winter.

KRUGERODER, No. 7 M.—This is a popular cooking apple of Russia. Large, green, shaded with purple, too acid to suit the Russian taste for eating, but not more acid than our Jonathan.

CALVILLE KRASNUI, 22 M.—A popular hardy sort which will keep well in northern Iowa. Medium size, red, quality best.

TITUS APPLE.—This is a popular variety in north Germany, Poland, and over a large portion of Russia. It is not an extra

grower in nursery, but makes a good orchard tree. In northern Iowa the fruit will keep about like Wealthy. Fruit very large, oblong, more or less ribbed, and as highly colored as Duchess. Small specimens look much like the Benoni, except the rich blue bloom is lacking in the latter. Mild sub-acid, and the most popular train boy and market woman's apple of the north.

ANISOMOVKA, 14 M and 18 M.—This has been sent out by mistake as 14 and 18 of the Moscow collection. It is one of the few winter sorts hardy at Moscow and Kazan. Size medium, flat, ribbed, yellowish-green, with bright red side, keeps through the winter at the north, but early winter at the south of Russia. Quality good.

ANISOVKA, 185.—This is a large striped sweet apple at the south, but at the north it fails to reach the sweet stage, and is classed as sub-acid. One of the hardiest, and really desirable as an autumn sweet variety, of large size and fine appearance.

BOROVINKA ANGLUSKAIA, 9 M.—In tree and fruit this resembles the Duchess, but the fruit is more conical; flesh white, fine grained sub-acid, good. Picked early it will keep at the north through winter. One of the most promising sorts for the north.

SERINKIA.—This is not an extra grower in nursery, but makes a fine orchard tree. It is a grayish-green apple, with bright red side, averaging large in size. Quality rated high even in Poland and north Germany. Good keeper at the north. Early winter in Germany.

BOHEMIAN GIRL, No. 1227.—This is one of the most beautiful self-colored apples we met in Europe. It is hardy in central Russia and should be in north Iowa. Quality good. Autumn.

AUTUMN STRIPED, No. 10.—This is largely grown in Central Russia. It is large striped and decidedly good for any use.

Remarks.—In making out this list the needs of the most trying portions of the Central and Northern districts have been mainly considered. Only varieties are noted which have been more or less distributed and of which a small stock is now growing in the experimental nursery. Very many other sorts are worthy of trial.

Some very valuable varieties found in the interior orchards of Russia we are grafting this winter for the first time.

NORTH GERMAN APPLES FOR TRIAL.

BELLE DE BOSKOOP.—This is not a true Russian, though found as far north as Warsaw and Kiev. Charles Dowing places it among our most promising apples of high quality, and Simon Louis, of Metz, France, a critical judge, places it at the head of the profitable list saying: "In our opinion the *Belle de Boskoop* is one of the most beautiful and profitable varieties and the best apple for table use at the close of winter." It seems to do well on all soils and exposures from the valley of the Moselle, in France, through Wurtemberg, and the whole country west and north of the Swabian Alps and the Carpathians, to Kiev in Russia. It will prove hardier and longer lived than Ben Davis, but may not be profitable north of the Central district. It is worthy the attention of those anxious to introduce a market apple of fine appearance and high quality, and yet a good keeper. We have sent out the young trees and scions quite freely.

RED BATTULIN.—This fine winter apple is now attracting much attention in the trying portions of Europe as far north as Poland and Kiev, Russia.

It is a native of the very peculiar and trying climate of Transylvania, in north-eastern Hungary. It belongs to the peculiar plicated leaved race of apples of Transylvania which *grow from cuttings* as readily as the Russian mulberry. At Reutlingen, Germany, we first saw fine plants in the nursery rows from cuttings put in last spring.

The fruit is as large as Ben Davis, finely colored, fine grained, and of very good quality for a late keeper. It will prove valuable in a large portion of the State, beyond doubt, and will most likely prove hardier at the north than Walbridge. The scions can be procured at the leading nurseries in eastern France and in Germany. The White Battulin is equally valuable. It is not really white, but has a glossy straw-colored skin, blushed on the sunny side. It is also an excellent keeper. We have no trees or scions to distribute as yet.

BOIKEN.—This is a half-blood Russian, doing well as far north as the *Belle de Boskoop*. It is specially a favorite on the plains of Silesia and Hungary. It is also well known and well liked in eastern France. Fruit medium to large, conical, bright yellow, flushed with carmine, flesh white, sub-acid, with a high and peculiar flavor. Keeps through winter. Very productive on account of late blooming in frosty localities.

BAUMAN'S REINETTE.—This does well over the plains north of the Carpathians. The fruit is medium to large, and rated best for table use or cooking. It is round, flattened, with showy red tracing over a deep yellow ground.

NEUMEISTER.—A South Russian and North German favorite, largely grown in the great nurseries at Riga, Russia. Medium to large, fine grained, finely colored, sub-acid, quality best, late keeper; will probably prove hardy as far north as the Gros Pommier.

Remark —The plains of North Germany, including Poland and Hungary, have a number of choice winter apples which I have reason to believe are as hardy as Plumb's Cider, Gros Pommier, and Fameuse, all of which undoubtedly came from this section. De Stoll, Director of the Pomological Schools at Proskau, in north Silesia, has given his long life to the study of northern fruits. As the result of his observations and experience he gave the following list with the assurance that any of them would prove as hardy in our prairie climate as Ribston Pippin, and most of them far hardier:

Battulin, Boiken, Bohn, Borsdorfer, Cardinal Weisser, Furstenapfel Gruner, Gulderling, Langer Gruner, Jungfern, Golden Pippin, Possart's Nalivia, Bauman's Reinette, Red Reinette, Casseler's Grosse Reinette, Landsberger Reinette, Muscat Reinette, Orleans Reinette, Yellow Stettiner, Red Stettiner, Winter Striefling, White Taffelapfel, and Red Taubenapfel—all of those are from medium to large in size, and nearly all have two stars as best for table, and two stars as best for cooking. All of them grow well on the northern prairies in north Hungary and eastern Poland, and all in my opinion are worthy of trial even in the central districts of Iowa. A part of them will be grafted for trial on the College

Farm this winter, if the scions arrive in good order, and the remainder possibly next year.

PROMISING PEARS FOR TRIAL IN IOWA.

BERGAMOTTE SAPIEGANKA. — This fine pear originated in northern Poland. Without doubt it has an admixture in tree of the wild forest pears of Poland. At Vilna, Russia, and at other points we saw perfectly healthy trees over forty years of age loaded with as perfect fruit as I have seen in any country. Though not as large, it is equal in quality to Flemish Beauty, which, under various names, is common in southern Poland, but not successful as far north as Vilna. Beyond reasonable doubt this pear may be grown on hardy roots in the Central and Southern districts. It may blight in some situations, but will not be as subject to it as the pears of moister sections further south.

BESSEMIANKA. — This is beyond all doubt a true hybrid with the wild pear of Russia as the parent tree. The name means *seedless*, and it is rare, indeed, that more than the rudiment of a seed can be found. It is medium or small in size, pleasant and satisfying in quality, but not strictly melting. Taken all in all it is the best dessert pear found in the far interior and northern steppes. Literally it grows from the Gulf to the Volga as far north as Moscow and Kazan. That it will grow anywhere in Iowa I have not the least doubt, or, at least, it would if we had seedlings of the Russian wild pear to work it on.

I do not believe it will be more subject to blight than the Duchess apple.

RED BERGAMOT. — This is a medium-sized, flattened pear, common among the peasants of Poland and South Russia. It was the pear sold mainly at the stations and on the trains, the last of September, from Kursk to Warsaw. The tree is vigorous and hardy and will do better in Iowa than any variety yet tried.

TONKAVETKA. — Like the "seedless" this will grow anywhere in central Russia or northern Iowa where the Duchess apple will thrive. The fruit is only fair for eating, but best for cooking. Hardier than Duchess apple.

PFUNDBIRNE. — This is a large sized cooking pear of best

quality that should do well with us. It has a good leaf and grows as rankly in the nursery at Riga as the Gros Pommier apple does with us.

Remark.—We have introduced scions of a number of North Poland and South Russian pears for trial. It is yet uncertain as to their liability to blight, but there is a positive certainty that all of them are fifty per cent hardier than any pears we have yet tried.

We have also a start of a number of varieties of cooking pears from North Russia as hardy as the poplars. It will be at least interesting to note their behavior in our climate. Beyond doubt the Bergamots of the upper Volga region will live, and fruit even in northern Minnesota and Dakota, if the blight does not attack them, which I have no reason to believe will happen.

PROMISING CHERRIES FOR TRIAL.

OSTHEIM.—A small growing tree of the English Morello race, found over north Germany, Poland, Hungary, Transylvania, and southern Russia. The tree seems as hardy as the Choke cherry and a free bearer, even in frosty localities, on account of its habit of late blossoming. I append the description of Dr. Hogg, the President of the Royal Horticultural Society of England, who writes from an English standpoint as to size and quality: "Fruit large, round, flattened at both ends, skin dark red, as it ripens changing to dark purplish red. Flesh dark red, tender, juicy, with a pleasant, sweet, and sub-acid flavor. Stone small. The tree forms a thick bushy head with long slender and pendulous shoots; it is an abundant bearer, and better suited for a dwarf than a standard." It bears better on rather thin soils, when on its own roots, as it is given to sprouting.

BRUSSELER BRAUNE.—This is of the same race and forms a very pretty round topped small tree. It is not quite as hardy as Ostheim, yet it is grown in Europe, as far north as Riga and Kiev, in Russia. The fruit is much larger than that of the Ostheim, not so dark in color when ripe, and not quite so sweet. At this time it is one of the most popular varieties in north Europe. It will prove more profitable in any part of the State than any variety we now have.

VLADIMIR.—This is a sort of generic name for dozens of varieties grown in Russia. The whole province of Vladimir east of Moscow, nearly is given to cherry growing. In the cherry season, dozens of trains are loaded weekly for Moscow, Petersburg, and other large cities of the north, which are better supplied with this fruit in its season than any towns I know of in America. The *best* varieties are much like the Ostheim, but the fruit is nearer black and still sweeter. We have found it difficult to introduce the best varieties of Vladimir, as they do not grow well on the cold wet soils near Moscow or St. Petersburg, and the parties who have engaged to send scions or plants have not known how to pack for a four months' voyage by land and water, yet we have a small start, if the plants now in cellar do not fail to grow next season.

DOUBLE NATTE.—A popular German and Polish variety of the same dwarf race as the preceding. Much like the others in fruit, but with a very long stem, beset with bracted leaves, and often dividing into two fruits. It is a great bearer, even in frosty northern localities. The tree is a compact grower of small size, with thin pendulous shoots. A dozen other varieties of this race might be named, not varying materially in tree or fruit from the preceding. How shall we propagate them? For the present, we can do no better than bud on the seedlings or sprouts of the common Red Morello. In time, we may secure the hardy stocks of the northern wild cherries. The scions are rather weak for grafting.

Remarks.—I can see no reason why the south part of the State cannot grow a great number of choice varieties found in Bohemia, Silesia, Hungary, and Poland. I found it hard to tell from leaf or habit of growth the class to which they belong. For instance, Spanish Ochsenherz, Spanish Gelbe Drogan, Spanish Rothe, Spanish Luzien, Spanish Napoleon, Spanish Von Orleans, Spanish Bunt, Spanish Richelieu, Spanish Schwarze Fruhe, Spanish Luthers, Spanish Winklers, Spanish Bernstein, Maikirsche Doppelte, Champaigners, and other varieties of what we know as the Yellow Spanish race, are grown in Poland, Hungary, and some of

them even fruit at Vilna and Riga, Russia. The whole race of North German cherries are, so far as I know, unknown in this country. We surely have much room as yet for experimental horticulture. In the experimental cherry orchard near Prague, in Bohemia, we saw over one hundred varieties in fruit, not one in fifty of which we ever heard of until we got into North Germany.

PROMISING PLUMS FOR TRIAL.

Here the question comes in : Will we gain anything by introducing the plums of North Europe ? Our native races of the plum are giving us fine varieties, relatively exempt from the attacks of the curculio. Dozens of varieties of the Lombard type of the plum are found in the north of Europe, some of which are far hardier than any we have tried, but they will all be subject to the attacks of the curculio. In Central Russia we come to another race of the plum of bush habit of growth, selected varieties of which bear better fruit for eating or cooking than the De Soto, or any of our varieties of the Chickasaw race. As they blossom very late and make a sudden and quick growth of fruit, like the Miner, they may not be troubled by the "Little Turk" to a serious extent. They are well worth trying, and we have secured a few plants for a start. As with the northern cherries the scions are so small that it will be difficult to propagate them by grafting. Some varieties I obtained in Veronesh, Russia, belonging to a peculiar race known as the Hungarian or Transylvanian. The fruit is rather coarse, but best for cooking. The rapid growth of the large fruit, and its succulent watery character when growing, favor the idea that it will be curculio proof. In due time, I may be able to report success or failure with the northern plums. If curculio proof, they will not be far in advance of some of our native sorts, but their superior firmness of flesh will fit them for uses for which our native plums are not adapted.

NOT WELL KNOWN TREES AND SHRUBS PROMISING TO DO WELL IN IOWA.

BY J. L. BUDD, AMES, IOWA.

MR. PRESIDENT AND FELLOW MEMBERS:—The opinion is common that the trees and shrubs native to our State will thrive in isolated positions, or in groves, on our open prairies far better than introduced species or varieties from any portion of the globe. In some cases this opinion may be well founded, yet the careful observer must admit that we have already growing in our young State dozens of introduced trees and shrubs that behave far better in open exposure than other dozens which are native to and thrive in our groves and native timber belts on the river and creek bottoms.

Though we have had much trouble with the fruits and many of the ornamental trees and shrubs of the states east of the great lakes, we must not fall into the erroneous belief that our climate is as capricious and trying as the intercontinental portions of northern Europe and Asia. Nor must we for a moment forget that our country *is new*, while the corresponding soil and climate of the Eastern Continent is the ancient cradle of civilization and is richly stocked with the fruits, the trees, and the shrubs which will be likely to do best in our peculiar climate.

In this age of the world we cannot doubt that Nature's distribution of the economic plants has been a thing of chance. The hundreds of botanic gardens and trial stations in all parts of the world are sustained for the sole purpose of correcting nature's faulty distributions, and to disseminate the improvements wrought in fruits, trees and plants, by the hand of man.

The object of the present paper is to direct the attention of amateurs and nurserymen to a few forest and ornamental trees and shrubs, as yet not well known in this country, many of which

thrive on the steppes of the Old World where the climate is so severe that a large share of our native trees and shrubs utterly fail.

It is not expected that all of them will prove valuable additions to our list, yet all are worthy of trial. Where I have expressed the belief that a tree or shrub has special value for prairie planting, the opinion has been supported by seeing it in healthy condition where the summers are hot and dry as ours, and the winters much colder, and yet thriving as well, or better on varied soils where the climate was far more equable. As a rule the tree or shrub which will grow on all soils and through many degrees of latitude, like white poplar and the lilac, can be safely planted in many parts of our State.

TREES FOR TIMBER OR ORNAMENT.

ACER PLATANOIDES.—As introduced from southern Europe the Norway maple has not thriven on our prairies as well as our native hard maple.

For our use the seeds should be obtained of the seed firms at Riga or Moscow, Russia. Beyond all reasonable doubt when grown from northern seed it will make one of our finest trees for large lawns and for park and street planting. It grows rapidly, it is easy to transplant, and is, at least, equal to our hard maple in beauty.

As a forest tree it grows rapidly and assumes an upright habit. Its wood is heavy and close grained, and its "bird's eye" grain, gives it a value for cabinet work. It is about as valuable for sugar as our Hard maple.

ACER SCHWERDLERII.—This is probably only a variety of the Norway maple. I was last summer in the neighborhood where still stands the original specimen from which this fine ornamental tree has been propagated, near Proskau in northern Silesia. Its beauty consists in the bright crimson shades of the young leaves when unfolding in spring, and when the second growth starts in midsummer. It is so easy to graft that it may soon become common in our nurseries.

ACER TARTARICUM.—The northern steppe form of this maple forms a small hemispherical topped tree not more than twenty feet in height, specially fitting it for lawns and parks. Its branches are numerous, forming a compact head, densely covered with leaves, with a peculiar net veining and lively green color. The seeds can be obtained in any quantity at Riga.

ACER GINNALA.—This is a graceful and pretty tree of small size, common to Russia. It is from the Amur country in Siberia and, I think, comes true from seed.

BETULA ALBA.—The European White birch as received from France has thriven unexpectedly well on our prairies. The northern steppe forms are even more beautiful and, I think, will thrive on our bleakest northern prairies. In Russia it is a common roadside tree on the great interior plains as far east as Kazan. The larger part of the Petrovsk park east of Moscow is planted with this tree, and a more beautiful grove is not found in all Europe. As found at the north the White birch is weeping in habit when standing alone, and when thickly planted the branches at the extreme top are gracefully pendent. In the seed lists of Russia this form is known as *Betula alba verrucosa*, and can be obtained in any quantity at reasonable rates. As the years go on this birch will be largely planted here as an ornamental and timber tree.

For amateur and park planting several of the grafted varieties of the birch will be deservedly popular. The Cut-leaved Weeping, Fastigiata, Purple-leaved, Nettle-leaved, and Asplenifolia, will give a charming variety of expression to grounds of considerable size.

POPULUS ALBA.—The White poplar found in Iowa is by no means the most desirable form found, even in southern Europe. In portions of France and Germany the upright form common to Russia was introduced many years ago by the Vilmorins, and fine specimens are still to be seen at Barres of the introduced steppe form of the White poplar and of the Sylvestris pine. As grown on the Russian steppes it is nearly as upright as the Lombardy, even when growing singly on the open plains. While an occasional sprout is seen, the sprouting tendency is not a

nuisance as with the Abele. The lumber of this fastigate form is used at the north for house finishing, and is not more liable to warp, shrink, or crack, than that of the Riga pine. It is very close grained and will "fill" for polishing when used for panels as readily as the White walnut. It will in time take the place with us of the Ohio Tulip tree, as its wood is much the same and is valuable for all the uses to which the White wood is applied and is superior to the latter for holding nails, in strength, for bowls and trays, and for flooring. No tree is easier to propagate, and no tree will prove more valuable for planting on our northern prairies and in Dakota, where the dry air causes the leaf rust of the cottonwood when planted on high dry ground.

POPULUS LAURIFOLIA.—This is a very common park and street tree of northern Europe. In isolated positions it assumes a symmetrical, rounded form of top, and its perfect dark green foliage would hardly be recognized as that of a poplar by a stranger not familiar with the species. It is a common street tree in many of the cities of Europe, even as far south as Germany and France. As a timber tree it is superior to the cottonwood for planting on high dry lands, either for lumber or fuel. Its thick leaves will withstand the hottest and driest air of the west, either standing alone or in shelter belts. The lumber approaches the White poplar in weight, strength, and closeness of texture.

POPULUS PYRAMIDALIS SUAVOLENS.—This is another thick leaved steppe poplar which is much used for a park and street tree. In growth it is one of the largest of the tribe. Trees four feet in diameter are common in poplar collections. It also deserves a general trial on the dry prairies of the northwest.

POPULUS SIBERICA.—Still another thick leaved poplar of the largest size. It is fully as valuable as our cottonwood in the quality of its timber, and will attain great size where the cottonwood will fail in twelve or fifteen years.

