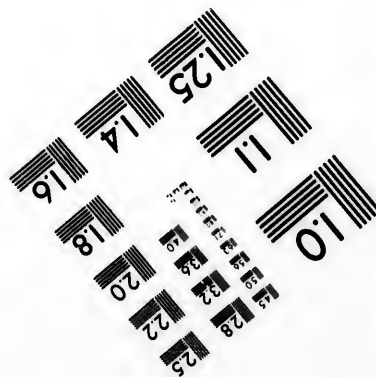
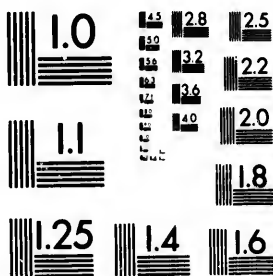


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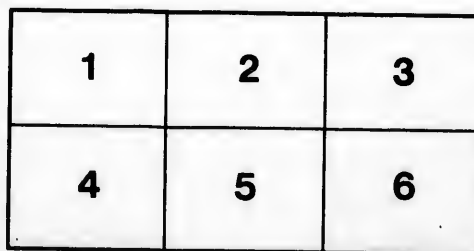
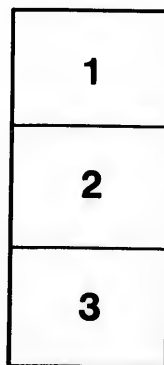
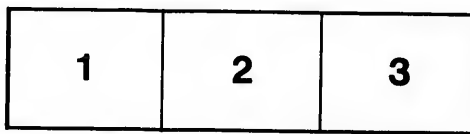
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Dawson, John  
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With best wishes  
for the New Year  
W.D.

"Reprinted from the Canadian Record of Science, December, 1891."

## NOTES ON TREES ON THE GROUNDS OF MCGILL UNIVERSITY.

By SIR WILLIAM DAWSON, F. R. S., &c.

In the year 1855, the grounds of McGill College were unfenced and practically a common, used for pasturage and open to all intruders. A few large trees existed on the banks of the little brook which then ran through the grounds, and to which, I suppose, the McGill Estate owed its name of Burnside; and along the brook there was a certain amount of coppice of thorn, young birch and alder, but so cropped by cattle and cut and broken by juvenile rambles that it presented a very unsightly appearance. So soon as a fence could be erected, steps were taken to lay out the grounds and plant trees. I was induced to give attention to this by the wish to have the surroundings more in harmony with an academical building, and by the hope that attractive grounds might tend to induce efforts to improve and complete the buildings, might give more public interest in the institution, and might lead to a wish to retain the grounds for academical uses rather than to dispose of them for building purposes. To me and my wife the improvement of the grounds was a congenial task; and the late Mr. Baynes, then Secretary of the University, cordially seconded the effort, while the Board of Governors granted a little pecuniary aid. The old McGill house and garden at that time existed immediately below Sherbrooke Street, though rented to a market gardener. The garden contained many good shrubs and herbaceous plants, and was

laid under contribution in aid of our plans, and many native trees and shrubs were obtained by collecting on the mountain, or by purchase from country people and from Guilbault's nursery. At a later date Prof. Penhallow commenced a botanical garden on a portion of the grounds set apart for that purpose.

Aid was also received from friends. The late Hon. John Young had imported a large number of European trees for his own property at Cote St. Antoine, and liberally presented many healthy young plants to the College, and the late Mr. William Lunn, whose zeal in gardening is well known, presented rare shrubs and trees. Somewhat later, Mr. Charles Gibb, having commenced his experimental farm at Abbotsford, sent a number of rare species, and Major Campbell of St. Hilaire, presented spruces and other trees from his estate. Seeds were also collected, and a little nursery of young trees was commenced in a suitable place in the ravine near Sherbrooke Street. Though neither my means nor those of the College were sufficient to provide proper attendance and sufficient labour, and though much damage was necessarily done by the public use of the grounds, yet they were beginning to present a creditable appearance and contained a large number of valuable foreign as well as native trees, when the unavoidable sale of land on University Street, and later, the exigencies of more direct educational work, in connection with the generous bequest of Mr. Workman, and the princely benefactions of Mr. W. C. McDonald, terminated our attempt to have a College garden and arboretum.

It is proper to state that, before our improvements began (as early as 1853), the late Mr. Shepheard of Montreal, in conjunction with the late Mr. J. Symmers, had presented to the College a plan for the laying out of the grounds, along with one for converting Sherbrooke Street into a boulevard with four rows of trees; which plans are still preserved. The formation of a central avenue consequent on the passage of the main pipes of the reservoir through the grounds, had rendered this original plan impracticable;

but on application to Mr. Shephard, he kindly consented to lay out the portion of the ground on the east side of the avenue, in a manner suitable to the changed conditions.

Early in our planting operations, the Graduates' Society, at that time recently organized by Mr. Brown Chamberlin and others, took an interest in the matter, and proposed to plant a "Graduates' Walk," extending from the great elm round by the bank of the brook to Sherbrooke Street. They prosecuted the work actively and in a few years had the walk stocked with trees, the latest of which was an elm planted in honour of the visit of H. R. H. the Prince of Wales in 1860. The Graduates' Walk is now for the most part merged in the approach to the new W. C. McDonald Physics Building, and most of its trees have disappeared except those at its extremities.

