

25454

DEPARTMENT OF THE INTERIOR  
DOMINION OF CANADA

---

# REPORT

OF THE

# SUPERINTENDENT OF FORESTRY

*PART X., ANNUAL REPORT, 1904*

OTTAWA  
GOVERNMENT PRINTING BUREAU  
1905

# FORESTRY.

---

## REPORT OF THE SUPERINTENDENT OF FORESTRY.

DEPARTMENT OF THE INTERIOR, FORESTRY BRANCH,  
OTTAWA, October 19, 1904.

JAMES A. SMART, ESQ.,  
Deputy Minister of the Interior,  
Ottawa.

SIR,—I have the honour to submit the annual report on forestry for the year 1904, or more correctly, from the date of the last annual report up to the present time, being the sixth annual report from this branch.

Reports from the assistant superintendent, from the inspectors of tree-planting, and from several of the forest rangers and others temporarily employed in forest protection, will also be found in the appendix.

Dr. A. Harold Unwin, who had been employed as one of the assistants in this branch for about a year, left the service in February for a position in the imperial forestry service in South Nigeria. I may say that only the offer of a much more lucrative position caused Dr. Unwin to leave the work of this branch, where he had proved himself a most capable officer.

Dr. Unwin's place was filled by the appointment of Mr. Roland D. Craig, F.E. Mr. Craig is a Canadian by birth. He studied at the Ontario Agricultural College at Guelph, where he took his degree of B.S.A., after which he took a full course at the New York State College of Forestry at Cornell University. On obtaining his degree from that institution he was employed by the United States Forestry Bureau on work on their forest reserves in California. He engaged with this branch in April last; and has been this summer principally employed on inspection work on the prairies in Manitoba. Mr. Craig is well equipped for the work, and will doubtless make a very efficient and useful officer.

I regret to have to record the death, in March last, of Mr. George Lang, the manager of our nursery work at Indian Head. Mr. Lang was for many years connected with the Experimental Farm at Indian Head, being employed in connection with the growing of trees there, and when this branch started to grow trees from seed for distribution to the settlers on a large scale Mr. Lang was engaged to oversee the work, a position for which he was exceedingly well qualified. So far no one has been engaged to succeed him, the assistant superintendent having personally looked after the work this season. It is desirable, however, that this place should be filled as soon as possible.

### FORESTRY NURSERY STATION.

It was stated in last year's report that a beginning had been made on the quarter-section of land about a mile south of the railway station at Indian Head in the way of preparing the soil for the growing of trees thereon, it being the intention as soon as possible to centralize at this place the work hitherto done on the experimental farms at Brandon and Indian Head by this branch. Further progress in this direction has

4-5 EDWARD VII., A. 1905

been made during the present season. Thirty-five acres of this land was broken and backset last year, and twenty-five acres of it was this spring planted to trees, tree seed and oats, ten acres being left to fallow to be planted with tree seed this fall. This season about forty acres more has been broken and backset. It is proposed to discontinue the further growing of trees at Brandon and thus do away with the inconvenience of operating two nurseries at such a distance apart. The necessary buildings have been erected, roads laid out, and in addition to the trees for distribution others of different varieties for permanent plantation have been started. It is designed not only that trees shall be grown here in large quantities for distribution to the settlers throughout the treeless plains, but also that this station shall be a model forestry farm where visitors will be able to see the possibilities of growing a variety of trees, both evergreen and deciduous, on naturally treeless land. Here, too, it will be possible to do some experimental work in the growing of certain varieties of introduced species of forest trees from other parts of the world possessing a climate similar to our own. It will also be easy to gather statistics here of the relative yearly increase in the growth of the different varieties under cultivation and other information of great value to the people of the prairie region. Every civilized country at the present day recognizes the furnishing of information on matters in which any considerable number of its people are interested as a legitimate exercise of its government. We have in Canada information given by the government on nearly every branch of industry. We have our agricultural colleges and experimental farms where experiments are made in agriculture and horticulture; our dairy associations, fruit growers' associations, agricultural societies and various others, receiving both federal and local government support. Surely the establishment and maintenance of a forestry station where object lessons on a subject of such importance to the people of Canada as her forests may be given needs no argument to justify it.