POPULUS WOBSTL.—This was not recognized as a poplar when first seen from the street cars in Moscow. On account of its regular form and large shining leaves, it is a favorite for ornamental planting; yet, it is an upright and rapid grower as a timber tree.

POPULUS PETROVSKY.—This is a hybrid form, originated on the grounds of the Agricultural College at Moscow. It will prove a favorite when better known at the West.

POPULUS BOLLEANA.—It is said this species is a native of Turkestan. It has a leaf much like the White poplar, and in habit of growth it is fully as erect as the Lombardy. Though very erect, its many branches, covered with silvery foliage, give a compact and yet graceful expression the Lombardy cannot have.

POPULUS PENDULA.—At the north are found some weeping forms of the Poplar far more graceful than the one used in our nurseries—top worked on an upright species. Grown thickly in nursery, they are upright when young, but suddenly become pendent when in isolated position.

SALIX ALBA ARGENTEA.—This is a steppe form of the White willow, with decidedly silvery foliage. As the trees attain size, the terminal branches become decidedly pendent. Taken all in all, it is the most desirable ornamental willow I know for prairie planting in park, large lawn, or by the roadside in cities. It is common along the old military roads across the dry steppes of eastern Russia.

SALIX ACUTIFOLIA.—This is one of the largest growing willows of north Europe. It will endure any amount of dry heat, and has been used on the sandy wastes of south-east Russia to fix the drifting sand. When the sand is shaded by the willow, the Riga pine can be successfully started.

SALIX LAURIFOLIA.—Fine specimens of this beautiful tree were found as far north as St. Petersburg. It has large, dark, glossy leaves and a finely rounded top, specially fitting it for the lawn where small sized trees are desired.

SALIX NAPOLEONIS.—A purple tinted leaf and pendulous habit, will ensure this northern species a warm welcome to our list of lawn and street trees.

SALIX ROSMARINIFOLIA.—A small growing willow, the northern forms of which do well on dry soil in the interior. Its foliage is graceful and feathery, and the expression and coloring of the leaf peculiar.

SALIX FRAGILIS.—This is a large growing willow common to nearly all parts of northern Europe. As an ornamental tree it is pretty when young, but rather ragged as it attains age, on account of its fragile branches. It is the celebrated willow used in tanning the pliable and fragrant leather which Russia sends to all civilized countries. On the prairie estates, five hundred miles east of Moscow, we saw immense sheds under which was stored the bark of young trees of the *Salix fragilis*. If manufacturers of fine leather can afford to import the bark of this willow, we can afford to grow it on our western plains, more especially as the trunks make far better fuel than our common species.

TILLIA PARVIFOLIA.—This small leaved basswood is a general favorite in Bohemia, Silesia, Hungary, Poland, and all Russia as a street, park and forest tree. In all the regions where it is largely grown it is a paradise for the bees. Unlike our basswood, its firm, close-textured leaf will stand any amount of exposure to dry wind and hot sun. No tree maintains perfect health and beauty more perfectly on the great northern prairies than the small leaved lime-tree. No American could guess one-half of the uses of the wood and bark of this tree. The Russian mats and prepared bast are seen in every country of the world. Whole villages, even five hundred miles east of Moscow, are engaged in the manufacture of various products from the wood and bark of this basswood. In summer it is the universal material for making the peasant shoes and boots. Incredible as it may appear, we were told that one hundred million pairs of basswood shoes are made each year in the great empire, and over forty-eight million wooden plates, platters, spoons and forks. Perhaps we do not need this tree for the latter uses, but we do need it for the bees, for ornamental planting and for variety in our groves. Its timber is harder, closer textured and darker in color than our basswood, more nearly approaching the wood of our Red elm. Its seeds can be secured in any quantity at lower rates than we can gather our home seeds.

QUERCUS PEDUNCULATA.—With our wealth of American oaks it may seem foolish to recommend a foreign one for timber growing or ornament. But, as before stated, it is not always that a

given country has naturally the best forest tree or the best product of any kind for its peculiar climate and soil. The Russian oak, which furnishes the sonorous lumber used by piano makers over the world, seems fitted by dame nature for prairie air and prairie soil. Unlike our oaks, it springs up from the acorn and makes a rapid upright growth from the word, *go*, instead of lopping around for several years getting ready to grow, as do our oaks.

Tens of thousands of acres of this oak are now being planted in the dry eastern provinces of Russia. When grown, it much resembles our White oak, but its acorns are long, slim and edible. I hope soon to be able to give it a trial on our prairies. If its timber is not better than our White oak, its habit of early and erect growth will encourage its planting at some future time.

ULMUS EFFUSA.—This is a widely diffused tree, running into many variations in leaf and habit in various parts of Europe. The northern form is the one we want for prairie planting. It is a valuable timber tree and extensively planted in the government forests. It attains larger size on the steppes with deep black soil, and its wood is hard and durable even where set as posts. It grows faster than the common European elm and has a better and more useful wood. In the moister air of France and England it grows well but does not ripen perfect seeds. In foliage it is much like the well known *Camperdown* elm, but the forest form is not pendent. But half-weeping forms are common in the northern nurseries, propagated by grafting. It will become a favorite tree with us. The trunk has smooth bark, and its leaves maintain their shining green shade in the hottest and driest of summers. It is said that the seeds of this species will grow after becoming dry. I am not certain of this, but propose to give them trial.

PINUS RIGENSIS.—Botanists class this as a variety of *P. Sylvestris* or Scotch pine. With the present broad gauge views as to the definition of the word *species*, it may be possible to class the Russian pine with the Scotch pine, native to Alsace, France. But in habit of growth they differ as widely as the Common fir and Austrian pine. On the celebrated experimental grounds of the Vilmorins, at Barres, France, I saw forestry plats grown from

thirty different lots of seeds from all parts of Europe. All the lots from the northern steppes proved alike. From these seeds the trees, now large enough for schooner masts, are as straight as reeds; and the second and third generation from these trees are equally perfect and erect. The trees grown from the Alsace race are crooked, deformed things, with no relative value for any use. Mr. Vilmorin assured us that the seeds gathered in France and Germany are mainly of the Alsace race, as *they are loaded with seed*, while the northern steppe form produces little perfect seed when grown south, as is the case with most northern trees.

The Riga pine seeds bountifully at the north, and the price at the seed stores of Riga is not higher than we pay for the worthless form grown in Germany and France. At this time the Riga pine alone is planted in France and the German provinces, but the seed is obtained mainly at Riga, Russia. As an ornamental and timber tree, we cannot plant the Riga pine too extensively. It is the tree of trees to grow on our few sandy plains, but it will grow rapidly and make fine lumber on the black soils in all parts of the State.

PINUS CEMBRA.—The race of "Swiss Stone pine," found in the great plantations of the Russian steppes, differs as widely from our well known nursery form as does the White from the Norway spruce. It is nearly as light in foliage as our White pine, and fully as graceful in expression; but its innumerable tufts of leaflets give a dense, compact appearance, decidedly unique and pleasing. It makes a free, rapid growth on the rich steppe soil, and attains large size. Specimens near Moscow, planted three hundred years ago, are larger than any pines I know of in this country. The timber is fine grained, soft and fragrant. Its quality may be inferred from the fact that it is used for the delicate carved work sold at Moscow, Kiev, and other sacred headquarters of the Greek church, to the pilgrim peasants, who take them to their home cabins as objects of veneration and worship. The nuts are *edible*, and are found for sale in all Russian shops. It is said to be the easiest of all conifers to grow from seed. I think the light-foliaged race common in Russia is the one which Hoopes calls *Pinus Siberica*.

PICEA PUNGENS.—Though really a native of the Rocky Mountains, we must go to Europe to ascertain the real value of this tree for ornamental planting. Grand specimens are common in the parks and botanical gardens in all parts of Europe; and the nurseries of Russia have thousands of fine trees of the Menzies' spruce for sale. We have here and there a specimen giving us a hint of its hardiness and rare beauty. In Russia and Iowa the dry air seems to increase the natural beauty of this, as yet, little known tree; that is, little known in the land of its nativity. It is said to be very easy to grow from seed.

ABIES PICTA.—This has not been tried in our State, but I can see no reason why the Russian form will not prove hardy and beautiful. Fine avenues of it are seen near Moscow, and fine specimens are seen in the dry air of even Kazan, Russia. It is quite variable, like the Menzies' spruce, but it will average far more perfect and beautiful than our common fir. It is obtainable in the Eastern nurseries under the name of Siberian fir, *Abies Sibirica*, or *Picea Sibirica*. It is hard to keep up with recent changes in the nomenclature of the conifers.

LARIX SIBIRICA.—This is the favorite larch for extensive forestry planting in Russia. I do not know that it is obtainable in this country, but it soon may be common, as its seeds are a commercial commodity. It will thrive in climates too dry and hot for our common larch. It is a rapid grower, decidedly upright in habit, and its timber is fully as valuable as the European species. As an ornamental tree it will be prized when better known, as it is darker in expression and closer in habit of growth when isolated than the common larches.

LARIX DAHURICA.—This is known commercially as the "Archangel Larch," and has long been used for boat building on the upper Volga. On the Tundras of the far north it is a mere shrub, but in central and southern Russia it becomes a large and fine tree. At the Botanic Garden, at St. Petersburg, it has attained larger size in a given time than the Siberian larch, but when standing alone it has not formed as upright a trunk. As an ornamental tree, it is unique rather than beautiful. Its branches are

twisted and gnarled, and through the openings made by its pendent branches it exhibits its twists and forks to poor advantage. Yet it will have its uses for ornamental planting, and will prove decidedly valuable in our timber belts.

TREES FOR LAWNS, PARKS AND STREETS.

PIRUS AUCUPARIA.—The common European Mountain ash has been long a favorite, but the form found north of the Carpathian Mountains will prove far better for our use as an ornamental tree. The northern variation assumes a somewhat rounded and pendent top, and when loaded in autumn with its great crop of scarlet fruit it is difficult to excel in its rare beauty. The seeds of this northern form are obtainable in quantity.

PIRUS ARIA.—The White beam tree of northern Europe runs into very many varieties, all of which will prove hardy with us, and all will prove desirable additions to our ornamental list. They are pretty, round-topped trees, of small size, with extremely variable, more or less silvery, foliage. The seeds of the common White beam are obtainable in quantity, and the varieties are readily grafted on the common stock. The following varieties are specially valuable for ornamental planting:—*Acerifolia*, *alpestris*, *corymbiflora*, *Cretica*, *glabrata*, *laciniata*, *lanata*, *longifolia*, *nivea*, and *rotundifolia*. In addition to these, some of the crosses of the White beam and Mountain ash are decidedly beautiful. Our Oak-leaved Mountain ash is one of the best of these hybrids.

PIRUS USSURIENSIS.—Beautiful specimens of this oriental species of the wild pear are common in private grounds and parks in the north of Europe. Its silvery leaves, pendent branches, and finely rounded outline, and its low spreading top attract general attention to well-cared-for specimens. It is one of the hardiest of northern trees.

WILD BERGAMOT PEAR.—This seems a native form in eastern Russia. As far north and east as Kazan and Simbirsk it is a favorite street, park and lawn tree. As grown from seed there is no perceptible difference in the plants, in leaf or habit of growth. Its leaves are large, thick and dark green. It never fails to form

a close, regular top, and taken all in all, it would be hard to select a finer species for ornamental planting. The fruit is about the size of the Seckel, and has some value for cooking and perry making. In addition to its value for ornamental planting, it will prove valuable as a stock on which to top-work the northern pears.

SAMBUCUS RACEMOSA.—This is an everywhere-present small tree in northern Europe. It seems as hardy as the Caragana, and when loaded with its crop of red berries it is even more beautiful than the Mountain ash. Even as far north and east as Kazan, it forms a nicely rounded tree from twelve to twenty feet in height. I do not know that this very desirable lawn tree has been introduced into the United States. We were told that it lost much in beauty when grown in the moister and milder climate of south Europe. It grows readily from seed, which is obtainable in quantity.

SAMBUCUS RACEMOSA SERRATIFOLIA.—This is a nursery-grafted form, which is in demand for northern planting. While not prettier in fruit, it is more ornamental in foliage than the former and gives variety to the lawn.

CARAGANA.—This is the universally diffused small tree of the great Russian steppes. The *aborescens* is everywhere seen in place of our snow fences, to arrest the drifting snow along the railroads, and on estates it is used for hedges, to form screens to hide undesirable views, to form arched walks from which the visitor may suddenly emerge to take in a desirable view, and for a hundred other uses in gardening effect. The wood is hard, compact, very tough, and is much used by the peasants for very many purposes requiring a strength equal to the best hickory, which they do not have. Fully a dozen varieties and species are found in the northern nurseries. All of them will prove hardy with us, and all graft readily on the *C. aborescens*. Some of them should be included in the desirable shrub list, but they can only be noted in this connection.

PRUNUS PADUS.—This is indigenous to the northern prairies. It forms a small, round-headed tree, not more than ten feet in height, much resembling our Choke cherry, but with thicker and

prettier foliage. It is obtainable at the eastern nurseries, but I am not sure that the steppe form has been introduced.

PRUNUS PADUS AUCUBIFOLIA.—This is a smaller tree than the above, with fine, large, variegated leaves. It is a popular large shrub were known.

PHELLODENDRON AMURENSE.—This is only mentioned to note the fact that as received from northern China this beautiful tree has not proven hardy with us. As secured by the Russian government from Siberia, it has proven hardy as far north as Dorpat. In time we will probably get the hardy race, and it will prove a decided acquisition.

SALISBURIA ADIANTIFOLIA.—The Maiden Hair tree from eastern China is doing well in some places in the Central District, as, with the *Phellodendron*, it has been found that hardier forms exist in southern Siberia. These have proven hardy at Dorpat, in Russia. When we secure this form, we may be sure of the hardiness of this tree in our worst test winters.

JUGLANS REGIA.—In connection with the mention of trees supposed to be half hardy, I wish to note the fact that the English walnut is exceedingly variable as found in different parts of Europe. As found in England and France, it came from Persia; as found as far north as Kiev and Saratov, Russia, it was introduced probably from some point in central Asia far north of Persia. At any rate the Russian form of this choice nut will grow in fully one-half of the State beyond reasonable doubt.

ALNUS GLUTINOSA.—This fine tree has often been noted as doing unexpectedly well in our State. Very many varieties are found in the northern nurseries, of which the following should be introduced by our nurserymen: *Imperialis*, *laciniata*, *oxycanthifolia*, *quercifolia*, and *rubronervia*.

ALNUS INCANA LACINIATA is a very pretty form, but not quite as desirable as the *laciniata* above quoted.

ÆSCULUS HIPPOCASTANUM.—As received from south Europe, the common Horse chestnut has not proven hardy in a large part of our State. As found on the Volga and at other points in Russia, there is little doubt as to its origin or its hardiness. They surely

did not come from this country or from any point in south Europe. Beyond all doubt the Volga varieties of the Horse chestnut and Pavia reached the early Russian gardens from central Asia and the mountains of Thibet. We should introduce these northern varieties as soon as possible.

CUT-LEAVED MULBERRY.—On account of ease of propagation from cuttings, the so-called Russian mulberry has been introduced very suddenly and extensively. Its home is in southern Russia. We first saw it at Veronesh and Orel, where the above noted forms of the Horse chestnut are perfectly hardy. The stories told about its value as a timber tree were laughed at by Russian foresters. It is used in Russia as it will be here, as a small-sized ornamental tree, of some value as a fruit producer. It is worthy of trial, but not of the fuss which is made over it by interested parties.

RHAMNUS.—The species of the buckthorn known as *alpina* and *frangula* are small trees at the north, much prized in private and public gardens. They are graceful and pretty in the growing season, and in the autumn they are loaded with showy fruit.

PROMISING SHRUBS FOR TRIAL.

As with trees, north Europe has its forms of most of the shrubs of central Europe, and in addition, it has a rich collection of steppe shrubs originally acquired, perhaps, from the anciently occupied, and more or less civilized, portions of central Asia and north-west China. Many of the latter thrive imperfectly in the moister air and milder climate of south Europe, but will no doubt prove at home on the steppes of this continent. From the long list of the botanic gardens of St. Petersburg and Moscow, I will only note at this time such as will be specially desirable for culture in the central and north part of the State.

CORNUS ALBA SIBIRICA.—This species bears the hottest sun and driest wind without injury to its fine glaucous foliage. Its brilliant red shoots are objects of interest throughout the year.

CORNUS STRICTA VARIEGATIS.—This has a long name for one of the prettiest variegated-leaved shrubs I have seen that will do well in a dry cold climate. As grown in Russia, it appears brighter than the variegated form of cornus here grown.

CORYLUS AVELLANA PURPUREA.—We have need for additions to our list of foliage plants for the lawn. As this purple-leaved filbert does well in central Russia it is more than probable that it will do well here.

HIPPOPHEA SIBERICA.—This hardy shrub is desirable on account of its silvery foliage, which is even more showy than that of our neglected Buffalo berry.

PANAX SESSILIFLORUM.—This is a recent acquisition from the valley of the Amur, in Siberia. It is peculiar in bush, and decidedly beautiful in flower. It is hardy at Riga, Dorpat, Moscow and Kazan.

POTENTILLA DAHURICA.—A shrubby form, with yellow flowers, and two or three species from the Amur, with white flowers, are well worth introducing.

RIBES PALMATUM.—A northern form of the currant with very large palmate leaves, decidedly unique and interesting.

RIBES ALPINA.—This is grown as an ornamental and fruiting shrub in central Russia. Some of the Asiatic forms have black and some red fruit, which is as large as that of the Red Dutch currant and nearly sweet.

AMYGDALIS.—The species, *Sibirica*, *campestris*, and *Georgica* are all well worthy of culture in a hardy shrub collection. They are small shrubs with shining or silvery leaves, flowering profusely in early spring.

CYTISUS.—Some of the northern species are pretty shrubs with white, purple and yellow flowers, on erect racemes. The most desirable for our climate are *Capitatus*, *Elongatus*, *Myricans*, *Ratisbonensis*, *Purpureus*, *Purpureus albus*, and *Purpureus atropurpureus*. They are all readily grown from seeds kept dry in the pods for spring sowing.

GENISTA.—Several species and varieties of this small shrub are worthy of trial. *Genista pilosa plena*, flowers abundantly in June; *G. tinctoria* is hardy even at Moscow; the double flowering yellow of Germany, we did not see north, but it will no doubt prove hardy with us.

LONICERA ORIENTALIS.—A hardy fine shrub, with large black fruit.

LONICERA CERULEA.—Much like the above, but with large dark blue berries, covered with a rich bloom.

LONICERA LUPRECTIANA.—This has peculiar thick plicated leaves and is ornamental through the season.

LONICERA ALPIGENA.—This has the largest and finest leaves of the family, and the red berries are as large as Morello cherries.

LONICERA HISPIDA.—A new species from Turkestan. It has very narrow leaves, and bears fine crops of showy white flowers.

LONICERA HYLOSTEUM MOLIS.—An upright form of the Chinese honeysuckle, which is very hardy and ornamental.

LONICERA KAMSCHATKA.—A large berried species, popular in all the parks of northern Europe.

SPIRÆA.—We have introduced very few hardy spiræas at the West, and the few fine ones we have tested are not yet common in our nurseries. Yet, with the hope that we will soon have a specialist in this desirable line of nursery work, I will note a few fine species of the spiræa for the central and north part of the State.