Notes have been kept since 1855, of the results of the planting and attempts to introduce foreign trees and shrubs, and it was hoped that these experiments and observations would have been continued by Prof. Penhallow, but since the park and its trees may now be considered as things of the past, and any experiments hereafter made will be carried on under new conditions in the ground leased from the Trafalgar Institute, or elsewhere, it may be well to record for the benefit of others the results of the observations made.

It may be premised here that the grounds are sheltered by the mountain, have a favourable exposure to the south-east, and have three varieties of soil—the sandy soil afforded by the Pleistocene Saxicava-sand toward the front, clay soil resting on Leda-clay and Boulder-clay and the alluvial soil in the little ravine, not to mention the rocky ground on Trenton limestone and old quarry pits, which was, for the most part, occupied by the Medical Faculty's building.

In noticing the trees and shrubs, I shall take them in no very definite order, but shall give a list with notes on each species, taking native trees and shrubs first.

1. THE RED OAK. *Quercus rubra*.

Several fine specimens of this tree existed along the bank of the brook—four of which still remain intact (1891). The finest specimen was drawn and engraved for the restoration of the Indian town of Hochelaga in my book "Fossil Men," in consequence of Cartier's note, that on his visit to the village of Hochelaga, he saw great oaks with large acorns on the path leading from the landing place below the current to the village. Our oaks are not those of Cartier's time. One of the largest, cut down last year, showed 160 rings of growth, so that it may be regarded as a child of the oak forest of three centuries ago. Sandy soil, especially with clay underlying at some depth, seems to be specially suited to this tree, whose large shining leaves and spreading form make it one of our finest forest trees.

2. THE WHITE OAK. *Quercus alba*.

This species was not indigenous to the College grounds, but a few fine plants were purchased. They thrive well in the more moist and rich ground, but were only young trees, and all have perished in the progress of improvements. There seems no reason why this species should not be cultivated as a timber tree in the Province of Quebec; but it requires a good soil and exposure.

3. THE OVERCUP WHITE OAK. *Quercus macrocarpa*.

This is not an indigenous species, but a few acorns from the North-west were presented to me some years ago by Dr. G. M. Dawson. One good plant was raised from these and was carefully tended. It grew well and promised to be a fine tree, but had to be removed last year, and I fear has perished. I have found that oaks do not readily transplant, as we have lost several good trees in this way. This species deserves to be introduced in Lower Canada as an ornamental tree. Its large leaves give it a fine appearance. It loves limestone soil.



4. THE ENGLISH OAK. *Quercus robur L.*

Specimens of this species were presented by Mr. Young, and were planted in different soils and exposures; but they proved incapable of enduring the winter and all perished; those in the lighter and more sandy ground surviving longest. In any case this tree is not comparable as an ornamental tree with our native species, and its leaves hanging withered on the branches in autumn give it an unsightly appearance.

5. THE BEECH. *Fagus ferruginea.*

A bed of young plants of this fine tree was raised from the nuts, and one specimen still remains. It grows well but not in the sandy soil, and as only very young trees have been on the grounds, little can be said respecting it. It is known, however, to love a rich calcareous soil, and, where this exists, to thrive even on rocky ground. Our beech is scarcely so fine a tree as the European beech, the hardiness of which, in Canada, I have had no opportunity of experimenting on.

6. THE HAZEL. *Corylus americana.*

A plant of this species obtained on the mountain about 1858, has grown luxuriantly and bore fruit every year. It was destroyed last year. The hazel is a long lived and beautiful shrub. As one usually sees it on poor ground and cropped by cattle it has a shabby appearance, but under more favourable circumstances it forms a fine element in shrubbery. Its catkins are pretty in the spring, and in autumn its fruit is curious and is edible.

7. THE HORNBEAM. *Carpinus americana.*

A fine and somewhat aged specimen of this little tree, native to the place, existed till last year in the lower part of the grounds. It is of slow growth and straggling form. One young tree still remains near the head of the avenue,

and is noteworthy for the brilliant crimson and yellow colours which its leaves assume in autumn; and as the leaves are somewhat persistent, their beauty remains till late in the season.

8. BIRCH. *Betula papyracea* and *B. populifolia*.

These white birches, so common throughout Eastern Canada, were native to the soil. One very old and spreading tree was probably the finest in Montreal. Its main trunk was short and the young people used to ascend and use the spreading branches as a study in the warm weather of summer. The white birches are trees of rapid growth and extremely hardy. I have specimens growing on somewhat poor soil, which, in twelve years, have attained the height of 30 feet and are beautiful trees.

9. EUROPEAN WHITE BIRCH. *Betula alba*.

The cut-leaved variety of this tree has grown very successfully, and its pendulous branches and pure white bark produce a fine effect. Several other species or varieties of foreign birches were presented by Mr. Gibb, but had to be removed to the new botanical garden on the Trafalgar property. The bronze-leaved variety did well and had a fine appearance. The remaining specimens are of the green and cut-leaved variety. Being more graceful and pendulous than our native species, and apparently quite hardy, they deserve cultivation.

10. THE YELLOW BIRCH (*B. lutea*) was not originally on the grounds, but a good specimen was planted on the Graduates' walk and has thriven, though perhaps the soil is rather light for this species. I had hopes that it might have gone on to rival our oaks and elms, as when mature, it is a majestic tree, one of our finest native species, but unfortunately it is too near the line of the approach to the Physics building and probably is doomed to disappear.