#### GOVERNMENT CO-OPERATION WITH THE PRAIRIE SETTLERS IN THE PLANTING OF FOREST TREES.

The object of the department in its scheme of co-operation with the prairie settlers in growing forest trees on their farms is two-fold; first, to assist the individual who is willing to permanently set aside a small portion of his land for forestry purposes and who agrees to put that portion in a thorough state of cultivation, to plant such varieties of trees thereon as are deemed on examination by experts best suited for it, and to continue to cultivate and care for the trees; secondly, by means of these plantations scattered here and there over the whole extent of the otherwise treeless prairie to furnish object lessons to the settlers, showing the best methods of tree cultivation in almost every neighbourhood; in other words, to exhibit a model forestry plantation so near at hand to every settler that he can learn all the details necessary to success in this line. By this means it is expected that the great majority of settlers, having this example before them, will in time find it best to have their own nursery beds in which they will sow the seed of such varieties as they wish to grow, and thus be able to transplant them when the weather conditions are favourable. This will in time relieve the government nursery station of a large portion of its present work in the growth and distribution of the ordinary forest tree and permit it to devote itself more to the distribution of tree seeds and to furnishing other varieties, the successful cultivation of which the original shelter belt will make possible.

Details of the distribution of trees and tree seeds will be found in the appended report of the assistant superintendent, from which the following summary is taken:—

In 1901	the total number of applicants for trees	was	469
In 1902	"	"	"
In 1903	"	"	"
In 1904	"	"	"
			1,033
			1,649
			2,218

## SESSIONAL PAPER No. 25

It should, however, be noted that some of these have received trees for more than one year, it being the rule that if a settler who has received trees has complied with the regulations he can obtain a further supply to extend his plantation.

Since 1901 the following numbers of trees have been distributed by this branch:—

1901.. . . . .	58,800
1902.. . . . .	466,000
1903.. . . . .	917,950
1904.. . . . .	1,800,000

Total.. . . . .	3,242,750
-----------------	-----------

Also about 2,000 pounds of maple and ash seed were sent out; in all a sufficient amount of material to plant up about 1,300 acres.

The following figures will give an idea of the trees now growing in the nurseries:—

Large enough for distribution—

Manitoba maple.. . . . .	1,385,049
Native ash.. . . . .	1,272,718
Elm.. . . . .	2,500
Russian poplar, one year cuttings.. . . . .	2,200
	<hr/>
	2,662,467

Too small for distribution—

Maple.. . . . .	505,039
Native ash.. . . . .	774,931
Elm.. . . . .	60,000
Birch.. . . . .	5,694
	<hr/>
	1,345,664

Conifers—

Larch (European) transplants.. . . . .	3,470
“ 2-year seedlings.. . . . .	29,444
“ 1-year seedlings.. . . . .	12,006
“ (native) transplants.. . . . .	1,252
	<hr/>
	46,132
Scotch pine, 1-year transplants.....	15,800
“ 2-year seedlings.. . . . .	34,104
“ 1-year seedlings.. . . . .	42,488
	<hr/>
	92,392
Pinus Murryana, 1-year seedlings....	13,764
“ Banksiana, 1-year seedlings....	9,250
“ Montana, 2-year seedlings.. . . . .	11,820
	<hr/>
	34,834
White spruce, 1-year transplants.. . . . .	2,615
“ 2-year seedlings.. . . . .	5,229
“ 1-year seedlings.. . . . .	2,728
	<hr/>
	10,572
Picea pungens, 1-year seedlings.. . . . .	37,296
Douglas fir, 1-year seedlings.. . . . .	200
Total conifers.. . . . .	<hr/>
	221,426

Total stock.. . . . .	4,229,557
-----------------------	-----------

From the reports of the inspectors it will be seen that the trees sent out have done exceedingly well. Mr. Caldwell estimates that of all trees planted during the past four seasons in his district, 85 per cent are now living. Mr. Stevenson finds now growing, 85 per cent of those planted in 1902; 80 per cent of those planted in 1903; 95 per cent of those planted in 1904. Mr. Wallin says that he found of all planted

4-5 EDWARD VII., A. 1905

during the past four seasons the following were growing: elm, 90 per cent; ash, 95 per cent; maple, 90 per cent, and cottonwood, 88 per cent. Further details on this point will be found in the reports of the several inspectors appended.