SPIRÆA OPPULIFOLIA.—While no better than our native species, it is a special favorite in all parts of Europe. It should be better known with us.

SPIRÆA DOUGLASI.—We have a fine spiræa under this name in the eastern nurseries, but the Russian form seems an improvement in plant and in the length and perfection of its purple flower spike.

SPIRÆA CANA.—This has fine graceful foliage much like our Thunbergia. It flowers freely in June and July at the north.

SPIRÆA NOBLEANA.—This is a fine hardy species with a profusion of scarlet flowers in July at the north.

SPIRÆA LAVIEGATA.—The only spiræa, it is said, which is strictly dioecious. The leaves are very large and the whole expression of the plant peculiar: very hardy.

SPIRÆA ALBA.—In the northern steppe gardens this species attracts the attention of all visitors.

SPIRÆA BELLA.—Hardy, fine foliage, and a profusion of fine, white flowers.

SPIRÆA CHAMÆDRIFOLIA.—A steppe species, improved probably by crossing. It is popular as an ornamental hedge plant in the north, and even as far south as Austria. It bears pruning, and in June and July it is literally a wall of pure white flowers. It grows readily from cuttings. Of the spiræas, only the specially hardy are noted, as for milder parts of the State we already have a good collection.

ROSA RUGOSA.—We have had much recent talk about this beautiful shrub, with the assertion that it came to us from China. It is more probably indigenous to the section west of the Altai range, as various forms of it are found in all parts of Russia we visited. A double flowering form is popular as far north and east as Kazan and Simbirsk. It should be disseminated in our State.

COTONEASTER.—The English and French varieties of this shrub are not hardy enough for our use. At the north are found many varieties—*Acutifolia* and *laxiflora* are the ones most extensively propagated at Petersburg and Moscow.

LILACS.—The northern steppes seem the home of the large leaved lilacs of the *Josikæa* race. In the large cities of central Russia, trees fifteen or more feet in height, with fine rounded tops, are everywhere common in public and private places. Of the beautiful varieties, little known with us, the following are specially worthy of introduction: *Azurea plena*, *Charlemagne*, *Karszubiana*, *Madame Briot*, *Madame Moser*, *Massart* and *De Rohan*. All of these are of hybrid origin. Of the *syringa vulgaris* race, fifteen marked varieties are widely grown. Of these, the *double red* is, perhaps, the most desirable.

CLEMATIS.—It may be worthy of note that the race of clematis proving hardiest on the steppes is *viticella*, with its varieties, *alba*, *rubra*, and *venosa*.

VIBURNUM.—Except the snowball and High-bush cranberry, we have no species of this numerous northern family under cultivation in the State. The following should be introduced: *Ainifolium*, *dahuricum*, *dentatum*, *lantanooides*, *macrophyllum*, *lantana flore pleno*, *lantana marginatum*, *Lantana minor*, *Prunifolium*, *pygmaem*, and *pyrifolium*.

ELEAGNUS AUGUSTIFOLIA.—This is supposed to be a native of south Europe, but it is a common large shrub as far north as Veronesh in central Russia, where it is as hardy as the Cut-leaved mulberry. The fine oval leaves are covered on both sides with glistening silvery scales. The abundant yellow flowers are followed by red berries, used for cooking. *Eleagnus fusca* and *E. macrophylla* are northern forms not seen at the south even in Europe. They are also fine ornamental species.

LIGUSTRUM FOLIOSUM.—The common English privet, we have not found hardy in our State. The northern species named is equally beautiful, and stands the dry summers and cold winters at Veronesh, Russia. It is more than probable it will do good service as a border plant with us.

PHILADELPHUS.—Of the many fine varieties introduced recently, the *Ledabourii* and *Zeherii* are the hardiest and finest seen on the northern steppes.

Without at this time enlarging a list that may seem already too long, I will add that our enterprising nurserymen can introduce and propagate most of the hardy trees and shrubs of Europe about as readily and cheaply as we can grow our native species and varieties. The gathering of seeds there is a commercial business. To illustrate, we have grown the Norway spruce and Scotch pine in quantity, mainly because the seeds could be obtained in quantity cheaply, while the White spruce, and Menzies' spruce, though equally (and even more) valuable, have been neglected. To those who complain of the recommendation of so many foreign products, permit me to repeat that many parts of Europe have a more trying climate than ours, yet they have been well supplied with economic plants hundreds of years before America was discovered.

HASTY NOTES ON TREES AND SHRUBS OF NORTHERN EUROPE AND ASIA.

BY CHARLES GIBB, ABBOTSFORD, QUE.

The experience of the Russian Horticulturists is just like our own. They have searched Central and Western Europe for new species, and have found among the many tried a few hardy and valuable. They have searched for new species on this Continent, and in some instances, like ourselves, have received the Southern forms of hardy species. Have you the Ash-leaved Maple? I ask Dr. Regel, the Director of the Botanic Gardens at St. Petersburg. Yes, but it is not hardy here. It is the only street tree in Winnipeg, I replied. Then I have some Southern form, he said. Yes, such is his experience and ours, and such must continue to be our disappointing experience until we establish direct communication with our like climates in the old world. The Russian Botanists had tried to find us years ago. They had endeavored to get into correspondence with the Botanists of the colder parts of Canada through their Consul at New York. They failed in this, but turned their attention to the cold climates eastward to the Pacific.

In the Imperial Botanic Gardens at St. Petersburg, we find the flora of the cold inter-continental climates of Eastern Russia, Siberia, Northern Turkestan, Soongaria, Mongolia, Mantchuria, and Amur, our own like climates in the Old World.

Europe may well be proud of her Botanic Gardens. The large outlay of the European Governments seems to have been money well invested. Botany in its relation to Agriculture, Horticulture and Forestry is a science deemed too valuable to be suffered to remain untaught. Russia is in no way behind in this matter. At St. Petersburg what cannot be grown out of doors must be grown within, thence they have there the largest number

of species under glass in the world. Not only in the larger cities, Moscow, Warsaw and Kiev, but in the smaller towns like Kazan, Voronesh, Orel and Penza (the last not visited by us), we find Botanic Gardens such as we might feel proud to own.

A generation or two ago, when Loudon and Lindley were at work in England, the Royal Horticultural Society imported from all parts of the world the plants likely to be useful or ornamental in England. They sent agents to China. Robert Fortune, however, spent much of his time at Canton, almost in the tropics. He was not in search of plants suited to the climate of Quebec, and yet some of our best hardy shrubs were brought to light at that time. This was probably the age of greatest Horticultural interchange the mild temperate regions have ever seen, and upon it is largely based their present advanced horticulture; and yet this work has been only of minor use to us.

In the tropics, and in the sub-tropical climates, the British Colonies have taken the lead in this matter of Botanic Gardens: wherever there is a Colony of any size there almost always is a Botanic Garden. Ceylon, India, (several), Singapore, Hong Kong, Queensland, Victoria, South Australia, New Zealand, Tasmania, Mauritius, Cape of Good Hope, and many others which I am not sure enough to note have their Botanic Gardens. Also in the West Indies, Jamaica, Trinidad and Demarara. The East and West Indies have interchanged for over 100 years! Read the reports of the Jamaica and other Botanic Gardens in the library of the Montreal Horticultural Society, and you will see that it is this Botanic interchange which has built up the present enormous export trade of the Tropics.

Now there are two points to which I wish to draw special attention.

I. We in the cold North have hardly begun to exchange with our like climates in the old world.

II. In Canada we have no Botanic Gardens.

As to exchange with our like climates, that will begin next fall. As to Botanic Gardens we must speak less hopefully. Our Horticultural Societies have done good

work. Our Universities do not neglect the science of Botany. We have some fair collections of trees, some Horticultural Gardens; but our Government has never seen the need of expenditure upon Botanic Gardens, as have the Governments of the European powers, and the Governments of other British Colonies. That this great Dominion of Canada, which stretches from the Atlantic to the Pacific, should be without a Botanic Garden, or a series of such gardens, is a fact without parallel in British Colonial history.

On the European Forestry plantations I must say a few words. The planted districts in France we did not pass through, but we obtained some idea of their method of work by visiting the Forest School at Nancy. That work one may get some idea of by reading their reports now in the Montreal Horticultural Society's library. In Germany we were continually passing extensive plantations of Scotch Pine (*Pinus silvestris*), bordered with Norway Spruce (*Abies excelsa*). The Germans are most economical in the use of wood, so that Pine so extensively planted must ere long become an article of export. But where are the hard woods needed for a thousand different purposes. Strange this exclusive planting of one species. So well are the forest plantations of Wurtemberg cared for, that the term "high culture" could with justice be applied to them. Evergreens are easily and cheaply propagated in the climate of Germany, and hence the method of planting adopted is that of close crowded planting, which of course, necessitates continued thinning.

In Russia the Government controls, in fact "works," a large proportion of the forests of the Empire. Of natural and planted forest the Government held in 1878 what is equal to 351,780,000 acres, exclusive of Siberia, besides about 51,590,000 acres of scrub at the far North. In 1878 they received from these forests an income of 10,648,000 roubles, and expended on new plantations, and working expenses, 6,400,000, leaving a profit for the year of 4,248,000 roubles, or about \$2,124,000. The extent of the plantations in Russia I cannot state. I know, however, that in three

of the Steppe. Governments in Southern Russia, 22,880 acres have been planted within the last 8 years. There are 762 forest stations under the charge of a like number of Foresters, and as we journeyed over the prairie regions of Russia, we were continually coming across some Forestry Station with its surrounding plantations. Like the Beet sugar factories they are scattered all over the otherwise treeless plains. Unlike the plantations in Germany the Russians have planted not only their native forms of the *Silvestris* Pine and Norway Spruce, but largely of *Pedunculata* Oak, Ash and Basswood, and somewhat of Larch, Birch and Poplar; also in the Southern Steppe regions, Yellow Locust, Maple, Elm, Honey Locust and others.

The Imperial Forestry Association was in session at Moscow at the time of our visit. Delegates from all parts of European Russia had assembled under the Presidency of Dr. Arnold, Director of the Agricultural College at Petrovskoe Rasumskoe, near Moscow. They meet biennially. We drove to the Government forests in coaches holding eight persons each, on side seats, back to back, driven by four stallions abreast. After luncheon I was called upon (my friend, Mr. Budd, was not present that day) to plant an oak, which is the joint property of the Canadian and United States Governments, and which may be worth several hundreds of dollars some centuries hence.

These Foresters are a fine set of men. It was one of this staff who, of his own accord, and at his own expense, accompanied us through the fruit-growing peasant villages of Kazan, sharing our discomforts and sleeping upon a bundle of hay when necessary.

As to the climates of the places I name, I must refer to my report on "Russian Fruits." Had I had more time I would have shown what these climates are, not from Meteorological tables, but from the flora in their Botanic Gardens. I would merely say that the mildness of Central Europe one may judge by the trees growing in the well-sheltered Botanic Gardens at Warsaw. Here, in latitude $52\frac{1}{2}$, we find *Sophora Japonica* 10 or 12 inches in diameter of trunk, growing from an old stump which had grown to a diameter of $2\frac{1}{2}$ feet; *Juglans Regia* had grown up with two

trunks, each 22 inches across; Tulip Tree, large and low branched, measuring 3 feet across its stump at the ground; Ginkgo, of 8 inches diameter; Cornus mascula, 25 feet in height, and thirty feet across its extended branches. The Horse Chestnut grows luxuriantly, and attains very large size at Warsaw.

I must say that these trees could not be grown in open exposure near Warsaw, for such is the ameliorating influence of a large city that the shelter it affords is equal to a difference of more than 50 miles in latitude. Proscau in Silesia, on account of its elevation of 720 feet, its open exposure and cold soil, is a rather more severe test of hardiness than the sheltered city gardens of Warsaw. North and East of Warsaw the climate soon becomes severe.

These notes I have written as addenda to a somewhat lengthy article on "Ornamental Trees," written by me last year for the seventh report of the Montreal Horticultural Society, so that what I say is merely a jotting down of things not said then.

Also before writing this, I had read Prof. Budd's notes upon the same subject before they were sent to press for the Montreal Horticultural Society's report. I have therefore avoided as far as I could repeating what has been said by Mr. Budd.

ACER.—Maple.

A. CAMPESTRE.—In my paper on "Ornamental Trees," I spoke of this as a tree or shrub that would prove hardy, if only we obtained our seed from Northern stock. Its beauty in Central Park and other places had made me wish we had its Northern forms. In the Imperial Botanic Gardens at St. Petersburg, we find a fine specimen, 18 ft. in height, apparently quite hardy. Another in the Botanic Gardens at Orel, 30 ft.; this latter, however, not cork-barked. In the grounds of the Agricultural College at Petrovskoe Rasumovskoe, near Moscow, their stock did not prove hardy. It is a native tree North of Kursk, in Central Russia, and runs thence North-West into the Baltic provinces. Farther South it grows to larger size. In the Botanic Garden at Warsaw there is a tree 12 inches in diameter of trunk, and at least 45 feet high.

not cork-barked, and in the Vienna Botanic Garden, 20 inches in diameter of trunk, and 40 feet or more across its extended branches. This, too, is not cork-barked. A tree capable of standing drouth well. I am at a loss to know what name to give this tree. English cork-barked Maple will not do for a tree worthless to us if grown from English seed; a tree not always cork-barked. Let us procure seed of this pretty shrub maple—seed of northern growth. We need direct communication with the Botanic Gardens, and Nurserymen and Seedsman of our own like climates in Northern Europe.

A. NEGUNDO FOL. VARIEGATIS OR ARGENTUM.—This is a variety of our Ash-leaved Maple, with white edged foliage. It is very ornamental, and largely used, top-grafted in Central Europe. Farther North, grown as a low shrub with slight protection, otherwise not at all hardy in extreme climates.

A. PLATANOIDES. *Norway Maple*.—We did not find this tree grown in as large quantity in Russia as I had expected; nor did we even find specimens of it as large as our own sugar Maple. We find it as a street tree, and in gardens in all the Russian towns, but in limited quantity only. I noticed on the Volga, in the dry regions, that the trees growing there, trees looking just like the Platanoides of Western Europe, stood drouth remarkably well.

Var. DISSECTUM.—This pretty thing we found in severe climates, and in Vienna we saw a specimen 8 inches in diameter of trunk, with a dense, round head, nearly 30 feet in height, showing that it attains larger size than I had expected.

Var. FOL. DIGITALIS we saw only at the Pomological School at Proskau, in Eastern Prussia. A small tree with leaves still more cut than Dissecta.

Var. REITENBACHI a curious and a pretty tree. Leaves, dull brown in summer, and in spring, red. I do not remember seeing it North of Warsaw.

Var. SCHWEDLERII.—A Maple with young shoots bright red. Quite hardy at Riga says Mr. Wagner. I should not expect it to prove hardy farther north.

A. TARTARICUM. *Tartarian Maple*.—This tree is a native near Moscow, and may be seen in the Botanic Gardens and parks in the severest climates we visited. It is an "entire-leaved" Maple, grows into a large bush, and is decidedly ornamental. It is a pity that the trees of it for sale in the States are not to be relied upon for hardiness. We must get Northern stock.

Var. GINNALA (*segmentosum* of some catalogues.)—A very pretty shrub Maple from Amur, noted as quite hardy at St. Petersburg, though only fairly hardy at Riga. My Moscow notes do not mention it. Hardy enough for Montreal, I should expect.

ÆSCULUS AND PAVIA—Horse Chestnut.

As we wandered from place to place we found decided variety in foliage of this tree. Mr. Budd used to note the thickness of leaf of the trees in some districts, as likely to stand the dry air of the Iowa prairies. The best collection we saw was in the Botanic Garden at Munich. Here special attention had been given to making a large collection. Specimen trees at St. Petersburg, Moscow, and Volsk looked as if out of their latitude. One thing, however, we observed, and that is the hardness of the *Pavias* or smooth-fruited Horse Chestnuts, and these *Pavias*, we were told in several places, were European, not American.

ALNUS—Alder.

There are some beautiful shrubs among the Alder. *Imperialis* is said to be the least hardy, and yet I would expect it to thrive in a sheltered city garden in Montreal. *Incana laciniata* has a dull, sombre tint, very unusual; leaves deeply cut, and very ornamental. It seemed, and was said to be, quite hardy in the nurseries at Riga. *Incana pinnatifida* or *acuminata* in the Botanic Garden, St. Petersburg, is a large bush 25 feet in height, with a trunk 12 inches in diameter; foliage dull in color and deeply cut. From my notes it must be very like *Laciniata*. *A. glutinosa oxyacanthifolia* is well named, and, like those above, bears no

resemblance to an ordinary Alder. It is light and airy, and rather pretty, but sparse of foliage, and should be headed in to make it appear to good advantage.

AMELANCHIER—June-berry.

We found nothing of special value, but I must speak of kinds which have already found their way into the West, probably from Europe. A dwarf variety has been grown by a German in Greene, Co. Iowa, for the past 12 years. Mr. Budd who visited the plantation, says "that the plants were literally loaded with a dark, nearly black fruit of good size and excellent quality;" even the sprouts, not more than a foot in height, were bearing. The bushes when full grown were 2 to 3 feet in height, bore fruit the size of black currants, and all this time had been grown and marketed under the impression that they were Huckleberries. This variety was imported from Germany. Another colonist, near Daveport, Iowa, has had 4 acres of a somewhat similar berry, and has produced 50 to 60 bushels in a season from the bearing portion of his plantation. This has been over 20 years on trial, and its origin is not traceable.

Again Mr. Budd draws my attention to the *Amelanchier alpina*, received from Texas, and which is a native of the Andes of Mexico, and apparently quite hardy at Ames, Iowa. It grows a foot or more in height, and has been highly thought of in Texas, where it has been grown as a Huckleberry.

Another variety received the prize of, I believe, \$40 from the Mass. Hort. Soc.

I mention these because they are fruit that should be grown in our climate.

ARIA—White Beam Tree.

This is a medium-sized tree, allied to the Mountain Ash; somewhat like it in blossom, and in the fact that it bears clusters of fruit.

The largest collection we saw was in the grounds of Mr. Wagner at Riga, and of these, *Nivea*, specially struck me, on account of the snowy whiteness of the under side of the leaf. This tree would be specially beautiful in a windy situation. Of others, *Acerifolia* has a very long leaf very much indented, and, I suppose, lobed. *Corymbiflora*, like *laciniata*, an indented rather than a cut leaf. *Cretica*, leaf small, but white on under side. *Eliptica*, very broad leaf, white underneath. *Glabrata*, leaf glossy on upper surface, and quite unlike others. *Lantana*, leaf lanceolate, and white beneath. *Latifolia atroviridis*, leaf larger and broader. *A. lutescens*, of M. Simon-Louis, at Metz, is remarkable for the whiteness of the under, and even of upper, side of leaf.

ARMENICA—Apricot.

Let us add the Apricot to our list of hardy fruits as soon as possible.

Mr. Maximowitch, Curator of the Botanic Gardens at St. Petersburg, who has spent many years botanizing that vast country eastward to the Amur, says that in Soongaria, in Eastern Turkestan, at the eastern end of the Altai range, it is growing in quantity, and that there the boars, and the bears, and the natives, fight it out as to who is to have the fruit. The fruit is small, that is, about one inch in diameter, but sweet, and pretty good.

In the Southern parts of the Province of Mantchuria, there is, says Mr. Maximowitch, a variety of Apricot different from those in cultivation. They do not thrive well near the coast, but in sheltered situations inland they grow in great quantity. They are really good, and are sold in quantity in the Pekin market. Could we not get the pits of this Apricot expressed to us by our Consul at Pekin? Surely this might be done.