11. THE ARCTIC BIRCH. *Betula pumila.*

A plant of this species presented by Mr. Gibb was tended for several years on the terrace in front of the College, but did not thrive and eventually died. I planted it alongside of a Tamarisk in hopes of reconciling to the same conditions these two trees of so different habitat. But the birch drooped in the heat of summer and the branches of the tamarisk were winter-killed, so the experiment was not successful. The tamarisk survives as a small shrub, sending up shoots from the root. The dwarf birch is dead.

12. THE ALDER. *Alnus incana.*

This common shrub grew plentifully on the borders of the brook, forming a dense thicket on the flat ground near University street, under which were many shade-loving ferns and herbaceous woodland plants. It is now extinct. I may mention with it the English Alder—*A. glutinosa*—a much finer plant, attaining to the dimensions of a small tree on one stem. Specimens of this were given to me by Mr. Young and grew vigorously for a few years, but seemed liable to have the young wood nipped by frost in winter, and finally perished. The cut-leaved variety seems more successful; and one specimen, presented by Mr. Gibb, still remains.

13. THE BASSWOOD. *Tilia americana, L.*

This tree is common on the mountain, but did not exist on the grounds till planted. It is a rapidly growing and beautiful tree, forming a fine variety with maples and elms, and interesting in spring from its clusters of fragrant flowers on a leafy peduncle, while its large heart-shaped leaves afford a grateful shade. It does not appear to be a tree of long life, and when pruned or wounded is very apt to decay in the stem. A large specimen in the avenue, which will have to be removed for the approach to the engineering building, has suffered in this way, and though

by no means an old tree, is little more than a picturesque ruin. Another and younger specimen remains and may serve to represent the interesting botanical relationships of the Tiliaceæ.

14. THE ELM. *Ulmus americana.*

One fine specimen stood on the ground in 1855, and was usually known as the "Founder's Tree," having been planted or preserved by Mr. McGill. It still stands, and is tall in form and less spreading than elms usually are near Montreal, and is now (1891) 10 feet in circumference at two feet from the ground. Many others have been planted, especially along the avenue, where it was intended to have a row of elms along each side. Great difficulties were found however, in planting them successfully in the drier parts of the ground, and in some places they would succeed only after digging up a wide and deep bed and filling it with manure. So soon, however, as the roots reached the moist clay of the subsoil the trees grew vigorously. It has happened in this way that some of the dying trees have been replaced by maples; so that our avenue of elms is not altogether complete. An inner row of soft maples was planted at the same time, partly to protect the elms and partly to form a shade in advance of the latter, the intention being ultimately to remove the maples and to leave merely the avenue of elms. The elm is the favorite ornamental tree in the province of Quebec, not only because of its beauty, but on account of its rapid growth. A tree planted in 1858 by Lady Dawson on the east side of the avenue has now a circumference of 6 feet near the ground, and is quite a stately tree. It has grown more rapidly than some of the others on account of the more suitable soil. The rough foliage of the elm is remarkably exempt from the attacks of caterpillars. Its worst enemy in my experience is the prickly black caterpillar of the mourning cloak butterfly — *Vanessa antiopa.*

15. THE RED OR SLIPPERY ELM. *Ulmus fulva.*

In 1855 there was a moribund tree of this species at the foot of the terrace in front of the college. Its roots had been in great part buried under the excavators' rubbish used in forming the terrace, and it was gradually dying. I planted at its root the wild vine and the Ampelopsis or five-fingered ivy, which in a few years completely clothed its stem and dead branches, giving it a fine appearance, especially in autumn, when the bright yellow of the vine and the crimson of the Ampelopsis had a most brilliant effect. It was one of the chief ornaments of the front of the buildings for many years, when, decaying at the base, it was finally overthrown in an autumnal storm. Other trees of this species were planted, but their inferiority to the ordinary American elm, both in form and stature was too manifest to encourage their multiplication.

16. THE CORKY ELM. *Ulmus racemosa.*

This species is distinguished by the curious corky excrescences on its trunk and branches, and by its stiffer and more rigid branching as compared with the ordinary species. A fine young specimen from St. Andrews was presented some years ago by Dr. Harrington and was growing well, but it was one of the victims of the recent improvements.

17. THE ENGLISH ELM. *Ulmus campestris.*

Specimens of this tree were presented by Mr. Young, and having been planted on good soil grew vigorously; but the twigs were liable to be winter killed and the tree then sent off shoots from the root, giving it an unsightly appearance. It is much stiffer in habit of growth than our elm, with smaller foliage and a tendency to corky excrescences on the bark. It is evidently scarcely hardy enough for our climate, though it has succeeded well in New England. All those in the College grounds have perished, except one

young tree; but I still have a plant in my garden in Walbrae Place.

18. THE BUTTERNUT. *Juglans cinerea*.

A row of these trees of large size formerly existed in continuation of the oaks along the bank of the brook to the rear of Mr. McGill's property of Burnside. They were probably along the line of an old fence or farm road. Five or six of these trees existed in 1855, and were regularly visited every autumn by troops of nutters from the east end of the town. The best of the survivors occupies a large space in my garden in Walbrae place, part of which was purchased from the rear angle of the McGill property. The ruins of another stand in front of the Medical Faculty's building and are at least picturesque. This tree was partly buried by excavated material, but has survived this, though many of its branches were killed. Another stands in front of the Thomas Workman Technical building and may probably be spared. Several young trees intended to renew the old ones have been destroyed, except one near the chemical laboratory of the Medical School.

The butternut is a very beautiful tree and well deserving cultivation, though it has the fault of leafing late in the spring, and dropping its foliage early in autumn. It is easily raised from the nut if planted in autumn, and grows with rapidity. It is quite a common tree on the farms northward and westward of Montreal.

The butternut, owing to the food it affords and to the shelter provided in the older trees by decayed spots, is a favourite home of the red squirrel. A pair of these animals has continued to maintain itself in the great tree near the Workman building for thirty years, notwithstanding occasional stoning by boys, and one individual at least still holds its ground up to the present autumn.

19. HICKORY. *Carya porcina*.

A few fine specimens of this beautiful and stately tree

occurred on the line of the Burnside brook. The best was destroyed in 1890. One remains on the lower part of the grounds, and another still survives between the Thomas Workman building and the Medical School. This is a more lofty but less spreading tree than the butternut; and in autumn its bright yellow foliage forms a beautiful variety. Though less rapid in growth than the butternut, it grows quickly in good soil and should be cultivated, both on account of its beauty and the utility of its remarkably strong and tough wood. In appearance it resembles the ash, but is a more beautiful tree.

20. THE MAPLES. *Acer saccharinum*, *A. rubrum*, *A. dasycarpum*.

Curiously enough no maples existed on the grounds in 1855. Now they are the prevalent trees, and many of the best trees are from seed collected in 1856, and sowed in our little nursery on the flat near Sherbrooke street. All the three species above named are on the grounds. The first is the most stately and enduring, but of less rapid growth than the others. In autumn its foliage is variegated with red and orange. The red maple, a more rapid grower but less grand and enduring, has the most brilliant red leaves in autumn. Those of the white maple, *A. dasycarpum*, are yellow in autumn. The belt of red and white maples along the east side of the grounds, all from seed sown by ourselves, was one of the finest bits of woodland foliage about Montreal, but was destroyed to make room for the Thomas Workman building. The thinner belt on the west side of the campus is also a good feature, but much inferior to the other, owing to poorer soil and the injury done to the trees by boys and spectators on occasion of games and athletic sports.

21. THE MOUNTAIN MAPLE. *Acer spicatum*.

This tree, better suited to the colder and more bleak portions of the country, has been naturalized on the college

grounds, where one plant still survives. It is of small stature, rather a large shrub than a tree, but its white bark, its peculiar light green foliage and its beautiful spikes of green and red samaras in autumn, entitle it to attention as an ornamental plant. It is easily cultivated and an excellent shrub for hiding palings or other unsightly objects.

22. THE NORWAY MAPLE. *Acer platanoides.*

Several specimens of this tree were presented by the Hon. Mr. Young, and it proved the finest of all those given by him as an ornamental tree. Our only remaining example is that near the Peter Redpath museum. This tree somewhat resembles our sugar maple, to which it is nearly allied, but it has larger and deeper green foliage, is earlier in putting forth leaves in spring, and retains them longer in autumn. It seems perfectly hardy, and is in all respects one of the finest ornamental trees from abroad ever introduced into this country. A seed bed was established for the sake of propagating plants for distribution; but the plants had to be removed owing to building operations. A number of them, however, still exist in care of Prof. Penhallow.

No tree better deserves the attention of arboriculturists. It would probably yield sugar, but I am not aware that its properties in this respect have been tested.

23. THE ENGLISH MAPLE. *Acer campestre.*

This very beautiful small-leaved maple was introduced by Mr. Young, and a number of specimens were planted on the grounds. All those on the richer and less sheltered ground were so much winter-killed that in a few years they perished; but a few plants which happened to be put on the dry terrace, sheltered by the buildings, have held their ground, not however as trees, but as shrubs. Their beautiful and singular foliage always attracts attention. It is deep green in summer and pale yellow in autumn. They have never borne fruit, and every spring require pruning



of dead twigs. The variety which has succeeded best is that having the roughest and most corky bark. The plants now in front of my residence, though mere shrubs, are about thirty years of age.

24. THE SYCAMORE MAPLE. *Acer pseudo-platanus*.

A fine healthy specimen of this tree was presented by the late Mr. Gibb and proved to be hardy and a vigorous grower, while its great glossy leaves were more showy than those of any of our other maples. It had attained to a height of more than thirty feet, and was a beautiful and shapely tree. Being a little removed from the new buildings I had hoped that it might be preserved; but on occasion of cutting down some common trees which were in the way, the workman extended his commission to this tree also, and I arrived on the ground too late to save it.