AZALEA.

A. mollis has a large salmon-colored flower, a variety brought by Mr. Maximowitch from high altitudes in Japan. It has proved quite hardy at St. Petersburg. I see that Ellwanger and Barry,

of Rochester, N. Y., speaks of the great beauty of *A. mollis*, but says it is only half hardy and needs protection. What difference in hardness there is in the offspring of plants of different elevations.

BERBERIS—Berberry.

These I have not made notes of. However the seedless Berberry is recommended as an acid little fruit—good for preserves. The Chinese sweet varieties, which are said to be dried like raisins by the Chinamen, I did not see.

BETULA—Birch.

The beauty of the Russian Birches is a matter of general remark by travellers. In general appearance they are not like our own, nor the Birches imported from Western Europe. The *Alba* of Linnæus, or *Pubescens* of Ehrhart, has a leaf in shape like our canoe birch, but smaller and velvety. Sometimes it is very aromatic. It is probably the fastest grower, and is suited to moist soils only, and is the best variety for the far North. The trunk is mostly white, and that almost to the ground. These notes were given to me by a Forester who had made a special study of the question. On the other hand the *Alba verrucosa* is a weeping or drooping tree, with triangular leaf, a leaf like our common White Birch, and when over 10 or 12 inches in diameter of trunk the bark becomes rough and covered with black clefts.

This latter, this weeping form, is the one I wish to draw special attention to. It is the Birch growing upon the dry soil of the Petrovskoe park near Moscow, that park which is the summer resort of the residents of Moscow. The most attractive feature of this park is its avenues, and groves of weeping Birch. Some of these groves seem to have sprung up as though planted irregularly at distances of from 6 to 9 feet apart, each way. Thus the one thing that presents itself is a vista of bright, translucent, white barked trunks. The effect is almost magical, and could not be

produced by plantations of our dull barked Birches. What an attraction to our Mount Royal park such a grove would be. It would become the haunt of our snow-shoe clubs by moon-light, in summer the resort of pic-nic parties and pleasure seekers. How beautiful our Montreal park could be made by the judicious planting of trees of varied form and foliage.

B. DAHURICA, we saw at St. Petersburg an oldish, slow-growing, rough barked tree. *Costata*, too, usually noted as from the Amur. Much like our canoe Birch in bark and leaf, but has a slow growing, stunted look.

CALYCANTHUS.

Some Northern forms, *C. Siberica*, seems quite hardy at the Botanic Gardens, St. Petersburg. Flowers whitish yellow.

CARAGANA.

The most widely popular of the Russian shrubs is unknown, I may say, in Canada. In Western Europe we scarcely notice the Caraganas, except in the Botanic Gardens. In central Europe they become much more generally planted; even in mild climates like Prague, we find them common in the city gardens. It is a plant capable of enduring great extremes of cold and drought; the best shrub for planting on the confines of the cold desert, and therefore widely popular in the cold, dry North.

On the Finland road, that suburb which is the resort of the townspeople of St. Petersburg during their short cool summers, the Caragana is the common hedge plant. It and the red berried Elder the commonest shrubs. In the tea gardens of the Petrovskoe park near Moscow, where the Russians met to enjoy their tea around their hissing samovars, the dividing screens are Caragana. At Moscow and Kazan, it and the Siberian thorn are the common hedge plants.

This arborescent Caragana is known also as the Siberian Pea tree and in France sometimes called acacia de Siberie. It is a shrub

usually from 8 to 15 feet in height, although at Saratof I saw it as much as 30 feet. It has a very small dark leaf, and may be trained to grow in tree form. There are many varieties, some catalogues offer 13 or 14 varieties. The most beautiful to my mind is *Pygmæa pendula*; top grafted, it forms a delicate pendulous head, very graceful and ornamental. I fear there is some confusion in the names given to these varieties. I have seen the names *gracilis*, *microphylla* and *horrida* given to what appeared to me to be this. *C. ferox* or *spinosa* is spiny, stiffer in growth, and has more foliage; it, too, may be top grafted. Of other kinds I would mention *C. altagana Dahurica*, a straggling bush with leaf smaller than *Arborescens*. *Frutescens*, a good shrubby little bush from the Altai Mountains and Turkestan. *C. jubata* is from Mongolia, and from the cold district of that coldest of all countries, Eastern Siberia. This, however, is positively ugly.

CORNUS—Dogwood.

One variety of the *Cornus* I wish to draw special attention to, the *Cornus alba fol. variegatis* or *C. stricta* of some catalogues. It is a low shrub with bright white margined leaves, very showy and attractive, and perfectly hardy. A very great favorite in the nurseries at Riga, a great favorite wherever known.

There is also a white margined variety of the *Cornus mascula*, very pretty indeed; hardy at Warsaw, but not hardy at Voronesh or Riga. The ordinary *Cornus mascula* is not to say hardy at Riga. At Warsaw, in the Botanic Gardens, we find a tree of it 18 inches in diameter of trunk and 25 feet high, and at least 30 feet across its extended branches.

Andrew S. Fuller in his "Fruit Culturist" recommended the introduction of the *Cornus mascula* as a fruit-bearing bush. At the nurseries of Simon-Louis at Metz, where they have six kinds, the *C. mascula macrocarpa* is considered the largest in size, and the best in flavor. This was corroborated at other places. It is worthy of trial at Toronto and southwards.

CORYLUS—Hazel.

On this I have nothing definite to say. At Vienna we saw a specimen of the *C. colurna* or Tree Hazel, 30 feet in height. Farther South in Turkey it grows to a height of 50 or 60 feet, but is not hardy in cold climates. At Reutlingen Mr. Lucas showed us the fruit of a number of varieties bearing large nuts of different shapes, but I cannot say if likely to prove hardy here. In the extreme climate of Kazan we saw lots of wild Hazel, but the fruit is small; no improvement upon our native species.

Nut culture has been tried at Riga, and Mr. Goegginger suggests that we should try the *Giant de Halle*.

COTONEASTER.

We saw many hardy varieties. In the garden of the Agricultural Academy at Petrovskoe, *multiflora*, *vulgaris* and *lucida* seemed all right. In the Moscow Botanic Garden we saw one variety bearing red berries, and another blue; both seemed quite hardy, so was *lucida*. *Acutifolia* grows to height of 6 feet, and seemed quite hardy at some points in Northern Russia. I saw many hardy forms, but did not take any trouble to look them up.

CRATÆGUS—Thorn.

The *Oxyacantha*, or Quick, is the common hedge plant of Central and Western Europe. On our way to Russia we passed thousands of miles of this hedge; along the railways, along the road-sides, often separating suburban properties. We began to lose sight of it on the way to Warsaw. However, it is quite hardy there and is grown a good deal, but we cease to find it as a hedge plant beyond Vilna. At Riga it is not hardy, and from thence Northward it is replaced by *Siberica*. On our return journey we find the *Oxyacantha* again at Kiev, large trees of it in the Botanic Gardens, such as one sees upon estates in England. The hardiness of this plant could no doubt be increased by getting seed from its North-Eastern limits of growth.

The *Siberica*, or rather *C. sanguinea* of Siberia, is a good hedge plant. Much like some of our own thorns, but I think of rather faster growth. Good hedges of it at Riga 10 feet high. In the College Gardens at Petrovskoe, Mr. Shroeder points it out as perfectly hardy, so too is *Crus-gali*. *Nigra* also is all right. *Mono-gama* has a pretty cut leaf, and is fairly hardy, not as hardy as the above.

CYTISUS—Laburnum.

Here again are some hardy forms although the same species from Scotland will not endure our cold winters.

In the Botanic Gardens at Munich we found *Alpinus* growing to a height of over 35 feet, with a dozen trunks from 5 to 12 inches in diameter.

In the severe climate of Orel, in Central Russia, we find a tree of *Alpinus* which seemed quite hardy. The Northern nurseries all grow *Cytisus*, and these hardy varieties are well worth looking up.

ELEAGNUS—Wild Olive.

This is a race of bright silvery-leaved trees and shrubs of great ornamental value.

In the grounds of the Pomological School at Proskau, we find a shrub three feet high, with gray, silvery leaves three inches long and an inch or more wide. We saw it again in the Botanic Garden at Moscow, apparently hardy. It was not named. This is very ornamental and should not be lost sight of.

E. angustifolia. In moderate climates this grows to a large size. At Warsaw we find a tree two feet in diameter of trunk and 30 feet high, old, and on its decline. In the cold climate of Orel we saw a tree 35 feet in height, but I do not remember it farther north. It has long narrow leaves, white on under side, bright and pretty. Of its blossom and fruit I cannot speak.

E. longipe, of Japan, we saw at Kew; a shrub six feet high, bearing large quantities of spotted red berries, like oblong cran-

berries. At Verrieres, in the garden of M. Henri de Vilmorin, we again see this plant bearing heavily; fruit red, a nice acid fully equal to cranberries, and as free from seed. It seems a very abundant bearer, and well worthy of introduction as a fruit-bearing plant—a plant likely to yield quite as much of a fruit as good and as salable as cranberry. The only question is its hardiness. It should be tried with us in sheltered corners, where the snow drifts would be likely to cover it. In many nurseries this is known as *E. edulis*.

FAGUS—Beech.

The European Beech is not as hardy as our native species. It will not thrive at St. Petersburg, whereas our own is found 50 miles north of the city of Quebec. I observed, however, that the cut-leaved beech (*F. syl. incisa*) is hardier than the purple-leaved, and may be tried in rather severe climates. There is a very fine specimen of the cut-leaved in good health on the grounds of Mr. Wagner at Riga.

FRAXINUS—Ash.

The Foresters in Russia prefer the American ash to their native species. So do the Forest Schools in Western Europe. The *excelsior*, however, grows to greater size; one in the Botanic Gardens at St. Petersburg rises from the ground with six trunks from 5 to 15 inches in diameter. The American is said at several different points to be the hardier. This seems strange, for at the Botanic Garden at Kazan we were told that *excelsior* was indigenous in that government. The variegated form of our native ash (*F. Am. aucubaefolia*) we find at Moscow and other places. The single leaved ash (*F. exc. monophylla*) has grown to the height of 20 feet in the Moscow Botanic Garden, and seems quite hardy, whereas little trees of mine at Abbotsford suffer. The weeping ash (*F. exc. pendula*) is fairly hardy at Riga. The young shoots are sometimes injured there. *F. juglandifolia sub-intermedia* may be

seen in the Botanic Garden, St. Petersburg; a tree 25 feet in height and apparently quite hardy. *F. Mantchurica*, a fine tree, quite hardy at St. Petersburg, and grows to a diameter of three feet in its native land.

GLYCYRRHIZA.

G. ECHINATA.—A shrub like a Bastard Indigo, bearing large balls of rough tufted seeds. A very curious shrub, which we saw in the Botanic Gardens at Kazan.

G. GLABRA is not so striking.

HIPPOPHAE.

The grey silky foliage of these shrubs makes them very attractive. Are they hardy? I asked Dr. Regel. "I received them from Central Europe and they proved tender; I then procured seed from Siberia, botanically the same, and they are quite hardy." Such was Dr. Regel's reply, the same old story, his experience and mine, as far as I may be said to have any.

The *Hippophae salicifolia*, which we saw at Proskau, was much like a Rosemary Willow, and lacking in that white lustre which others usually have. *Siberica* is more like the *argentea* of Proskau, bright and very ornamental.

LARIX—Larch and Tamarac.

In the Riga nurseries we first saw *Siberica* and *Europæa* growing side by side. *Siberica* much the faster grower in nursery, foliage slightly longer, more fringing, and clothing the branches better than on *Europæa*. This larch was from the Ural Mountains. Again at the Petrovskoe Academy there is a very fine avenue of *Siberica*, a quarter of a mile or half a mile long. The foliage very light in color; the outline much less sharply conic than other varieties. An avenue of even-sized trees about 30 feet in height. In the Botanic Gardens at St. Petersburg we see it in old age, a few old trees about 70 feet high. Alongside of it is

Dahurica, of equal size and age, but different in this way, that at a certain height *Dahurica* usually forms two or more trunks; it is just as ornamental, but on this account not equal as a timber tree. In the far North, on the border of the tundra, *Dahurica* is a small stunted tree. Many years ago the Duke of Athol had imported Larch seed from the forests to the South of Archangel. This proved inferior in growth and in quality of wood, and led us to suppose that there was no larch in the Russian forest equal to Europæa, which is that of Central Europe. The Duke of Athol's seed, too, may have been obtained from stunted specimens on the Northern limit of its growth.

The *L. Kæmpheri* of Japan, Mr. Wagner, of Riga, says is not hardy at Berlin.

MAGNOLIA.

Mr. Maximowitch tells me that the *Hypoleuca*, if the seed be procured from Hakodati, on the Island of Yezo, might be worth trying in rather severe climates. It becomes a large tree, and, I think, has a large blossom. The *M. Kobus* is less beautiful, but probably still hardier.

MORUS—Mulberry.

We made many inquiries about the Russian Mulberry but could hear nothing of it in the colder climates. At Voronesh, in the Botanic Gardens, we saw a variety in leaf much like it, though there not valued. In Odessa there are large Mulberry trees, we are told, and in the Botanic Garden in Vienna, we saw not only large trees of *Alba*, but a specimen of *Tartarica*, 14 inches in diameter of trunk and 25 feet high. The Russian Mulberry, however, as known in the States, is on extensive trial in the cold climate of Cottonwood County, Minnesota. It has been visited by Horticulturists, and we shall soon have opinions upon its probable value.

Mr. Maximowitch suggests that we should try the Mongolian Mulberry, if we can manage to get it.

PANAX.

P. SESSILIFLORUM.—A shrub or small tree from Amur, well worth introducing. There is a specimen in the Botanic Gardens, St. Petersburg, about 15 feet high, and Mr. Maximowitch tells us that it blossoms well there, but does not mature its fruit. It grows in Mantchuria, but not North of lat. 49°.

PHELLODENDRON.

Mr. Goegginger, of Riga, tells us that in the Botanic Garden at Dorpat, half way between Riga and St. Petersburg, there is a tree of this variety 8 to 12 inches in diameter of trunk, and 25 feet in height. Again, at Orel, in Central Russia, we find a young tree about 15 feet. Clearly hardier varieties than those now grown in United States. The tree I have at Abbottsford kills back every winter.

POPULUS—Poplar.

The poplar is our most valuable tree where quick shade is needed. Different species abound in varieties; some of the best we have not.

P. ALBA.—The silver poplar is a tree of very wide habitat; the varieties indigenous in cold, dry regions we have not tried. In the Botanic Garden at Kazan, there is a row of 11 trees, in all in the garden 20 trees, about 18 inches in diameter of trunk; trunk straight and tapering, the leaf larger than our varieties, and acerifolia only where making strong growth. The quality of the wood of the white poplar is well known, but the trouble is the difficulty of getting a straight piece from the Western European form. On dry soils the White poplar we have, becomes very small in leaf, and looks unhappy, while the varieties we find on the Volga, maintain a large acerifolia leaf and good growth on very dry soil, and stand severe drought better than any of the Siberian poplars, better than any other tree we find there except the wild Volga pear. Cuttings from Kazan and other points in Eastern

Russia should be obtained, for these straight-trunked, drought-resisting, white poplars are very important, both as timber and ornamental trees.

In the collection at Verrieres, near Paris, planted by the late M. de Vilmorin, two varieties maintain this straight trunk.

Of the *erect* forms of white poplar, that which we find in the nurseries under the name of *Bolleana*, and said to be from Tashkent and Samarcand, seems the same as that at Busy Institute introduced by Prof. Sargent, and described by me last year as a species from Turkestan; a deeply cut-leaved silver poplar, as erect when young as a Lombardy; a decided acquisition. I am told by those who have been at Astrachan, that the common white poplar along the Volga, from Tsaritsin to Astrachan, is upright like the Lombardy,

Such are the variations in poplar seedlings, that in dealing with them we must consider that we are dealing with approximations. The *P. alba* and the *P. alba nivea* in the different Botanic Gardens of Central Europe all differ somewhat.

At Kew there is a grand specimen of *alba pendula*, three feet in diameter of trunk; a lofty tree of fine weeping form. There is an *alba pendula* in the catalogues of Riga, and I think Metz, but I have not seen it.

P. MONILIFERA.—This is the most largely planted tree in Northern and Eastern France, the most common country roadside tree in Central Europe. Not only along the road-sides, but, especially in France, along all sorts of imaginary lines across the fields we find it in single rows, with side branches trimmed up and cut as they grow for faggots and even for sheep feeding. Loudon queried as to whether it was introduced from Canada or Virginia. At any rate Botanists seem to say it came from this continent. This favorite tree, with some variation in form, is our own native Cottonwood; universally planted in the North-Western States, valued in Europe, scarcely known and never planted, I may say, in this province. A most valuable, though an

over-looked tree. Its wonderfully rapid growth at Abbotsford has begun to attract notice there.

P. NIGRA.—At Warsaw some of the roads are lined with grand old trees of what is there known as the *Vistula poplar*. We saw large spreading trees 60 or 70 feet in height, with a leaf much like our Cottonwood, and with bark rough except on limbs less than 5 or 6 inches. In the Botanic Gardens at St. Petersburg are two immense trees, one nearly six feet in diameter, now in a state of decay, and said to have been planted by Peter the Great. However, at Riga and other places this tree is not a favorite on account of its tendency to decay or kill back in the tops of the branches, both on dry and moist soil, and as we get into severer climates trees of this variety are often very unsightly, and thus it is not a favorite as is *Monilifera*.

A very different tree is the *Nigra* of the Botanic Gardens at Munich. A tall tree of small diameter, not spreading, and with very small leaf. A good healthy tree, unlike others, and worthy of trial. According to the *Flora Rossica*, by Dr. Ledeborn, the *Populus Nigra* is a native of Lithuania, Moscow, Kazan, the Caspian desert, Southern Siberia, and the Altai. For some reason the Siberian *Balsamifera*s have been planted instead of it in Eastern and Middle Russia.

P. EUGENI.—This is a hybrid between *fastigiata* (or *Lombard poplar*) and *monilifera*; so we are told by Messrs. Simon-Louis at Metz, who have a very large collection of the poplars of Central Europe and who seem to have made them a special study. In the Botanic Garden at Nancy there is an immense tree with a straight trunk between five and six feet in diameter, growing to a great height, with branches somewhat pendulous. Certainly the poplar is a grand tree.

P. TREMULA.—Our own aspen is the poorest tree we have, so short lived. The Russian form grows to much larger size, and does not appear to be short lived. In Botanic Gardens at Munich there is a high, narrow, small leaved *Tremula*, much like the Munich *Nigra*. A good tree.

ASIATIC POPLARS.

Under this vague heading, for want of a better, I will group a race of poplars hardly known to us; trees better suited to dry, cold climates than those of the *monilifera* and *nigra* types, at least one would suppose so from the fact that they are the street and garden trees from Moskow to Kazan, and South to Saratof, and in middle Russia. They do well on dry soils, yet do not maintain anything like the same healthy foliage during extreme drouth as the Volga forms of the Silver poplar. Neither are they trees of great size, at least not in their native climates. They seem related to our *Balsamifera* or Balm of Gilead, yet have leaves not pubescent but smooth and whitish on the under side, and in some forms singularly narrow.