25. THE ASH-LEAVED MAPLE. *Negundo aceroides*.

Our experience with this handsome tree is of interest, as showing the difference in hardiness of specimens from different localities, a point to which attention has recently been directed by Mr. Fletcher, of the Experimental Farm, Ottawa. Desiring to introduce the tree as a botanical specimen, in consequence of the peculiar form of its leaf, I purchased some plants from a nursery in the State of New York, but was much disappointed with the result. The ends of the twigs were winter-killed and the trees soon began to lose their beauty in consequence, so that I regarded the experiment as a failure. A little later some seeds from Manitoba were sent to me in a letter by Dr. G. M. Dawson and produced healthy plants, which showed no sign of winter-killing, and now I have healthy and vigorous trees perfectly suited to the climate. They have already borne abundance of seed which has been cultivated by Dr. Harrington, and numerous plants have been distributed by him. He has even found that this progeny of the Northwest *Negundo* will grow successfully as far to the North-

east as Little Metis on the Lower St. Lawrence, where he has plants ten feet high. One of my original Negundos still exists in the College grounds, and I hope will be spared to become an old tree. Dr. Harrington has ascertained, from specimens on McGill College grounds, the proportion of sugar yielded by this tree, as compared with the sugar maple, which is so considerable as to warrant its culture as a producer of sugar.<sup>1</sup>

26. THE WHITE ASH. *Fraxinus americana*.

A great number of trees of this species were raised from the seed, and have been planted in various parts of the grounds. The belt of trees on the east side of the Medical building consists of this species, and presents a fine mass of foliage in summer, through the trees are still young. The ash suffers in some years from the attacks of the tent caterpillars (*Clisiocampa*), and is rather straggling and slender in its habit of growth, but it is easily cultivated and is a rapid grower, especially in moist ground.

27. THE ENGLISH ASH. *Fraxinus excelsior*.

A few specimens of this species were presented by Mr. Young. One still survives in front of the east wing, but is in danger of death from being embanked in earth. It grows vigorously and stands the climate well, but puts forth its leaves very late in spring, so that a casual observer, seeing it bare after other trees are in leaf, would suppose it dead. It is a finer and more stately tree than any of our species, and deserves cultivation.

28. THE MOUNTAIN ASH *Pyrus Americana* and *P. aucuparia*.

The first named species is the native mountain ash and the second is the European species. Both are handsome small trees and produce beautiful pinnate leaves and rich clusters of scarlet berries in autumn. The American spe-

<sup>1</sup>Trans. Royal Society of Canada, vol. v, 1888, p. 39.

cies is the more luxuriant grower and has larger and more shining leaves. The English species is more delicate and graceful. Both are perfectly hardy, of rapid growth and easily propagated, and are not uncommon in gardens and shrubberies in and near Montreal. We had young trees of both species on the grounds as well as some varieties with peculiar leaves presented by Mr. Gibb, but they had to be removed to the botanical garden.

29. HAWTHORN. *Crataegus*. (Species.)

In 1855 the most abundant shrubs on the grounds were hawthorns, whose spines had enabled them to resist the attacks of cattle and boys. They also sheltered wild vines and other climbers. There were three species; the most abundant was *C. crusgalli*, the cockspur thorn, but *C. coccinea*, the crimson-fruited thorn was also present though rare, and one specimen of it still survives near the Medical building. The finest species, however, was *C. tomentosa*, the apple or pear thorn, which becomes when full grown a small tree, throwing out its branches horizontally with a very fine effect, and presenting an object of rare beauty when covered with blossom in spring. One of the finest specimens I ever saw was on the east side of the grounds toward University street. When it was proposed to sell lots on this street, Mr. D. Davidson,<sup>1</sup> then a member of the Board, declared that one of his chief objections to the sale of these lots was the probable destruction of this tree. It survived this ordeal, however, being a little beyond the limits of the building lots, but now its place knows it no more. A very fine, though younger, specimen still exists in front of the Library at the foot of the terrace.

Some years ago I suggested to the gatekeeper to plant a row of seedlings of this species along the Sherbrooke street front, in hope that they might replace as a hedge the old

<sup>1</sup> While these pages were in the press the news arrived of the death of this venerable and true friend of education, to whom both the University and the High School of Montreal are most deeply indebted.

paling along that front. The attempt was quite successful and the hedge still stands, though the paling has been replaced by an iron railing.

When in England in 1865, I procured some plants of the pink and crimson double hawthorn, so ornamental in that country in spring, and planted them in different parts of the grounds. One of them, planted in a rich and sheltered spot, grow well and flowered several times. The others were less successful, and eventually all succumbed to the rigour of the winter. The common variety of the English thorn is however more hardy.

30. JUNE-BERRY. WILD PEAR. *Amelanchier canadensis*.

This beautiful little tree was introduced to the grounds many years ago, and was the first to gladden our eyes in spring with its white blossoms, though the wild plum was sometimes about as early. I took special care of one specimen training it on a single stalk and cutting away the shoots which this tree is so prone to form at the base. The result was a specimen of unusually large size and beauty, which several botanists informed me was the finest they had seen. It was destroyed to make room for the engineering building.

On our grounds the delicious fruit of this tree, so much prized by the Indians of the North-West, could not be obtained, owing to the constant depredations of a grub which destroyed or rendered it unsightly, and the birds quickly disposed of the remainder. I had hoped by culture to improve the fruit, but could never obtain it in any quantity.

31. POPLARS. *Populus*. (Species.)

The Abele or European white poplar and the Lombardy poplar were early introduced on the grounds, and have grown vigorously. The former is too rapid in growth and too wide-spreading for limited grounds, and both are very exhausting to the soil in their vicinity. Of the native

species the only one to which I gave attention was the *P. grandidentata*, the large-toothed aspen, because of its resemblance to some fossil species, and the wonderful variety in form and texture of the leaves on shoots and branches of different ages, as illustrating the diversities of foliage in these fossil species. The tree is, however, of straggling and irregular habit of growth, and scarcely worthy of cultivation except for its tremulous leaves, in which property it is surpassed by its ally, *P. tremuloides*, but this also is a straggling and usually ungraceful tree.

### 32. WILLOWS. *Salix*. (Species.)

Some plants of native willows existed originally in the grounds, and seemed to have been less attractive to browsing cattle than most other shrubs. The bright yellow catkins of the male plants formed an attractive feature in early spring. They appear, however, to be of short life and require to be frequently renewed. In recent years some foreign species of fine appearance were presented by Mr. Gibb. Two of these, more particularly, a gray or olive-leaved species and one with shining dark green leaves, were especially attractive and proved hardy and rapid growers. They are well deserving of attention where beautiful foliage is desired in a short time and where the soil is moist. The same remark may be made as to some of the finer varieties of the white-leaved poplar. The beautiful golden willow was early planted along the side of the brook, and though for some years it was impossible to protect the plants from the knives of schoolboys, they eventually overtopped their assailants and grew to the stature of trees, which formed a very pleasing variety in contrast with the maples and spruces.

### 33. WILD CHERRY AND PLUM. *Prunus*. (Species.)

The choke cherry (*Prunus virginiana*), the black cherry (*Prunus serotina*), the common wild red cherry (*Prunus pennsylvanica*), and the wild plum (*Prunus americana*),

were all indigenous on the grounds, or early introduced, and flowered and fruited every year. A few specimens still remain. The wild red plum, still used for preserving, was an article of food with the old people of Hochelaga, as the stones are found in their kitchen-middens. It probably grew plentifully along the base of the mountain. The plants on the college grounds had apparently been sown by birds, and were principally interesting as harbingers of spring by their early blossoming—their fruit being usually destroyed by the curculio.

34. THE LOCUST TREES. *Robinia pseudacacia* and *R. viscosa*.

Slips of these trees were obtained from friends at an early period of our planting, and throve well, especially the former, which, from its habit of sending up shoots from its roots, became almost a nuisance. The clammy acacia (*R. viscosa*) was more tender and liable to have the twigs winter-killed, but it often bore abundantly its beautiful clusters of reddish flowers. A plant of the latter species still remains, but all those of the former had to give way to the new buildings.

35. THE CATALPA. *C. bignonioides*.

For several specimens of this beautiful and interesting tree we are indebted to the late Charles Gibb, and all are fortunately planted in portions of the grounds not as yet invaded by building. They require a sheltered position, and some specimens seem perfectly hardy, while others, perhaps less favorably situated, have the shoots winter-killed. None of the specimens have yet flowered, and, as their growth is not rapid, it may be several years before we can have the pleasure of seeing the beautiful blossoms. I have observed that this tree has in Toronto been planted along some of the streets. Whether it would stand here in such situations is uncertain: but it deserves attention in ornamental grounds.

36. THE DOGWOOD. *Cornus*. (Species.)

Of our different species of dogwood, that which seems most deserving of cultivation as an ornamental tree is *C. paniculata*. A fine tree-shaped specimen with very spreading branches is in the grounds, and is still vigorous though thirty years of age.

37. THE ELDERS. *Sambucus canadensis* and *S. racemosa*.

Both species are cultivated in the College grounds. The latter is perhaps the most important. It grows very vigorously, is the first shrub to put forth its leaves and its not very showy blossoms in spring, and when in fruit is gay with its bunches of scarlet berries. It tends to have a straggling habit of growth, but is easily pruned and kept in shape. Its early vegetation in spring entitles it to special consideration in our climate; and though it prefers somewhat rich ground, it will grow well on dry banks.

38. THE HIGH CRANBERRY. *Viburnum opulus*.

Two specimens of this plant presented by the late C. Dunkin, Esq., still exist in the grounds, and their fruit, remaining over winter, produces a pretty appearance and provides a meal to winter birds. The double variety known as the snowball is a common ornamental shrub everywhere, but the brilliant berries of the single variety entitle it to consideration as an ornamental plant, though its flowers are much less showy.

39. THE SHEEP-BERRY. *Viburnum lentago*.

This species, indigenous on the mountain, is the only other viburnum we have cultivated except the common snowball. It grows well and flowers and fruits freely, and is among other shrubs a pretty variety. In some parts of the country its berries are used as fruit, but are of little value.

40. THE WOODHINE OR FIVE-FINGERED IVY. *Ampelopsis quinquefolia*.

This species grew freely among the thorn bushes and was used as a climbing plant as it generally is in Canada, with good effect. I owe to the kindness of my friend, the late Prof. Gray, some seedlings of the beautiful Japan species, *A. veitchii*. This I have found too tender to grow in rich soil or in shady or exposed places, but in the dry soil and sunny exposures of the front of the college buildings it has held its own, though more or less killed back in winter, for about ten years. It is too tender for our climate, except in the most favourable soils and exposures.