P. LAURIFOLIA.—This, Mr. Maximowitch tells me, is a medium sized tree, usually 30 or 40 feet in height, and one foot in diameter of trunk, as growing on the Altai Mountains. Mr. M. had seldom seen it larger. It is a common street tree in North-Eastern Russia. It is a fast grower, has narrow leaves curled very much on their edges, and has angulated branches. A specimen in the Botanic Gardens at St. Petersburg is nearly 50 feet in height, and I understood it to be but 26 years planted. It seems to be a faster grower than *Suavolens*.

P. SUAVOLENS is a native, says Mr. Maximowitch, of very cold districts in Eastern Siberia, also of Kamtschatka and the islands of the coast. It grows to a height of 50 or 60 feet, with a trunk two or three feet in diameter, and is a good street tree. Branches round.

P. SIBERICA is another variety; foliage slightly broader, and Mr. Wagner, of Riga, says it grows to be a good sized tree. This must be the *Siberica pyramidalis* of some catalogues, and is, I think, the tree we used so often to see planted in the gardens at the railway stations, and which looked at a distance very like a sweet cherry.

P. BALSAMIFERA in leaf in nursery is just like the above, but is said to grow into a tree of different form. We saw a specimen of it in the Botanic Garden at Kazan 50 feet in height and two-foot diameter.

P. SIBERICA SUAVOLENS.—A good sized spreading tree. Mr. Goegginger says like a *Tilia*. Said to grow larger than *S. pyramidalis*.

Of others, *Wobsti*, Mr. Shroder, at Moscow, says, is a large as well as a good tree, with broad leaf. It is said to be from Turkestan. *Petrovskoe*, Mr. Goegginger says, is a Turkestan variety, growing at Petrovskoe, also a broad leaved variety. *Nigra horizontalis*, said to be from Tashkent. *Simonii*, an Asiatic variety with red twigs and a close thin leaf the least like the *Balsameas*. *Effratia* or *diversifolia* from Turkestan is a curious variety of irregular foliage. So says Mr. Goegginger of Riga, who has the largest collection of these poplars which we saw. *Tristis* is a variety with dark concave, thick, glossy leaf, which sprang up by chance in the Botanic Garden at St. Petersburg.

These varieties are mostly variations of what Pallas called the Siberian balsamifera. They will not grow to as large size as our own Balsam of Gilead, which here is a lofty tree with a trunk three feet and even four feet in diameter, and which reaches a diameter of 6 to 10 feet on the upper Peace river in the North West. They are, however, so easy of introduction, so easily scattered, they differ so much in foliage and growth, that they must be looked upon as interesting and valuable introductions.

PRUNUS—Plum.

P. PADUS, AUCUBAEFOLIA.—*Variegated leaved bird cherry*. This and other varieties quite hardy in the north.

P. MAAKIA.—Hardy at St. Petersburg.

P. SPINOSA.—The dwarf form on the Volga, seldom grows over three feet. I have seen bushes 18 inches high loaded with bright blue little fruit. Very ornamental.

PYRUS—Apple and Pear.

Some very ornamental trees among the wild forms of the apple and pear.

P. ELEAGNIFOLIA.—A bright foliaged tree, nearly as white as *salicifolia*, leaf broader and growth more upright and regular. I do not know that it is a tree of northern habitat, still it is hardy at Proscau. We also saw a good specimen of it 8 or 10 in. in diameter of trunk at Warsaw.

P. SALICIFOLIA.—The most ornamental of the *Pyrus*; an irregular, eccentric growth, somewhat pendulous, and with branches intertwined in all sorts of ways. The leaf is very narrow, and as white as the *regalis* willow; a strikingly beautiful tree. It is a native of the Ural Mountains, and therefore should prove hardy.

P. USSURIENSIS.—The wild pear of the Ussuri in Mantchuria. I am not sure that I saw it. The tree is said to be quite ornamental, the fruit of fair size, but it does not soften even when cooked.

The wild pear of the Volga and of middle Russia, I must mention as the best tree I know of for a cold climate, for maintaining a dark, glossy leaf during extreme drouth.

QUERCUS—Oak.

Tender and unsatisfactory as are some of the English oaks, the *pedunculata* in Russia grows in climates quite as severe as the native oaks of this Province. The foresters tell me that *pedunculata* is indigenous in the Government of Moscow, also, I am told, in the Government of Kazan. From this latitude southward wherever the soil is suitable, this oak has been planted in vast quantity by the Government Forestry stations. Our red oak is a good, fast grower, but the wood is inferior. Our white oak is the very best of wood, but, I was going to say, it grows, but watch a white oak for a few years, and if you believe your eyes you will declare it does not. This Russian *pedunculata* combines good growth with a good quality of wood.

I find the *Q. r. fastigiata*, the upright oak, hardy as far north as Riga. *Q. Mongolica*, a variety with a very small indented leaf, is recommended to us for trial in our cold climate.

RHAMNUS.—Buckthorn.

R. ALPINUS.—A variety with an immense leaf, and quite ornamental. At Riga, Mr. Wagner says, hardy but sometimes slightly injured.

R. CATHARTICUS.—Hardy at St. Petersburg.

R. PALLASII.—A pretty shrub with very glossy foliage, six feet in height. It seems hardy in the Botanic Garden at Moscow.

RHODODENDRON.

The Rhododendrons extend from the Himalayas north, to the Altai, and East to Kamschatka, and are found in some cold regions. *R. Dahuricum* is an evergreen variety with purple blossom, quite hardy at St. Petersburg. It does well on limestone soil. *R. parvifolium*, a smaller and more compact shrub with a small blossom; grows well on peat or without it, and is very hardy far to the north.

RIBES—Currant.

R. Alpinum.—A fruit and an ornamental shrub. The fruit is of fair size, a rich carmine, quite sweet, but with a very slight bitter, yet nice and quite productive it would seem. It is from Siberia. Mr. Shroeder, at the College Gardens at Petrovskoe, seemed to value it highly. In Siberia, not only the currants, but some of the *Loniceras* bear fruit, which is gathered for the table, and yet these same varieties ripened in the climate of St. Petersburg are not eatable.

ROBINIA—Locust.

The pseudo-acasia, or *yellow locust*, next to the *monilifera* poplar, is the most common tree in northern and eastern France. We find it planted along the railroad cuttings and embankments to bind the earth. We find it a common tree in the streets and parks of Paris. We find it planted to cover waste tracts of land.

As we enter Germany we find it a most popular tree in their streets and city gardens.

According to Loudon it was introduced into Europe in 1601 or 1635, and the tree planted at the latter date in the Jardin des Plantes at Paris is still living. A still larger tree, however, is that in the public gardens at Warsaw. This locust has run into endless varieties. The great favorite in Central Europe is a top grafted, rounded variety, which rather, I think, must be the *umbraculifera* or globe acacia. Not quite hardy at Warsaw though grown there. Not likely to prove hardy here.

In Europe this tree does not seem affected by borers, nor does it have the same seedy look when old that it does here. Its wood is most durable and valuable at any age; its growth when young is rampant; it suckers very badly. At Abbotsford we have had no borers, and hence it promises to be the best fence-post and fence-rail tree we have.

ROGERSIA.

This I did not see, but Mr. Maximowitch speaks of it as a pretty shrub, which does well at St. Petersburg. The flower is small, but plentiful.

ROSA—Rose.

I wish to draw special attention to the *Rosa rugosa*, and especially its double form, *flore pleno*, as a shrub perfectly hardy at St. Petersburg and Moscow. In this respect it is pointed out to us as a shrub of unlimited hardiness. It has a pretty double flower, and is a decided acquisition. It is a native of Japan. The *R. villosa pomifera* is so named because it bears a fruit 2 inches in diameter, and which is good for preserves. It is fairly hardy at Riga. It should be planted where likely to be covered with snow. *R. rubrifolia* is a red foliaged shrub. The flower is not special, but I am glad to know that this plant, which I had admired at Busy Institute, is hardy in the North.

SALIX—Willow.

S. ALBA *var* *SPLENDENS*.—In the Botanic Garden at St. Petersburg there is a fine specimen of this bright silvery willow, a tree about 15 inches in diameter, and 35 feet high, without any dead wood about it ; a tree of great ornamental beauty in contrast with dark foliaged trees like *S. Canifolia*. Throughout Russia we find willows more or less of this shade of color. In France and Central Europe many willows have this bright silvery tint. We intended to try the *alba lucophylla* of Messrs. Simon-Louis, at Metz, until we found at St. Petersburg a variety whose hardiness was already tested for us.

S. ALBA of the Volga.—The first groves of this I saw were on low land on the bank of the Volga, some distance below Nijni Novgorod ; lofty trees with straight narrow trunks, growing quite close, and therefore without lower branches. The foliage is quite narrow and feathery, the branches pendulous. Single trees maintain the same straight trunk. At several points on the Volga I asked what variety it was, and was told *Salix alba*. It is also known as "vertla." How different is the *Salix alba* of Western Europe, the great screen, wind-break and snow-break tree of the prairie States. This Volga willow is not suited for these purposes, but is a straight growing timber tree of great height, with feathery foliage.

S. ACUTIFOLIA.—This is the favorite willow for planting to stay drifting sands. In Mantchuria, in the woods, it is a large tree with a trunk 4 feet in diameter, used by the natives for canoes. In cold open exposures it is a mere shrub. It is the best weeper among the willows in the Botanic Garden at St. Petersburg.

Of others, *S. Californica*, a small, broad leaved, very bright silvery little shrub, quite hardy at Proskau, quite hardy, top grafted even, with Mr. Hoser at Warsaw. *S. cuspidata* becomes a large handsome bush. It has a laurel leaf and yellow twigs, quite hardy at St. Petersburg. *S. fragilis* is, I believe, a widely scattered tree in North Europe and Asia. Large canoes are made of it in Amur. Rather ornamental and quite hardy.

SAMBUOUS—Elder.

An ornamental race of plants, most of which are adapted to cold climates.

S. NIGRA.—We find this as a small or even medium-sized tree in the milder parts of Europe. It has been grown at St. Petersburg, but is tender there. The *S. nigra incisa* which we saw at Prague and similar climates is a very dark, yet feathery cut-leaved shrub of great beauty. I think this is the *Nigra laciniata* of the nurseries at Riga, which is fairly hardy there.

S. RACEMOSA.—The *red berried Elder* is the favorite shrub in Russia; more widely planted than any other, except the Caragana; more common than the Mountain Ash, or any other tree bearing ornamental fruit. In the North it bears its clusters of bright red berries in profusion, and decorates the roadsides and gardens, where it is planted. The *S. racemosa seratifolia* is a beautiful cut-leaved variety of it; fairly hardy at Riga, nearly hardy at St. Petersburg. There is also a variety *Plumosa* much like it, and about as hardy at Riga.

SORBUS—Mountain Ash.

As we journeyed from Proskau to Riga, during the first week in August, the Mountain Ash everywhere were full of clusters of bright red berries. This eastern form is not as straight and smooth a grower as the ordinary forms from Western Europe, yet this seems to fruit more heavily, but here is the point, it colors its fruit a month earlier.

TAMARIX—Tamarisk.

This is a beautiful feathery shrub, unlike any other. I was always making enquiries to see if we could not find a really hardy species. The *T. tetandra* is a native of the Altai Mountains, yet needs shelter at St. Petersburg. *Dahurica* is very light in color, and very feathery. Mr. Goegginger, at Riga, finds it a little hardier than *Gallica* or *tetandra*. *Gallica* seems to differ much in hardiness. In the Botanic Garden at Moscow it is said to be seldom

covered. In Norway it grows wild in lat. 70° , about as far North as the sorbus and the trembling poplar.

We cannot grow the Tamarisk as a tree as in the gardens of the Tuilleries, in Paris, but as a shrub, cut back each Fall, grown in some corner where the snow is apt to cover it, there should be no trouble in the culture of this beautiful plant.

TILIA—Linden or Basswood.

The Linden is a very favorite street and park tree in central and northern Europe. It has long been a favorite, and hence we find avenues of grand patriarchal trees which have been the pride of generations. At Verrieres there is an avenue planted by the late M. de Vilmorin, trimmed inside in the form of a high narrow Gothic arch, with transept, a prolonged Westminster Abbey.

T. EUROPAEA.—The linden of western Europe is hardy in Montreal, but its leaf is so fine and thin that it is sensitive to drought, and even in England its foliage is apt to wilt in dry weather. It is a favorite street tree on the Massachusetts coast, yet should not be planted largely in drier regions.

T. EUROPAEA var. PARVIFOLIA.—As we proceed eastward this becomes the favorite, and finally, in middle and eastern Russia, the only Tilia. The first specimen we noticed was at Reutlingen, in Wurtemberg, a largish tree with leaf no larger than an English shilling. It was growing very slowly, the foliage is always larger. At Salzburg, in Austria, the grand old lindens, centuries old, trees 4 or 5 feet in diameter of trunk, were all parvifolias. At St. Petersburg the finest street trees are lindens, and I believe most of them parvifolias. Here the ordinary Europaea is known as the tilia of Holland. At Moscow parvifolia is represented in the Botanic Gardens by a tree with a straight trunk over four feet in diameter. In Kazan we are told that the trade in basswood bark from that region is all from this parvifolia variety. Russian foresters view the enormous consumption of basswood bark much as thinking men do here our export hemlock bark

trade, and consider it a destructive industry. Soon some other material will have to be found for peasants' shoes, rope and matting.

Of other varieties, *Nigra*, which we saw in the Munich Botanic Gardens, struck me as being a good tree, with dark, glossy leaf. The *vitifolia*, of the American nurseries, has a good leaf, but I did not see it in Europe. So has *dasystyla*. *Grandifolia* and a host of others have foliage too thin for our dry air. *Begoniaefolia* is not variegated enough to be ornamental, not in dry weather. *Aspenifolia* is a great curiosity, leaves torn and slashed irregularly, folded and indented, with scarcely two leaves alike; quite hardy at Proskau; fairly hardy at Riga. This is sometimes noted as *dissecta*.

Of the *white leaved* lindens, the *American*, which I have noted as a native tree as far north as the Hennepin Islands in Minnesota, is spoken of at Riga as the hardiest tree, and the largest tree. I believe it is rather erect in growth. The *Hungarian*, known there as *pannonica* (I suppose the *tomentosa* of Messrs. Simon-Louis) is not as hardy, not as erect in growth, more bright in color, more ornamental. Further south, at Vienna, in the Botanic Gardens, we find a variety marked *heterophylla*, of Ohio and Mississippi, 12 inches in diameter, semi-upright, more bright and white in foliage than the *T. Argentea* of Hungary alongside. The white leaved European lindens we did not see in the very severe climates. The *alba* of Hungary has not proved hardy with me at Abbotsford, still less so the *alba pendula* which winter kills at Riga. So we had better try the northern forms of the American white lindens.

ULMUS—Elm.

In Europe they have overlooked the grandest of all American trees, the white elm, a tree that thrives in climates even more severe than St. Petersburg and Moscow.

The *campestis* is not indigenous at St. Petersburg, as I had said, nor is it hardy there, but *Effusa* is. In the southern part of the Government of Moscow, both *effusa* and *montana* are found

wild, but the northern limit of *campestris* is yet further south. *Effusa* is a good and a hardy tree but I never saw one of large size. At Petrovskoe, Moscow, Mr. Shroeder showed us a fine specimen of *effusa pendula*, so my notes say, but I have forgotten it. *Montana*, or the so-called Scotch elm, is not so hardy there or at St. Petersburg. Some weeping forms of it of the Camperdown type, seemed quite hardy at Riga, and were very graceful and ornamental. Their *pendula* should rather be named *horizontalis*. They have a fine specimen in one of their public gardens, eight inches or more in diameter of trunk. Another is quite pendulous. We are much in need of a tree of this kind a little hardier than *camperdown*. *U. montana exoniensis* is very erect in growth, has large curled leaves clinging around the stem—both odd and ornamental. *U. m. Damierii* is much like it, but said by Mr. Wagner to be less hardy. *Adantifolia* is like the *urticaefolia* of the American nurseries, but even more crinkled, and its recurved serrations are very curious. The *U. suberosa* (?) of Turkestan, is a small leaved variety, not hardy at Moscow.

Under the name of *Siberica* are several varieties unlike one another, and quite unlike that described by me last year.

Notes on Evergreens, I regret I am unable now to prepare.

In conclusion, I would say that I have written these notes when pressed with other work, but felt it was necessary that they may appear at once, that whatever is of value to us, should be imported this coming autumn; for orders of plants from points North and East of Warsaw must be shipped in the fall.

Seeds can be sent from or to Russia in bags under 8 oz. Scions I have sent safely to Warsaw by mail; and scions sent by mail from Riga arrived in fair condition. Letters to Central and Eastern Russia (Moscow excepted) should be addressed in Russian.

As an amateur, I cannot continue to give up to this work the time I have given in the past. My part has been an endeavour to show our Governments and our Horticultural Societies what may, what should be done.

Let us carefully watch the work now being carried on by Mr. Budd, at the State Agricultural College at Ames, Iowa—work of the highest value to the cold climates of Canada; that work which made our trip to Russia a necessity, that is, a necessity to fair progress; a trip which enabled me in part to see with his eyes, and give you in some degree the results of his study and observations.

Let us then follow out this scheme of interchange with our corresponding climates in the old world. The work has some difficulties. However, as we have the North-Western States and the Russians as our allies, the difficulties may be overcome to one great and mutual good.



OUR FINE FRUITS.

BY H. GOEGGINGER, RIGA, RUSSIA.

Among the rich assortment of fine apples which we cultivate in the Baltic Provinces, there are, unfortunately, only comparatively few kinds which can be called winter fruits.

The Reinettes, which in Western Europe belong to the very best winter fruits, have to hang on the tree until and during October, but as our climate does not permit this, these apples do not become ripe with us and fade in stock. In consequence they are tasteless, felty, sour, and have not that fine flavor which they have in countries with a long autumn.

The maturity of the fruit is generally analogical with the ripeness of the wood. The trees grow until late in the autumn, and therefore are sure to freeze in a somewhat severe winter. We in the North, therefore, can only use such fruits as become tree-ripe in good time, and can be taken from the tree in September, and at the same time those whose young shoots are then sufficiently turned into wood in order to stand a severe winter.

To this kind belongs, without doubt, the "Antonovka apple," which is often found and much liked in Russia, but which seems to be little known as yet in our Provinces.

Large lots of this variety go to the Russian cities and are sold there at high prices. It is seldom found on the markets of Riga, but realises from 40 to 50 per cent. more than the "Serinka."

HOME.—The Antonovka is spread over all North and Middle Russia, and grows to perfection in the provinces of Witebsk and Varoneesh.

LITERATURE.—Lucas describes it in the illustrated monthly journals, and believes it to be the same as the "Possart's Nali-vaia," which is described in the manual of pomology, but wrongly so—the Russian pomology by Regel gives a splendid drawing and a good description of it. It belongs to the "Calville" family.

SHAPE.—Large to very large, 3 inches wide, $3\frac{1}{2}$ inches high, sometimes still higher. The greatest circumference is nearer to the apex about which the fruit is much flattened, also near the calix it is pretty flat.

This fruit, like the "Calville," is distinctly ribbed, it also often shows bruises. Many specimens are very similar to the fine white winter Calville.

CALYX.—In a deep, wide basin provided with sharp furrows, green-brown when ripe, pointed and closed.

STEM.—Woody, long, in a deep wide cavity, acuminate ; short fruitwood.