41. THE STAFF-TREE. *Celastrus scandens*.

This fine climber was abundant in the thorn thickets, and often bore quantities of its brilliant and permanent scarlet and orange fruit. It is now, however, confined to a single specimen trained over the front porch of the east wing, where it has continued unimpaired for the last twenty-five years, and puts forth its shoots and blossoms vigorously every spring, though it does not fruit. It is very well suited for this purpose, and I am surprised that it is not more frequently cultivated as an ornamental climber. When trained artificially, however, it often fails to fruit. It is not only a very beautiful climber, but has the merit of escaping the attacks of the minute insects so destructive to vines. I used to boast that it is altogether exempt from insect ravages; but only last spring I found some of the slender young shoots covered with the common black Aphis. It is an interesting example of the almost instinctive attraction of some climbing plants to supporting bodies. Its long red roots pass for a considerable distance underground, and whenever they come near to a post or tree stem, send up young plants though they may show no tendency to this elsewhere.

42. THE FROST GRAPE. *Vitis cordifolia*.

This grew abundantly among the thorn bushes, often



weighing them down with its masses of foliage and fruit. As already stated, it was used for training on dead trees, etc., but latterly it was much affected, and its beauty destroyed by the attacks of a minute vine-fretter (*Tettigonia*). Its fruit is useless except for the plentiful colouring matter which it contains.

43. THE JUDAS TREE. *Cercis canadensis*.

We owe specimens of this shrub to the late Mr. Gibb. It has, however, proved tender, even in a sheltered position, and has not flowered. It does not seem to be suited to our climate. Our largest specimen has been removed to the new botanical garden, where, perhaps, it may be more successful.

44. THE SUMACH. *Rhus typhina*.

This beautiful little tree is one of our best ornamental plants and will grow on poor stony soil. Its straggling habit of growth can be corrected by cutting down the tops of the young shoots annually for a few years. The female plant is much the best, being of more compact and vigorous growth and retaining its dense panicles of red fruit through the winter. In autumn the brilliant red leaves have a fine appearance. The fruit, though dry, is greedily eaten by some winter birds, and it is probably by the agency of these that the species is so plentifully disseminated over the lower part of the Mountain Park. Young plants trained separately on single stems and pruned as above directed, have a very fine appearance on exposed banks.

45. THE SHRUBBY HOLLYHOCK. *Hibiscus syriacus*.

I was much struck with the beauty of this plant as cultivated in the suburbs of Boston, and endeavoured to introduce it on the College grounds. The attempt was, however, unsuccessful. The tips were winter killed, and though I succeeded in having flowers for a few years, the plants ultimately perished.

46. THE ANGELICA TREE OR SHRUBBY ARALIA. *Aralia spinosa*.

We owe this curious plant to Mr. Gibb. When growing vigorously and in good condition it is highly ornamental, but it is liable to have the terminal bud winter killed, and it has a bad habit of spreading freely from the root. It requires moist ground. Our best specimens have had to be removed, and some have been planted in the rear of the grounds near the Medical building.

47. PAULOWNIA. *Paulownia imperialis*.

This tree produces magnificent leaves and is very ornamental, but unfortunately its large shoots are annually killed down. It has been on the ground for about twelve years and sends up vigorous shoots annually. It is deserving of cultivation even as a herbaceous plant, because of the beautiful foliage. Our best specimen has been destroyed but a smaller one still survives.

48. SHRUBBY HYDRANGEA. *Hydrangea arborescens*.

This beautiful, shrub presented by Mr. Gibb, has proved quite hardy and flowers profusely. Its large cymes of flowers are very showy in autumn, and if taken into the house can be dried and will remain fresh over winter. It has now been introduced into many private gardens. The best specimens I have seen are in the grounds of Mr. J. H. R. Molson.

49. THE HORSE CHESTNUT. *Æsculus hippocastanum*.

Specimens of this tree, presented by Mr. Young, have been growing for many years on the grounds and flower freely. I had hoped also to introduce the red variety, so much cultivated in England; but the specimens imported proved too tender to endure the winter, though Mr. Lunn, perhaps from some difference in soil or exposure, was more successful, and had vigorous specimens for many years.

50. THE SPRUCES. *Abies*. (Species.)

We had originally no spruces on the grounds. The late Major Campbell of St. Hilaire was kind enough to send a car-load of young spruces to the College many years ago, principally of the black spruce, *A. nigra*. They were planted and grew well; but those in the vicinity of the cricket ground were all killed by the rough treatment they received. A group around the lawn tennis shelter still remains; but the best were planted on the east side of the grounds and have been destroyed. Mr. Gibb, at a later date, presented young plants of the Norway spruce, one of which remains. This species is finer in habit of growth than those of our country and perfectly hardy.

51. THE ARBOR VITÆ. *Thuja occidentalis*.

A few of these trees were planted in a clump in the central part of the ground in 1856 and still remain. I trust they will not require to be removed, as I am very desirous to obtain a record of the rate of growth of this tree, which seems to be extremely slow, a fact perhaps connected with the very durable character of the wood. Our specimens are only a few inches in diameter, while the elms and maples planted at the same time are a foot or more, and the spruces planted long after are twice their size.

52. THE LARCH. *Larix americana*. L.

Only a few specimens of the American larch were planted on the grounds, and I believe all have been destroyed. A fine specimen of the European larch still exists, but is too near to an intended roadway to be permitted to survive. The European larch is a finer and more compact tree than ours, and with more pendulous branches and larger and brighter coloured cones. It is perfectly hardy. The native larch has in many places been destroyed by the ravages of a caterpillar. I have not yet observed this to attack the English species.

53. THE JUNIPER. *Juniperus communis*.

I brought a specimen of this plant from Cape Elizabeth about 1865, and planted it in what seemed a favourable spot. It grew and has continued to live up to last year; but its growth is so slow that in twenty-five years it was a low bush, with a total diameter of only about three feet. I feared to attempt to transplant it, and had hoped to preserve it by placing guards around it, but in my temporary absence it was buried under a pile of stones and destroyed.

54. THE GINKGO TREE. *Ginkgo biloba*.

I was naturally desirous to have this tree on the grounds, as an example of a taxine tree with broad leaves, as the sole representative of its genus, and as a modern example of a type which in Cretaceous and Tertiary times was represented by several species in Canada. A specimen which I obtained many years ago from a nursery in the United States still stands, but it is too large to be transplanted with safety, and I fear is so near to a contemplated road embankment that it may be destroyed. A few smaller examples, presented by Mr. Gibb, have been transplanted to the new botanical garden.

*Miscellaneous Shrubs.*

It would be tedious to refer to a variety of other ornamental shrubs cultivated or experimented on. Among those successfully introduced are the golden currant, the flowering raspberry, the Western white flowering raspberry from Lake Superior (*Rubus nutkanus*), the silver-leaf (*Eleagnus argentea*),<sup>1</sup> the lilacs, of which we had at one time five or six varieties, the species of Philadelphia or "Syringa," the burning bush (*Euonymus*), the fringe-tree (*Chionanthus*), various species of *Spiraea*, etc. Many of these, as well as Canadian herbaceous plants, have been transferred to the new botanical garden.

<sup>1</sup> This species, usually considered a Western plant, is also found locally in Eastern Canada, as, for instance, on the banks of Metis River, and it grows very vigorously and would easily run wild at Montreal.

I have always regarded the sight of trees and other beautiful or impressive natural objects as an educating influence of no small value, and all the more needed in a country whose tradition is the destruction, not the culture of trees, and where, even from a utilitarian point of view, arboriculture should be encouraged far more than it has been; while the love of rural beauty, for its own sake, at present so lamentably deficient among us, would be an influence not only elevating but tending to the best kind of patriotism. For this reason I had hoped to leave behind me, in connection with McGill, a college park, which, if not large, should be attractive and instructive from its variety and the number of interesting trees contained in it, where our young men could learn to know and love the useful and ornamental trees of our country, and whence some of them might go forth to take up the pursuits so admirably carried out by our late lamented graduate and friend, Charles Gibb. This portion of our educational work has for the present been suspended, except in so far as it can be renewed on the Trafalgar property; but I hope that the slender and imperfect record of it above given may aid those who may have opportunity to continue it under better auspices, and may possibly tend to induce some large-minded benefactor to bestow on the University a sufficient tract of land for a botanical garden and arboretum, like those connected with some of the greater universities on this continent and abroad.

For the present we have secured, as a refuge for a portion of our collections, the use of a desirable property on the mountain, belonging to the Trafalgar Institute; but this is only temporary, and it is evident that to make adequate experiments on tree culture, and to perpetuate the evidence of our results, requires a permanent property, and this of some magnitude and with somewhat varied soils and exposures. Our botanical department, as now organized under Prof. Penhallow, would render this beneficial not only to students, but to the country at large.

ADDENDA TO SIR W. DAWSON'S PAPER ON THE  
TREES GROWING ON THE GROUNDS OF  
MCGILL UNIVERSITY.

In the discussion I was reminded that I had omitted two of our most useful and beautiful shrubs, the Mahonia, *Berberis aquifolium*, and its ally, *B. vulgaris*, both of which may be said to have been naturalized on the College grounds and spread themselves at their own discretion. The former in particular is interesting as our best substitute for Holly, which in its foliage it much resembles. It is an evergreen, but its leaves are liable to be killed in winter if not covered with snow. When planted in a low and sheltered place, likely to be well covered with snow in winter, it spreads freely and its leaves preserve their greenness, so that it may be gathered at Christmas; and it will come out bright and uninjured from under the snow in spring. With a few of the berries of the tree cranberry, which remain red and perfect all winter, it may be made to do duty very well for the traditional holly of the mother country.

It was also noticed in the discussion that the growth of trees in this climate is very rapid. A young man who plants well selected trees may, before he is middle aged, have large and useful plantations; and belts of forest trees, if judiciously planted, besides their other uses, are invaluable for shelter and for protecting fruit trees.

Young seedling trees are the best, as they soon gain on older trees which have been removed, and are more beautiful and shapely. Many of our best forest trees are quite easily propagated from the seed, and abundance of healthy seedlings can often be collected under old trees.

Much is to be said, both on the score of economy and beauty, in favor of hedges instead of fences; and if the native thorns are to be used, the best will probably be *C. tomentosa*, the pear or apple haw, from its vigorous growth and compact habit. Some varieties of this species also produce a large and edible fruit.

A pleasant feature connected with such trees as the

Sumach, the Rowan tree and the Trec-cranberry, is that they attract winter birds, and thus enliven the shrubbery at a time when living things are least abundant in our woods and grounds.

The planting and culture of trees, and the disposal of them for utility and adornment were referred to by several speakers in the discussion, and it is hoped may form the subject of a separate paper by some member having the requisite experience and scientific knowledge.