SKIN.—Smooth, very shiny, taken from the tree green with white dots, later a splendid yellow—very aromatic when ripe.

FLESH.—At full ripeness white, coarse, juicy and of very spicy strong taste. With fruits picked too early there is a strong acid which disappears at complete stock-maturity, and gives way to a very agreeable fine acid taste.

The core is closed in and contains a few strongly developed seeds.

TIME OF MATURITY AND USE.—Not before December and may even be kept until April. A market fruit of the best kind and equally valuable for the kitchen. As a table fruit it is excelled by the finer foreign kinds, and by our red Serinka, but as it has, when ripe, only little competition, and the fruit having good flavor, it can be classed as a dessert fruit.

The tree has a healthy growth in the nursery. It is also decidedly fruitful here. The branches grow from the stem at a somewhat obtuse angle ; the leaves are dark green, hard, somewhat felty on the back ; the points of the sprouts are woolly. The tree grows to an enormous height in a good soil, with a well extended crown. It rarely fails to bear fruit annually, and the amount of fruit it produces in good years is enormous. In a sandy soil and in dry, light places it does not grow well. It stands our severe winter well, even in the higher latitudes, especially near St. Petersburg, also the continental climates with their sudden changes, agree well with it.

THE MAGISTRATE APPLE.

HOME.—This is a fruit which comes from Holstein, where it grows in some parts abundantly, and is much valued. Also in Germany it is much liked, and Oberdieck calls it rightly a noble fruit. At full maturity it equals in taste the noble "Gravensteiner," and although easily distinguished from it in shape, they are often confounded. The "Gravensteiner," which cannot stand our climate, is surpassed by the "Magistrate Apple," in size and fruitfulness.

In our North, this kind is found especially in Livonia and Estland, and also in the neighboring provinces, and is much valued on account of its superior qualities. Without losing its fine taste, the fruit is larger with us, and shows more vivid colors.

LITERATURE AND SYNONYM.—This apple has been described by the most celebrated German Pomologists, and has also been mentioned prominently in the Manual of Pomology.

Synonyms are the "Livlandische Gravensteiner," the "Wine-apple," the "Herbststrifling," and, perhaps, also, wrongly, the "Striped Rambour" and the "Titovka."

SHAPE.—It is often somewhat high-looking and conical. About 3 to 4 inches wide, and $2\frac{1}{2}$ to $3\frac{1}{2}$ inches high. The greatest circumference near the apex.

CALYX.—Pointed, half open to closed, is situated sometimes in a deep and wide basin, provided with ridges and furrows, from which start distinct ribs.

STEM.—Woody, $\frac{1}{2}$ to 1 inch long, in a tight flat cavity. A little russetty.

SKIN.—Shiny, and when taken from the tree yellow; when stockripe, a beautiful gold yellow with crimson stripes. After wet summers shaded between the stripes; in a wet and cold autumn insignificant and only a little red. Odor fine and spicy. The color is similar to the "Titovka," but the latter has a still more brilliant color.

FLESH.—Yellow, fine, soft, and of a refreshing spicy taste, which is much like the real "Gravensteiner."

CORE.—Large, with wide and flat chambers, sometimes closed and sometimes open.

MATURITY AND USE.—Can be picked early, but keeps better if taken from the tree in the middle of September. It matures on the tree the end of September, and keeps, if well taken care of, until December. The fruit is liked in the market, and is often seen in Riga. It commands the same prices as "Serinka," but as this apple is more productive, grows quicker and bears a larger fruit, it is more advantageous than the "Serinka." In the kitchen it can be used in a half ripe or ripe state, but only at full maturity shows its entire value as a table fruit.

TREE.—Grows healthy, bears early and amply; grows very large, and forms a flat, ball-like crown. It does not suffer from our severe climate, and grows in a soil which needs not be very rich. It bears very regularly, and only stops bearing every 4 or 5 years. In the nursery it also grows quickly. The summer shoots are very woolly, and in color are olive green with brown ground. One can recommend it to be planted in large quantities.

THE SUMMER EGG PEAR.

HOME.—This is a German fruit, which is supposed to come from the "Wetteren," and the neighborhood of Frankfort, but has spread, in consequence of its superiority, nearly all over Germany.

It has been cultivated for a long time in many parts in the Baltic Provinces, and is highly valued. It is only found in Russia, however, in such places as import their trees from the nurseries in the Baltic Provinces.

LITERATURE AND SYNONYMES.—It is described in the Manual of Pomology, by Jahn, as "Sommereierbirne." Mayer calls it "Colmar d'été," "Strassbourg Pear," and "Wurzburg Sommercitronenbirne." In Wurtemberg it is called "Saurussel," and in the Wetteren, Frankfort and Alsace, "Best Pear."

In the Baltic Provinces it is known as "Bausker Butterpear," and by other names. The German and French illustrations are suitable to the fruits here. In the description, however, there are

a few differences, as, principally, that the leaf appears here woolly only in its youth, and gets smooth and shiny later on. It is a Muscatel Pear.

FORM.—Egg-shaped on the top and below somewhat smooth ; 2 inches wide, and $2\frac{1}{2}$ to 3 inches high.

CALYX.—Small ; half open.

STEM.—Woody ; 1 to $1\frac{1}{2}$ inches long, mostly bent a little, sometimes in small hollows.

SKIN.—Fine, delicate ; yellowish green at full maturity ; yellow with many gray dots. Now and then russetty, especially at the calyx and stem.

FLESH.—White ; very juicy ; melting, and has a strange sugar-like Muscatel taste, mixed with a fine acid. If grown in a meagre soil the flesh is somewhat firm.

CORE.—Narrow, with many seeds. Seeds black, and well developed.

MATURITY AND USE.—Middle of August until the beginning of September. It is a first-class table fruit, which can compare with the best French fruits. The fruit merchants are always anxious to obtain it, and it is in great demand.

It should be taken from the tree in the beginning of August, and can be shipped for a journey of about 14 days. The tree grows healthy and strong even in poor soil ; it is an early bearer, forms an oval crown and becomes a very large tree. It does not suffer from want of rain or from severe cold. It bears continually and heavily, and therefore yields good interest. In the nursery it grows quickly and forms soon a pretty head. The shoots are strong, light brown, somewhat grayish, and slightly punctuated.

Leaf tolerably large, in the beginning, woolly, later on brilliant, with faintly developed ribs.

Eyes on strong supports, pointed, arched, small.

It should be cultivated in quantities, as our large cities, St. Petersburg and Moscow, offer a large market for it, and at present the demand for Riga cannot be supplied.

Owing to delay in translation, we are unable to publish this report in full.

ON RUSSIAN APPLES IN WISCONSIN.

 BARABOO, March 11th, 1883.

TO MR. CHAS. GIBB :

DEAR SIR,—I fruited last season between 40 and 50 of the new Russian apples. I have on trial over 100 varieties, and all of them seem perfectly hardy. I have never seen a bud hurt by the Winter. Some of them have blighted, but none more than Alexander, and most of them are as free from blight as Duchess.

Of early apples the Transparents are of excellent quality, fully equal to the old Early Harvest, much fairer, and better for market. I find very little difference between Yellow and White Transparent, Charlottenhaler and Red Duck, either in tree or fruit, except that the fruit on Charlottenhaler is larger—fully as large as Duchess. They are all long in season for early apples. I consider them a great improvement, both in tree and fruit, on Tetofski, or any early apple tested in this climate. Following the Duchess in season are several apples, large, showy and of good quality. The trees seem to be very early and abundant bearers. Of these, Zolotorf, Turnipy Juicy, Green Streaked, Vasilis. Largest and Titus apple are well worthy of cultivation. Green Streaked is particularly fine, uniformly very large, brighter in color than Alexander, and of better quality. I think it the most showy of any apple I have ever grown. It probably takes its name from streaks of green inside the apple.

There seems to be several apples much like Duchess in appearance, later in ripening, and of better quality. One I fruited under the name of Summer Lowland. From its season in ripening it should have been called Autumn Lowland. The tree is very fine, and the fruit of excellent quality, a very pleasant sub-acid. Arabian is very much like Duchess, both in tree and fruit, so is Anisette and Glass Green apple.

Later in ripening comes the Hiberna, the tree is splendid, the fruit large and fair for cooking. Long Arcade is a beautiful late Fall apple of fine texture and quality, Lubsk Queen is a sub-acid of good quality, ripening in October. It has been reported as a sweet apple.

Longfield apple is one of the most promising of the new Russians. The tree is a large grower, and an early and abundant bearer. The fruit has kept from the 1st of March without any extra care. The fruit is *very fair*, averaging larger than Fameuse, and about as good in quality. As grown here it is the handsomest apple I have ever seen.

Following it in season is Red Queen and Lords apple. This last is quite large, resembles Blue Pearmain in color, and is covered with a bloom very similar. It is of fine texture, a clear and agreeable acid. The tree is very fine, I think fully as hardy as Duchess. The latest keeper is Little Seedling, size below medium; the tree is fine and the apple of good quality.

I have enumerated the more promising among those I have fruited; none of those designated on the catalogue as Winter have fruited yet. I hope to fruit them the coming season, and that they will prove a valuable addition to our list of Winter sorts.

We have just passed one of the hard Winters, the mercury reached a lower point than at any time since January, 1864. I have made an examination of the fruit trees, I find the Fameuse, Pewaukee and others of similar hardness, somewhat colored on the inner bark, while the new Russians are as clear and bright as Transcendant crab.

Yours, &c.,

A. G. TUTTLE.

ON SEEDS FROM CAPE OF GOOD HOPE.

QUEBEC, 9th April, 1883.

HENRY S. EVANS, Secretary-Treasurer,

Horticultural Society, Montreal :

DEAR SIR,—In accordance with your request to report on the Forest Seeds from the Cape of Good Hope you were kind enough to send me, my reply is they are entire failures, that is to say their vitality was lost previous to their coming into my hands. My experience with Forest Seeds is, so long as the usual conditions are observed, that is a cool, moist temperature, sufficiently low, say 40-100 (so that fungoids cannot grow), they may be easily preserved ; this result may be found every Spring in this climate, but when the seeds of trees are placed in a dry and hot atmosphere, their vitality rapidly passes away. I had no great faith in the Cape seeds when I first saw them, because they looked as if they had been too much dried. My plan to preserve the seeds of Forest trees is, collect in the Autumn in fine weather, dry the seeds thoroughly in bags placed on a verandah (that is exposed to the air), then take a box, sow a layer of sand, a layer of seeds, and so on until the box is full. I then place the box under a fir tree for shelter from too much snow or rain, and in the Spring sow the sand and seeds together, in a hot bed if the seeds are fine, or in the open ground, if they are large.

The danger with us is a late frost killing the seed just as it comes overground.

Your Obedient Servant,

W. RHODES.

THE PRINCIPLES OF SUCCESSFUL ORCHARDING IN THE PROVINCE OF QUEBEC.

BY R. W. SHEPPARD, JR., MONTREAL.

If success is to be expected in the cultivation of orchards in this severe climate of ours, much greater consideration must be given to the selection of more hardy varieties, than is generally the case when farmers set out trees.

The failure of a large percentage of the orchards of grafted trees that have been planted out within the last 25 years, must be attributed to the fatal mistake of setting out tender, or *only half* hardy varieties; of course there are other causes why orchards have failed, but that is the chief one in *this* Province, at least. A farmer who contemplates setting out an orchard ought first to consider what *varieties* he should plant. He is not planting corn to be cut down in the Autumn, *but trees*, which should live long after he himself has passed away—(a legacy to his children and grandchildren). Unfortunately, there are few nurserymen in this Province, and they, having only small nurseries, can only supply local demands, and in consequence the majority of farmers have been the prey of agents of large nurseries in the States or Western Canada, who, offering their surplus stock at *slaughter* prices, and adopting a plan of delivering the trees, *freight paid*, at the nearest railway station, thus putting the purchaser to little trouble and expense, have sold varieties totally unfit for this climate. We cannot grow, successfully, five per cent. of those varieties of apples which are the leading commercial kinds of the Ontario fruit growers. When I say *cannot*, I mean that the trees would not live long enough, under the most favorable circumstances to yield paying crops. I would not dream of setting out a thousand trees of the following varieties :

Northern Spy, Baldwin, Golden Russet, Rhode Island Greening, Ribston Pippin and Spitzenburgh ; yet these are the leading commercial kinds which the report of the Ontario Fruit Growers' Association for 1881, tells us are cultivated in that Province. The Golden Russet, perhaps, can be profitably grown, but yet it is not hardy enough to induce me to plant out a tenth of a thousand. A friend of mine in Mississquoi County informed me this Spring that he lost 60 trees of that variety last Winter.

Half-hardy varieties, Fameuse for example, from Ontario nurseries, and planted out in this Province, do not succeed as well as trees of the same variety, from a Quebec nursery. I have proved this fact to my own satisfaction, by trees in my experimental orchard. In 1876, I planted a row of Fameuse, received from Galt, Ont., and in the same orchard, only a few feet distant, a number of the same variety from Abbotsford, Que. What is the result ? To-day the Abbotsford trees are sound and healthy ; those from Galt nearly all, if not all, diseased and dying. Now the latter have had the same care and attention as the former and grown in the same soil. Why this marked difference ? Because the Galt trees, nursed in a milder climate, were induced to grow until late in the season, the Fall before they were sent to me. The young branches, no doubt, ripened their wood sufficiently to withstand the Winter in that part of Canada, but not in this. The mischief was done the first Winter here. The young branches are now main branches of these trees, and all are diseased and rotten, at their junction with the trunk, easily breaking off with the weight of fruit or in high winds.

The Hon. J. J. C. Abbott, whose orchard at St. Anne's is situated within a dozen miles of my own, has had much the same experience. His first trees were from Ontario and the West, and are dead or dying, never living long enough to bear paying crops ; but now he has a large and profitable orchard of Quebec nursery trees.

What varieties do I recommend ? Well, I have tried over 80 varieties of apples, but can recommend very few to grow for profit. The following, however, are the leading varieties :

Tetofsky, Duchess of Oldenburgh, Peach of Montreal, (for Summer.)

Alexander and St. Lawrence, (Fall.)

Winter St. Lawrence, Fameuse, Wealthy, (Early Winter.)

Canada Baldwin and Ben Davis, (Late Winter.)

Fameuse is undoubtedly the most profitable apple. It is such a heavy bearer, and the fruit of such quality, and so well known, (the favorite in the Montreal market), that it is always saleable; but the tree is not *quite* hardy enough. A large percentage of those planted out, however, with good care and cultivation, will live long enough to bear heavy crops for ten or a dozen years.

The *Wealthy* (a new apple from Minnesota) is, in my opinion, *quite hardy*. The best evidence of hardiness in a tree is when the buds at the ends of the branches (terminal buds they are called) start to grow in the Spring; it is a sign that the tree is hardy, and has ripened its wood to the very tips of the branches. I have never seen it otherwise in the "*Wealthy*." But the hardiness of the "*Wealthy*" was conclusively proved in my nursery at Como last Winter. It was, perhaps, (owing to the want of snow protection) one of the most severe Winters we have had for many years. Of 1,000 two-year-old *Wealthy* trees, not more than two per cent. was Winter killed. Whereas the 500 *Fameuse* in the next row, four feet distant, quite, if not more than fifty per cent. was completely *killed out*.

The "*Wealthy*" compares favorably with *Fameuse* in *size, color, flavor and productiveness*, and under like conditions, the fruit will keep a few weeks longer. I have about 700 *Fameuse* trees in my orchard; they look well and pay well, but I shall set out no more. I have 100 "*Wealthy*" in orchard; they look *better* and *healthier* and *will pay better*, because being more hardy trees, will live longer.

Winter St. Lawrence, a fine large apple that keeps as long as *Fameuse*, and is profitable. The tree is hardy.

Of the late keeping varieties, *Canada Baldwin* and *Ben Davis* have proved quite hardy and productive. The former is a beautiful red apple of fair flavor. "*Ben Davis*" is an apple of

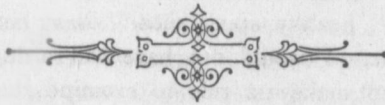
fair size, but rather poor quality. Both these varieties sell well in the Montreal markets. This season I sold my "Canada Baldwin" at \$4.50 per barrel.

In *planting* an orchard, bear in mind that trees of three years growth from the bud are the best. A small tree with all its roots intact, can easily be taken out of the nursery, and if transplanted *properly, must grow*. Do not plant the trees deeper than they stood in the nursery; dig large shallow holes. It is no advantage to dig deep holes, and to fill them up, (before setting trees) to the desired height, that only induces the roots to strike down into the poor cold sub-soil. Spread out the roots well, shovel in surface earth carefully; when the hole is nearly full, pour in a pail of water, which will carry the earth all around the roots, filling up all interstices.

After planting, *mulch* the surface of the earth around the tree, for three feet with straw, chips, or coarse manure, and *wash* your trees with a weak solution of potash and water, or soft soap and water every Spring. I generally have this work performed in the early part of June, when the insects are most active. The washing destroys borer eggs, bark lice, &c., and gives the bark of the trees a nice, fresh, healthy appearance. *Borers* have been a great annoyance to me. I would not have had a dozen trees at this time if we did not make it a rule to examine the trunks of the trees just below the surface of the ground, twice each season, June and October. After a little practice a man can detect Mr. Borer's presence very readily. My man takes a week to thoroughly examine 1,500 trees, and cut out the depredators neatly without injuring the tree.

I find the best fertilizers for an orchard, to be *wood ashes* and barn manure. I use a large quantity of ashes. But were I so situated as to be unable to procure this fertilizer, I would try phosphate, bone-dust and lime, as I am quite convinced that high cultivation is absolutely necessary to success in orcharding. The fourth or fifth year after the trees have been set out, I seed down to clover, and cut one crop each season, the second crop being allowed to lie down. But Mr. McColl, in Two Mountains

County, who sells over \$1,000 worth of apples from his orchard annually, cultivates his orchards like any other field, raising oats, barley, wheat, &c., without apparent injury to his trees, but he *also manures very heavily*. But, in my opinion, it matters little what crops we raise in the orchard as long as we keep up the vigor of the trees. The trees should make at least 12 to 18 inches of growth each season. A tree that makes little growth cannot be healthy, and when growth ceases, it dies.



REPORT OF THE JUDGES ON GARDENS.

MONTREAL, AUG. 12TH, 1882.

*To N. S. Whitney, Esq., President of the Montreal Horticultural Society
and Fruit Growers' Association for the Province of Quebec.*

SIR,

In compliance with the desire of your Directors, we have examined the gardens of the competitors for prizes offered by them, and herewith present our report. There were seven private and three commercial gardens entered for competition. All of the private gardens were remarkably clean and orderly, and bore evidence of skill and care in their management, the lawns especially were in splendid condition. To one garden, that of Andrew Allan, Esq., was adjudged the maximum number of points. The following is the order of the awards with the number of points adjudged to each, viz. :—

Private Gardens.

- | | | | | |
|----|--|----|----|------------|
| 1. | Jules Betrix, gardener to A. Allan, Esq., | - | - | 85 points. |
| 2. | Samuel Ward " A. Buntin, Esq., | - | - | 63 " |
| 3. | { Octave Dandurand, gardener to W. Notman, Esq., | 62 | " | |
| 4. | { " " Jesse Joseph, Esq., | 62 | " | |
| 5. | J. Robson, - " A. Mitchel, Esq., | 59 | " | |
| 6. | H. B. Drennan, - - - - - | 58 | " | |
| 7. | J. Landers, gardener to G. H. Ryland, Esq., | - | 57 | " |

Commercial Gardens.

- | | | | | |
|-----------------------------------|---|---|---|------------|
| 1. John Doyle, Sherbrooke Street, | - | - | - | 36 points. |
| 2. W. B. Davidson, Cote St. Paul, | - | - | - | 29 " |
| 3. Wm. Ross, Sherbrooke Street, | - | - | - | 21 " |

We regret that Mr. P. McKenna's garden was entered too late for competition as it would certainly have received first prize, and we recommend that the Directors give him a special prize with honorable mention. We would also recommend that in the future there be at least two classes of private gardens, say in first only those that had previously won a first prize.

(Signed), T. ATKINSON.

" ROBT. HAMILTON.

" JOSEPH JORDAN.



REPORT OF JUDGES ON GREENHOUSES AND WINDOW GARDENS.

The undersigned having been appointed members of a Committee of three, to examine and report upon the Greenhouses and Window Gardens entered to compete for the prizes offered by the Society in February, 1883, having carefully examined and compared, in company, the exhibits of the various competitors, have to report, as follows :—

As to greenhouses and conservatories, there were but four entries, namely, the houses of Messrs. Andrew Allan, Andrew Mackay, Mrs. J. Redpath and Mr. William Lunn. It is not easy to establish a comparison between a house like the first, where, in different compartments, are grown greenhouse plants, stove plants, and early fruits and vegetables, with other houses less complete and extended in plan ; but the Committee, after weighing these differences, and considering the rules laid down for their guidance in judging, have given, out of 30 possible points, 29 points to Mr. Allan's house, 26 to Mr. Mackay's, and 24 to Mrs. Redpath's, recommending these for the 1st, 2nd and 3rd prizes. The display of bloom and of fine foliage plants in both the first and the second is worthy of high commendation, as also that of early beans, lettuce and strawberries in the first. We note moreover that the remarkable show of bloom in the third, under disadvantages arising from the limited facilities of the house, reflects the highest credit on the gardener's management.

As regards Mr. Lunn's establishment, it should be remarked that the fact that it is largely devoted to growing plants for sale, prevents it from competing on equal terms with places kept only for private purposes. Yet considering the skill and judgment shown in its management, we recommend therefor, as a special prize, the Diploma of the Society. At the same time, we venture

to suggest, in consideration of the great and increasing importance of the industry, that those engaged in growing plants for market should, in future, be invited by the Society, to compete for prizes in a separate class.

As regards the Window Gardens, for which through the kindness of M. H. Gault, Esq., the Society has been enabled to offer four prizes, there were, in all, seven entries, to four of which were assigned as follows, out of 20 possible points :—

G. Lockhurst.	20 Points.	1st Prize.
Patrick Rodden.....	19 “	2nd “
Mrs. S. W. Johnson.....	18 “	3rd “
John Harper.....	17 “	4th “

It should be said that Mrs. Johnston's large and fine collection was deficient only in the quantity of bloom, and had it been in this respect, a little more advanced, would probably have contended with that of Mr. Lockhurst for the 1st prize.

The whole respectfully submitted.

(Signed), T. STERRY HUNT.
 “ JAMES MORGAN, JR.
 “ JAMES MCKENNA.

MONTREAL, March, 1, 1883.



FRUIT GROWERS' ASSOCIATION OF THE COUNTY OF SHEFFORD.

SECOND ANNUAL REPORT.

The beginning of a new year is a fit time to take a retrospective view of the year that has so recently been rolled up in the scroll of the past. This course of procedure might, with much propriety, be voluntarily pursued in all the affairs of public and private life ; but, it is rendered obligatory upon us as an Association, as the Council of Agriculture has wisely prescribed and enforces its observance.

As you are aware, our Association was organized in the year 1881, and in its earliest childhood was recognized by the Council of Agriculture, and awarded a grant of fifty dollars. In September 1881, we held, with official sanction, a joint exhibition with the Abbotsford Fruit Growers' Association, in the Town Hall, Granby, the details of which have been submitted to you in the report last year. Contrasting the number of entries in the year 1881, when united with Abbotsford, with the number of entries in 1882, when we stood alone, we think you will find unmistakable evidence of expansion and of a growing public interest. In 1881 the entries in the three departments, Fruits, Vegetables and Pot Plants and Flowers were respectively 199, 188, and 75, making a total of 462, whilst in 1882 the numbers in the three departments were respectively 159, 216 and 105, making a total of 480.

Our entries in fruit last year were less than in the year preceding, but you must remember that we had a year exceptionally bad for fruit culture, and most disastrous to the orchardist. Notwithstanding this untoward circumstance, we had upon the tables 337 plates of apples, including crabs and hybrids, and in the two sections of single plates—"Duchess" and "Alexander" we had

42 entries, making an exhibit of these two varieties, seldom if ever equalled, and, we believe, never excelled in this Province. The "St. Lawrence" was poorly represented, no competition in this section having been deemed worthy of a first prize. The "Fameuse" were, taking the season into account, very fair, yet they lacked coloring and were inferior to those shown in the year previous. Competitors in "Canada Baldwins" were not numerous, and we are of opinion, from information gathered from experienced fruit growers, that these trees are not to be planted out indiscriminately, but that other and more desirable varieties can, in many instances, be profitably substituted. Mr. Charles Gibb, no mean authority, writes of it:—"No bright red, fine qualified, good sized, long keeper, can anything like approach it in general satisfactoriness on the heavyish soils of North Shefford. On the warm, quick soil of Abbotsford, the early rising of the sap tends to sunscald and premature decay, yet we must still plant it, as we have no other to take its place, while on heavier soils we expect it will become widely popular." This was Mr. Gibb's opinion in 1878 when he wrote: "we must still plant it, as we have no other to take its place." Probably if he were writing at the present time, his views on this particular point would be somewhat modified. We do not by any means wish that this most desirable fruit should be excluded from our orchards, but we merely are anxious to call the attention of fruit growers to the fact, now universally admitted, that it is not suited to our light, gravelly soils, but that it is a thrifty and productive tree on all soils of the opposite character. But to proceed with the details of our exhibition. We had also upon our tables some good specimens of the "Wealthy," that were fruited in the orchard of Mr. M. L. Clow, in the township of Granby, in this county, and as many of our farmers in each recurring Spring, are planting out young trees, we would call their attention to the character given to this particular variety by two of our leading and most experienced fruit growers, whose opinions are entitled to our consideration. Dr. Hoskins, who owns an extensive fruit farm on the shores of Lake Memphremagog, and Mr. R. W. Shepherd, Jr., of Como, describe it fully in

the fifth Report of the Montreal Horticultural Society, to which our members can have access on application to our Secretary. When any member of our Association is about to plant a new orchard, or to replenish an old one, we would advise him to obtain his trees from some of our local nurserymen, who will act squarely by him, and furnish him with the most profitable and hardy varieties. Beware of tree peddlers, avoid them as you would the lightning-rod man, and the entire race of ravenous harpies who travel round the country, utterly reckless of any interest save their own,—yet in years gone by, the tree peddler has not been an unmixed evil; the existence of some orchards, at least, depending on his presence sometime in the past, and the persistence with which he plied his avocation. The township of Granby can furnish some notable examples of extortion—cases in which fifty crab trees have been fraudulently supplied instead of the varieties ordered, and we do not entertain a doubt but that other townships throughout the county can do likewise. There has been no single cause so obstructive to apple culture in this county as the failure which has attended the efforts of some who have invested their time, labor and capital in the project. Young trees have been planted in soil ill adapted to their growth, where they were utterly without any wind-break either natural or artificial. Once planted, and even then probably poorly planted, stuck into the earth after the manner of a fence post, they were allowed to take care of themselves, and, to cap the climax, it was no unusual sight to see the cattle regaling themselves on the struggling, but defenceless, saplings. To avert such deplorable results as we have endeavored feebly to describe, our Directors would urgently advise the holding of meetings of the members of our Association, at such times and places as might be agreed upon, when there would be an opportunity for free discussion of all subjects appertaining to Horticulture, for the reading of essays, for the recital of each other's experience, and for the communication of all kindred subjects of interest. We would cordially invite our young people to participate in our deliberations, and by following up faithfully, and with an honest desire both to receive and impart instruction, we

doubt not, but that in a very short time there would be an impetus and an interest imparted to Horticulture hitherto unknown in this county. After careful enquiry from many reliable sources, our Directors are of opinion that the five varieties, the best for profit, placed in the order of merit, are the—Fameuse, Wealthy, Duchess, Summer St. Lawrence and Alexander. We might add a sixth—the Canada Baldwin—planted in soil suitable to its growth; but whether it should remain sixth or occupy the place of one of the preceding five, we are not, as yet, fully able to determine. We would be strongly in favor of propagating some of the choicest and best varieties of seedlings. There are many orchards not merely in our own county but also in those adjacent, in which very old seedling trees are to be found—trees that, for many years, “have braved the battle and the breeze”—the battle of parasitical enemies and the breeze of our inclement winters, and still continue to yield, year after year, good crops of large apples, excellent in quality. These selected seedlings we think it would be most desirable to propagate. We might here mention a fact to which allusion has been made in our first published report, although yet many of our members are unacquainted with it, viz.: That Shefford furnished Abbotsford with its first grafted fruit trees, and even to this day the relics of an old orchard on the western slope of Shefford Mountain, remains a monument to the enterprise and fruit-growing taste of John Spalding, who first planted a grafted tree in our county, probably the first ever planted in the Eastern Townships.

THE GRAPE EXHIBIT.

We will now briefly allude to the grape exhibit, which was much inferior to that of 1881, yet we had 56 plates on view, Mr. W. Mead Pattison, Clarenceville, taking First Prize on collections. There is no more conversant adept in grape culture in this Province than Mr. Pattison, and to his experience and courtesy we are indebted for much of the following information:—“In black grapes,” he writes, “fully tested, I would name in their order of ripening, as adapted to general culture in our Province—Champion, Worden and Barry; in reds—Massassoit, Brighton, Delaware and

Salem. In whites it is more difficult to determine. Lady is quite early and good, but starts slowly, and takes at least four or five years from planting to bring it to a respectable bearing condition. The foliage is very healthy, though the vine has a rambling disposition and short-jointed. The fruit has a tendency to crack. Eva from Martha is earlier than its parent—a beautiful deep green, and a satisfactory grape, so far. Faith, a new grape, a seedling of Elvira, will be most likely a favorite white with us. It has remarkably vigorous foliage, resists first Fall frosts, and its leaves remain green long after all others have fallen.” * * *

“White grapes sell so much higher than any other, I trust we may soon determine the highest excellence in the large array of new candidates for favor.” Mr. Pattison, writing of the mode of planting, says—“I prefer shallow setting—say six inches, and keep well mulched first year. Add loamy sand, as a mulch, afterwards a couple of inches. Home-raised vines, taken from the ground in spring, do better than those we buy from nurserymen, who winter vines in cellar.” We are not certain that there was a single specimen fully matured open-air grapes at our Show. Our Secretary received a communication from Messrs. Stone & Wellington, of the Fonthill Nurseries, Toronto, under date 8th Sept., 1882, in which they say—“Our grapes are all a month behind, the earliest varieties are hardly coloring yet, and we fear we shall have none to show this year, though we have sixty varieties fruiting.” We have to thank Messrs. A. J. Caywood & Son, Marlboro, N. Y., for some specimens of Duchess, Poughkeepsie Red and Ulster Prolific, the last being exhibited for the first time in this Province. We would confidently hope that next year our clusters of luscious grapes will present a more tempting and imposing display.

THE VEGETABLE DEPARTMENT.

Our vegetable department comprised 216 entries, distributed over 24 sections—from 19 to 42 inclusive, on the prize list. It would afford us unbounded satisfaction to report that the vegetables in each section were first-class and deserving of commendation. Unfortunately, however, this was not the case, the exhibits

in Sections 22, 23, 24, 25 and 26—Red Cabbage, Cauliflowers, Carrots, (stump rooted and long) and Celery—were not by any means up to the standard, and in several instances were altogether undeserving of any prize. The show of Musk and Water-melons was fair, taking into account the nature of the season. Section 36.—Collection of Potatoes—a plate of each variety named—was the point of attraction in this department. Here were nine competitors, showing in the aggregate 194 plates. The first prize was awarded to Mr. A. Van de Waters, St. Armand Centre, for 34 named varieties; the second to Dr. Greene, Granby, for 28; Mr. P. W. Taber, East Farnham, and Mr. E. Longley, Waterloo, being each respectively adjudged a third and fourth. Our Directors consider that they are within the limits of accuracy in saying that this was the best exhibit of this most valuable esculent ever brought together in the Province. The Early Rose has had its day, it is fast “running out,” as our farmers describe it, and it is being replaced by some of the newer and more choice varieties, such as Snowflake, Beauty of Hebron, Extra Early Vermont, Mammoth Pearl, Early Ohio, etc. The three potatoes which have been tested in the experimental grounds of the *Rural New Yorker*, and recommended as an early, intermediate, and a late variety, are the Beauty of Hebron, the Blush, and the White Elephant. The Blush is described as a variety “particularly adapted to resist drought, unsurpassed in quality, in keeping properties, and in yield.” The White Elephant has been produced from a seed ball of the Garnet Chili, fertilized with pollen from the White Peach-blow, and is remarkable for its “wonderful productiveness, excellent quality and flavor, power of resisting disease and great beauty. The tubers, notwithstanding their great size, are always solid and growing closely together in the hills, the labor of digging is comparatively slight.” The originator of this new variety claims that he planted in 1881, one bushel of sixty pounds, and therefrom harvested no fewer than fifty-seven bushels! The culture of the Potato—and we may observe, *en passant*, that there is no other vegetable which begins to compare with it in importance—is making rapidly progressive strides, and we may here mention incidentally, as evidence of this, that a gentleman named Rowe,

living in York County, Ontario, has adopted a new method of grafting, "which," he says, "is going to be very valuable, as he can bring in a new variety, by thus crossing, in one or two seasons, that by the system of seedlings or pollen crossing might take several years to prove. His method is a secret known only to himself, but his results have proved it very valuable." In the remaining sections of the Vegetable Department the various articles exhibited were passable, save in section 42,—“basket of vegetables, one of a kind.” Here there was much room for improvement, and our Directors would suggest that in the future preparation of the prize list the exhibitor be not limited, in this section, to one specimen of each variety, that he may put in as many specimens and as many varieties as he may deem fit, and that the judges should, whilst giving all due credit to the qualities of the vegetables, not overlook their arrangement in the baskets. As this closes all we have to say regarding this Department, we will briefly notice the

POT PLANTS AND FLOWERS.

The plants were well arranged on tiers of benches extending the entire length of the Hall on each side, thus affording the crowds of spectators every facility for examining the exhibits in the different sections, whilst tables extending across the south end were occupied by floral designs, bouquets and cut bloom, all the central portion having been devoted to the Fruits. As ladies are mainly the exhibitors in the Department of Floriculture, we must be cautious and sparing in our criticism. Although the floral designs of this year were, with a single exception, much superior to those on our tables in 1881, yet there is a great lack and much room for advancement in this direction. Our ladies have got the flowers, they have got great good taste, and by skilful manipulation, we have no doubt but that the Fall show of 1883 will afford striking and beautiful examples of their handiwork. This Department of Pot Plants and Flowers embraced 32 sections, and although some were entirely unrepresented, yet we had 105 entries against 75 in 1881. Our Association has developed wonderfully a taste for and an appreciation of flowers, the Heaven-sent

messengers of cheerfulness and beauty in our homes, and although some of our farmers say (we believe they do it thoughtlessly) that there is no use nor benefit in their cultivation, yet these same manly, horny-handed sons of toil have their inmost feelings touched to the quick when they behold the grave of some dear departed one garlanded with these speechless yet instructive "Messengers of God." It is not much over eighteen months since our good and gracious Queen, as a tribute to departed worth and in token of sympathy with the American people for their grief and loss, placed, or rather caused to be placed, a wreath of the choicest exotics upon the coffin of their murdered President. Such an act of queenly, yet womanly devotion and respect is not to be measured by the sordid standard of dollars and cents.

In writing the above Report we have endeavored to adhere to accuracy as much as lay in our power; where imperfections exist, to faithfully point them out, so that at future exhibitions of our Association, they may be promptly and efficiently remedied, and, whilst giving all due credit to the worth and excellence of the exhibits of some of our members, to stimulate them to increased effort, and that each should adopt as his or her own, what should be the motto of all horticulturists—"excelsior." Our Directors would also suggest the advisableness of having a code of instructions prepared for the guidance of the judges. Having such a code before them their duties would be rendered much less difficult, and they would be enabled to make their awards more justly, and in accordance with real merit. This code should give the main points for consideration in each department, placed in the order of their importance, and having once called the attention of the judges to this simplified criterion, leave them entirely free to arrive at their own conclusions.

Whilst acknowledging, with thankfulness, the receipt of fifty dollars, the amount of Government Grant for the year 1881, which was not forwarded to our Secretary till the 6th of April, 1882, we would with all earnestness urge upon the members of the Council of Agriculture the claims we have upon them for additional Governmental aid. The Hon. Dr. Loring, President of the American

Forestry Congress, at one of its Montreal meetings in August last said—"Agriculture is, in truth, the basis of a nation's greatness," and a much higher authority than he tells us—"the profit of the earth is for all, the King himself is served by the field." Recognizing the force of these truisms, being convinced that horticulture is but agriculture in a more advanced and more perfected form, and knowing that the Agricultural Societies throughout Quebec are deservedly sustained by liberal grants, we would respectfully remind the Council that our Horticultural Society is entitled, in all fairness, to something like a just appropriation of the bounty of the Province.

Our Association, you will remember, is but two years old ; if it continues to progress in the future, as it has done from its birth, we may look forward with confidence, in the course of a few years, to a well developed and vigorous maturity. Our farmers are only beginning to realize and recognize its importance ; there can be no better means of conveying practical lessons of useful instruction in the school of horticulture, than by open competition at our annual shows. We would invite all residents within the Province to "come over and help us." They may rely upon a kindly reception, and that their exhibits shall be judged by the only true standard—merit. We would also call the attention of our members, and of those intending to become members, to one of our Regulations, No. 16, which says—"The Prize List is open to competition, to members and their families, free." We would be much rejoiced to find several out of the same family, girls and boys, all competing for prizes ; of course only one of the family can compete in the same section.

We cannot conclude this Report without tendering our warmest and well deserved thanks to Mr. J. M. Browning, Montreal, for the repeated acts of kindness which he has conferred upon us, and for the valuable information he gave us, in our infancy, as an organization ; to Mr. Henry S. Evans, the energetic and courteous Secretary of the Montreal Horticultural Society, for several volumes of Pomological and Agricultural Reports, as also the Report of the Fruit Growers' Association of Ontario for 1881 ; to the many kind

friends who aided us in our concerts, and to the few who helped to place the exhibits in the various sections allotted to them.

All of which is respectfully submitted.

DAVID GREENE, M.D.,
Secretary-Treasurer.

GRANBY, P. Q., Jany. 16th, 1883.



REPORT OF THE MISSISSQUOI HORTICULTURAL ASSOCIATION, 1882.

HON. THOS. WOOD, *President*. DR. J. B. GIBSON, *Vice-President*.
DAVID WESTOVER, *Secretary-Treasurer*.

I believe we may feel well assured that our Society is growing in favor and interest in this County, from the fact that our members' list is the largest yet attained since its organization, and that taking into consideration the very unfavorable fruit season, the Annual Exhibition was successful in bringing together a much finer and larger display than was expected.

The total number of plates, though not so large (341) as years before, may be accounted for in some measure from the limiting of collections to twenty (20) plates.

The finest specimens, however, were found in the class of single plates of five. The Alexander, from its "good" looks, taking the lead, closely followed by the Duchess; the Fameuse and Golden Russet coming next. The Golden Russet was shown by eighteen (18) members, and I have no hesitation in recommending it for general planting, for profit. The tree is, perhaps, not as hardy as the Fameuse; yet in good ground does well—is an early bearer of medium-sized "clean" fruit. It will keep till June. Care should be taken not to force the tree either in nursery or orchard. Canada Baldwin, Peach, Blue Pearmain, Talmans' Sweet, and many other varieties were shown in good numbers, but rather under-sized, evidently affected by the bad season. Of the newer varieties one plate only of the Wealthy was on the table. Grapes were in fair numbers, but again the season was against them, many of the varieties being quite unripe, the largest collection being shown by Mr. Pattison, of Clarenceville, numbering upwards of thirty distinct varieties. The Flower and Vegetable Department were filled to repletion with specimens of unusual excellence.

BROME COUNTY FRUIT-GROWERS' ASSOCIATION.
REPORT FOR THE YEAR, 1882.

The officers of this Association regret that, in consequence of the delay in their receiving the Government grant for the year 1881, they have not this year been able to realize the hopes of an active prosperous year's work, which they had hoped for, and made arrangements for. Not only did the delay in the payment of the prize money interfere with the increase of the membership, which has not been so large as it might have been ; but the lack of necessary funds prevented the holding of a series of meetings which the officers of the Association had planned for the Winter season, and which were believed to be the best attainable means of awakening an extended and more intelligent interest in the objects of the Association.

The result has been that we have only been able to hold an Exhibition in connection with the Annual Agricultural Exhibition. Notwithstanding this our membership received a very gratifying increase, notably from a more extended area in the County. We have unfortunately found that heretofore we were only able to obtain members in the neighborhood of this place, but now we have had people from other neighborhoods join us, and we trust by their means to increase our usefulness, and the area of the benefit which is already visible where live the bulk of the members.

The Fall Show was held on the grounds of the Knowlton Park Association, on the 13th September, in conjunction with the Agricultural Show of the County. The Exhibition was a success, nearly all the prizes being well competed for and adjudged.

It must, however, be confessed, that neither fruit, vegetables nor flowers were in as fine condition as was the case last year. This may be, to some extent, accounted for by there having been a sharp frost the night before the 13th, by which all tender plants were

nipped, while the whole season among our Eastern Township hills was a backward and a cold one. The number of entries, however, were larger than ever before, and many new competitors appeared, which is a proof of the increased membership alluded to above. Here it may be pardoned me if I say that this increase has been due to the active canvassing and constant urging on the part of our Directors.

Our show of apples was large, including, besides exhibits of the usual well-known varieties two or three fine collections of seedlings.

We were, however, very much disappointed not to obtain any entries from outside the County, though prizes were offered for collections of apples and collections of grapes (out-door), especially to attract such competition, as we believed this would benefit our people by showing them what other Counties were able to do, and by inciting them to emulate what they thus might have placed before them.

We trust that in future our open prizes may attract exhibits from the other Counties, and for this purpose we propose increasing their value, so that it might be worth the while of fruit-growers to attend our Show.

At a meeting of the Directors, which was held recently at Knowlton, it was decided that a series of meetings should be started at which, by discussion and lectures, we might bring to the attention of the farmers and other landowners what are the objects and scope of the Association, and urge on them the culture of fruit and vegetables, and try to give them some hints to assist their efforts in that direction.

To this end we held a public meeting on the 12th December, in Mr. Pette's Hall, in Knowlton, which we regret to say was not very largely attended. Mr. R. W. Shepherd, Jr., the indefatigable member of the Report Committee of the Montreal Horticultural Society, was kind enough to come out from Montreal, and deliver to us an address, in which he shortly laid before us the many advantages derived from the planting of orchards, and gave us many valuable hints in regard to their care. Besides the address,

our members were able to draw from the experience which Mr. Shepherd has had in his large operations with fruit trees, much that was of interest and value in the free discussion which followed his paper.

Dr. H. W. Wood, of Knowlton, at the same meeting read another paper, in which he gave a careful description of many of the enemies which interfere with our fruit trees, and explained the best manner of fighting them ; at the same time going into some of the simple details of the Tree Planters' Act, which he rightly said were not understood at all by many who wanted to set out trees.

The thanks of our Association are gratefully tendered hereby to Mr. Shepherd for his kindness in undertaking a journey, and the loss of some days' time in coming thus willingly and effectively to our assistance.

We only hope that others who take an interest in the success of fruit-growing in the County and Province, will aid us in our efforts, and we trust that next year at our Exhibition, we may have some entries from outside our own County, as an earnest of the mutual good-will and good-feeling between sister Associations, which must ever be an encouragement, and an assistance to a young Society such as ours.

S. A. FISHER, *President.*

J. N. BRASSARD, *Secretary.*

KNOWLTON, December, 1882.



REPORT OF THE FRUIT-GROWERS' ASSOCIATION OF L'ISLET COUNTY.

The Secretary-Treasurer having given a statement of the transactions of the Society for the last year, the same Board of Directors was elected, and Hon. E. Dionne, Commissioner or Agriculture, was appointed Honorary President.

The members present at the meeting expressed their satisfaction of the increasing interest taken by the farmers in fruit-growing, more trees being planted, and more care being taken of the orchards.

The Society has distributed last Spring to its members, apple trees of the new Ontario varieties, principally Arnold's Seedlings, the members paying half the cost. We hope the introduction of testing these seedlings shall prove them to be profitable and hardy in this district.

The Society's Exhibition of fruits, flowers, cte., was held Sept. 28th last, at St. Jean Port Joli, and attracted a great number of people. The specimens of apples, flowers, pears and grapes, were very fine, though less in quantity than the preceding year, especially with plums, of which the crop was a failure, the trees were exhausted by the heavy crops of 1880-81.

The Duchess of Oldenburg, Astrachan St. Lawrence, Famuese, Colvert and Baldwin apples were remarkably large and fine; the best plums exhibited were the Lombard, Bradshaw, Washington, Yellow Egg, Imperial Gage, and of the old and esteemed Orleans blue and yellow. The grapes were much admired, the varieties exhibited were Concord, Hartford Prolific, Champion. Of currants the Versaillaise were the best. Eighteen samples of home-made wines were considered very good. They had been manufactured with cherries, currants, plums and rhubarb. One of the exhibitors had made over 100 gallons, and he declared "it paid him better

than by sending the fruit to market." This is worthy of trial by those residing at a great distance from the cities.

The Society should continue to encourage by liberal prizes the making of good wine, each sample exhibited bearing the written description of process of manufacture. The same encouragement should be given for jellies and preserves. We should remember that Grapes make the most delicious preserves and jellies, if taken when green, or just before they turn color for ripening. Thus grapes which do not mature well in this district, could well be utilized.

The great demand for young plants of our Canadian Orleans plums, from Ontario and the United States, ought to render us more careful of the thousand seedlings that are neglected and destroyed. Let each of us cultivate them for sale if we do not wish to plant them permanently, which latter would prove the most profitable,

Chas. Gibb, Esq., of Abbotsford, who travelled last Summer in Russia, has made a careful study of the varieties of apples, pears, plums, etc., which resist the intense cold of that country. His observations, we are confident, will be of great value to the fruit-growers of the Eastern part of the Province, and to the members of our Society in particular, who should make efforts to test the most valuable Russian trees recommended by Mr. Gibb.

Though Fruit-growing is the principal aim of the Society, yet Forest Tree Culture, and the preservation of our woodlands have received the encouragement of the Society since its formation.

We hope the grant from the Council of Agriculture to our Society shall be increased this year, which surplus shall be devoted to giving prizes for planting forest trees, particularly maples, which grow so luxuriantly in this County.

We should plant shade trees and groves, and shelter belts for our orchards. Our boys should specially be interested in tree planting. Arbor Day should be a holiday for all school-boys, provided they would plant a few trees. Enrol the boys in the Forest Tree Association, and let us give prizes to those who shall do the planting carefully. In after years they shall recall with

pleasure the memory of the happy Arbor Day, and they shall acquire the taste of planting fruit and forest trees to the benefit of the whole community.

A member of our Society has already enrolled a large number of school-boys as members of the Forest Tree Association, to whom he shall supply trees for planting on Arbor Day, without charge, and he has deposited \$10 for awarding them prizes. We hope other members shall subscribe equally. The children are our hope, we live for them, and for our country. We should do all in our power to instruct and interest them in tree planting.

AUGUSTE DUPUIS,
Corresponding Secretary.

January, 1883.



REPORT OF THE FRUIT-GROWERS' ASSOCIATION OF ABBOTTSFORD.

N. COTTON FISK. *President.* JOHN M. FISK, *Vice-President.*
ARTHUR M. FISK, *Secretary-Treasurer (pro-tem.)*

This Association held its Sixth Annual Exhibition at Abbotsford, on the 28th September.

Of apples there was a great variety, though not so many plates as at some of our former Exhibitions. Owing to the unfavorable season for fruit, perfect specimens were the exception rather than the rule, and many of the prizes in the single plate competition were carried off by parties residing outside of Abbotsford, while all the prizes for collections (except one on seedlings) were retained by residents.

In Pears and Plums, Mr. C. Gibb was the only competitor. To judge from his loaded Flemish Beauty pear trees last Fall, and from the fine quality of the fruit, it is no longer a question as to whether the pear can be grown here. It is to be hoped that fruits growers will give more attention in future to the cultivation of this valuable fruit.

Notwithstanding the season was backward and cold for outdoor grapes, the exhibit was good, and displayed a marked improvement in varieties, there being several of the new grapes on exhibition.

Wm. Mead Pattison, of Clarenceville, took first prize on best collection, while Alexander Choquet, of St. Hyacinthe, took first on heaviest bunch, leaving Mrs. N. C. Fisk victor in five best varieties with first prize. There were 94 plates on exhibition as compared with 150 plates for 1880, and 140 for 1881; this last, however, the joint exhibition of Shefford and Abbotsford.

The most marked improvement in the Society's Exhibition was in its display of Flowers, which for quantity, beauty of foliage and bloom, and originality of the design, surpassed any former

exhibit here. More than double the usual space was occupied this season, and yet there was not room, so crowded were the competitors in the different sections, necessitating larger accommodation in future.

The display in Vegetables was above the average, showing that more attention is being paid to the selection of varieties.

This Association was again successful in competing for the prize on County collection of Apples, offered by the Montreal Horticultural Society, taking a joint first prize of \$40.

It is surprising there is not more competition by the different Counties in this class. Surely it is not owing to a lack of fruit, but rather, we think, from a lack of proper organization and energy on the part of the fruit-growers of our sister Societies. It is an opportunity for gathering together the different varieties of apples in the Province, correcting names, studying one another's fruits, and disseminating many practical ideas. Have we nothing to learn? Ought we to allow such opportunities to pass unimproved?

The Directors of this Association return thanks in acknowledgement for the Montreal Horticultural Society's report for 1881, which contains valuable information and a fine map of the "Geological Survey of Canada, showing the general northern limits of the principal forest trees." This is a work to be appreciated, and must have added materially to the expense of the Society in its publication. It is to be regretted that a Society doing so good a work in the interest of the country's welfare, should not receive sufficient support from the Provincial Government, to enable it to publish these reports in *French* as well as English, and in sufficient numbers to distribute a copy to every member of a Horticultural and Agricultural Society in the Province. It is by such means as this that a people becomes educated in the requirements of those interests calculated to increase the revenue and comforts of its population. There is no reason why this Province should not largely increase its area in fruit culture, and supply our markets with the apples, pears, grapes and many of the smaller fruits annually supplied from Ontario,

and many parts of the States. The growing demand and popularity of Canadian apples in the English market, with present facilities for export, is sufficient in itself to induce increased efforts in this line. Let us hope that this question will receive due consideration, and that we shall reap in the near future an ample harvest from our combined efforts.

Another point of practicable benefit to our fruit growers is the need of a winter meeting or convention, held at some railway centre, such as West Farnham, at which members from the Societies of Montreal, Missisquoi, Brome, Shefford and Abbotsford, could attend at a small expense, and discuss the different questions of interest, relating to Horticulture and Forestry. Such meetings, if properly organized, cannot fail to produce beneficial results. "Union is strength" is an old proverb. Why not apply it in the present instance?

The visit of our esteemed Secretary, Mr. Charles Gibb, to Russia, in quest of hardy varieties of fruit suited to our climate and fill the blanks of our present fruit lists, is an event important in the Society's history, and to the country at large. Judging from Mr. Gibb's report, and from the Russian apples already under cultivation here, such as Duchess, Red Astrachan, Tetofsky, Alexander and others, there is no doubt many other varieties of the apple, pear, and other fruits would prove of great value to us, as they are natives of a climate much colder than our own.

The question is, how far, and in what manner, is the Province to profit by the introduction and dissemination of these, to us, new Russian fruits?

Are we to expect aid from the Government? Or is some enterprising nurseryman to order, propagate, and monopolize the business? Or shall we combine, each Society furnishing its proportion to cover the expense of importing, in such a manner, such varieties as Mr. Gibb may recommend?

This is an instance in which an experimental station in the Province would be of value. But as we have no such institution, one is to suppose we are to "paddle our own canoe," and each to get as soon as he can, the best way he can, and *all* he can, of these new Russian fruits.

METEOROLOGICAL RESULTS FOR THE YEAR 1882.

MCGILL COLLEGE OBSERVATORY, MONTREAL, CANADA; C. H. McLEOD, SUPERINTENDENT.

HEIGHT ABOVE SEA LEVEL, 187 FEET.

MONTH	THERMOMETER.				* BAROMETER.					WIND.			Sky Clouded Per Cent	Percentage of Possible Sunshine.
	Mean.	Max.	Min.	Mean daily range	Mean.	†Max.	‡Min.	Mean daily range.	†Mean Pressure of Vapour.	‡Mean Relative Humidity.	Mean Ve- locity in miles per Hour.	Mean Direc- tion.		
January.....	12.20	42.4	-26.0	17.69	30.1047	30.881	29.144	.4142	.0711	79.8	14.15	W by S	58.7	44.1
February.....	21.04	46.2	-8.5	16.37	30.0903	30.899	29.682	.3629	.0934	74.0	13.17	W by S	47.3	49.7
March.....	26.05	47.0	-1.4	15.23	30.0716	30.943	29.280	.3322	.1066	68.7	12.85	N W by W	50.1	53.0
April.....	36.67	57.2	13.1	14.07	29.9716	30.643	29.536	.2139	.1160	68.7	11.88	N W by N	63.8	46.6
May.....	49.68	67.5	27.1	18.02	29.9392	30.482	29.536	.1936	.2019	66.6	11.40	N E	67.0	50.0
June.....	62.72	84.7	43.9	17.24	29.7989	30.246	29.339	.1936	.2019	66.6	10.15	N by S	61.3	60.1
July.....	67.64	84.9	50.8	16.21	29.9006	30.811	29.500	.1936	.2019	66.6	10.15	W by S	63.2	62.8
August.....	68.34	91.0	48.0	17.72	29.8597	30.811	29.500	.1936	.2019	66.6	10.15	W by S	63.2	62.8
September.....	68.21	78.1	40.6	14.79	30.0616	30.413	29.295	.1621	.3799	75.7	7.62	N by W	68.0	63.1
October.....	48.21	74.7	30.6	15.09	30.0587	30.880	29.611	.1635	.3799	75.7	7.62	N by W	68.0	63.1
November.....	31.38	69.6	14.3	11.24	30.1124	30.582	29.659	.1708	.2853	77.0	9.30	W S W	48.9	67.6
December.....	17.67	37.1	-6.3	12.34	30.0528	30.561	29.386	.2200	.0923	86.4	11.04	W S W	78.7	50.1
Mean.....	41.576	.....	.....	15.35	30.0111	.....	.....	.....	.23985	72.73	10.83	W N W	56.63	50.87
Means for 8 years, ending Dec 31, '82.	42.601	.....	.....	.....	29.9684	.....	.....	.....	.26477	73.97	11.054	W by W	61.41	.....

* Barometer reduced to 32° Fahr. and to sea level. † Inches of mercury. ‡ Observed. § Relative, saturation being 100.
The monthly means are derived from observations taken every fourth hour, beginning at 3.15 a.m. (The mean snatching gives for December is not from a record, but was estimated from the mean of the 6 days observed.)

The greatest heat was 91.0 on August 6th; the greatest cold was 26.0 below zero on January 24th; extreme range of temperature for the year 11.7°; greatest range of thermometer in one day was 38°-0 on Feb. 18th; lowest range of thermometer in one day was 4.4 on November 20th; the warmest day was August 6th, the mean temperature (from 10 a.m. and 10 p.m.) being 82°; the coldest day was Jan. 24th, the mean temperature being 18°-1 below zero; highest barometer reading was 30.999 on Feb. 18th; lowest barometer reading was 29.339 on April 20th, giving range of 1.660 inches; the lowest relative humidity was 18, on May 17th. The greatest mileage of wind recorded in one hour was 4.4 on January 22nd; greatest velocity was at the rate of 64 miles per hour on January 22nd. (This is the greatest velocity recorded here during eight years—the greatest previous velocity during this period was 60 miles per hour, on February 2nd, 1876.)
The closing of the winter closed on March 27th. The first snow of the autumn fell on Nov. 14th, but was inappreciable; the first appreciable snow fell on Nov. 20th. The first river craft arrival in port was on April 11th. Ferries began running on April 18th. Navigation opened on April 27th. Aurores were observed on Nov. 22, 23, 24, 25, 26, 27, 28, 29, 30, 31; on 20 days; auroral storms were observed on 3 nights; lunar halos on 18 nights; solar halos on 5 days, accompanied on 2 days; a.m. The solar light was observed once. Earthquake tremor on October 10th, at 4.60 a.m. The solar light was observed once.

RAIN AND SNOW FALL DURING 1882.

MONTH.	Inches of rain.	Number of days on which Rain fell.	Inches of Snow	Number of days on which Snow fell.	Inches of Rain and Snow melted.	Number of days on which Rain and Snow fell.	Number of days on which Rain or Snow fell.
January.....	1.18	4	28.2	20	3.90	3	21
February.....	0.58	4	23.2	13	2.87	0	17
March.....	2.46	8	15.3	15	4.41	3	20
April.....	1.58	11	3.2	5	1.85	1	14
May.....	1.50	15	0.5	1	1.55	0	16
June.....	4.74	20	0.0	0	4.74	0	20
July.....	6.04	17	0.0	0	6.04	0	17
August.....	2.52	11	0.0	0	2.52	0	11
September.....	3.63	12	0.0	0	3.63	0	12
October.....	1.34	14	0.0	0	1.34	0	14
November.....	1.39	14	1.0	5	1.46	1	14
December.....	0.04	3	39.8	24	3.95	1	26
Totals.....	27.00	133	111.2	83	38.26	9	202
Means for 8 years, ending 1882.	27.04	127.0	113.7	85.3	38.48	16.1	205.5

Hail fell one day in June, one day in October, and two days in November.