In addition to the trees planted under co-operation with the settlers on their farms, 9,500 Scotch pine seedlings were planted last spring in the sand hills on the Spruce Woods timber reserve, in Manitoba. Five thousand of these were one year old and 4,500 two year old plants; and about three pounds of Scotch pine and jack pine seed was sown at the same time as an experiment. Recent examinations have shown that from 35 to 45 per cent of the two-year old plants had made fair growth, while of those one year old scarcely any had lived. Some of the seed has come up, but as the soil in those hills is nearly pure sand, it is probable that many of the seeds did not get sufficient moisture after the sowing, which was late in the spring, to cause germination, and that they will come up next spring. As this timber reserve is valueless for agriculture, it is the desire of the branch to proceed as fast as the means at its disposal will permit in making it of some value in the production of timber by protecting the young natural growth where such is found to exist, and by planting where natural reproduction cannot be obtained.

#### FORESTRY EXHIBIT.

During the present season, as in former years, we had a forestry exhibit at the Dominion Exhibition at Winnipeg, and also at the Western Agricultural Fair at Brandon. The exhibit consisted of a large variety of native woods, mostly collected from the timbered districts of Manitoba, including sections of elm, scrub oak, basswood, white spruce, iron wood, green ash, white birch, native white poplar, Manitoba maple, balm of gilead and western black willow; and alongside there were shown sections of the same kinds of wood and other introduced varieties by which a comparison of the rates of growth under natural and artificial conditions could be made. Seedlings of different ages and of the varieties of trees best suited for planting in this country were shown growing in boxes. Leaves of the principal trees were pressed and mounted on sheets and a number of enlarged photographs taken in Manitoba and the Territories, illustrating what is being done by this branch in assisting afforestation on the plains, were also shown.

#### LECTURES.

The increased public interest in forestry is shown by the requests from various quarters for lectures on the subject. In February last meetings were held in the maritime provinces. The secretary of the Canadian Forestry Association accompanied me, and addresses were given at Halifax, St. John and Sackville, and also at Montreal on our return. In Manitoba and the Territories arrangements are made each year with the agricultural societies and farmers' institutes by which addresses on forestry are delivered at their meetings throughout the country.

#### PUBLICATIONS.

In addition to numerous articles contributed to the newspapers and magazines by the superintendent, a bulletin on Tree Planting on the Prairies of Manitoba and the North-west Territories, by the assistant superintendent, has just been issued from the press. This publication, which consists of about forty pages of reading matter, besides numerous illustrations, was prepared for the purpose of affording practical information to the settler on the western prairies as to the best methods of propagating, planting and managing hardy trees for shelter belts, wind-breaks and plantations.

## SESSIONAL PAPER No. 25

## THE CANADIAN FORESTRY ASSOCIATION.

This association is steadily increasing in numbers, and is fast becoming an institution of great influence in the country. The influential character of its membership and the important matters with which it deals give it a distinguished place among the educative institutions of the country. This branch of the department may justly claim the parentage of the association, and it has given it considerable assistance from its start up to the present time, but the aims of its founders were that its influence should not be limited to any section of the country, but that it should be what its name implies, an institution for the whole of Canada, and that these objects are being realized may be inferred from the fact that provinces as widely separated as British Columbia, Ontario and Quebec, have within the past two years recognized its benefit to them by the governments of each of these provinces appropriating money towards its maintenance. As a forward step the directors of the association intend starting a quarterly periodical at the beginning of next year, which will be devoted entirely to forestry, and be conducted solely by the association.

## DOMINION FORESTS.

The vast area of forest land under the control of the Dominion government has been pointed out in previous reports, but the discoveries of each year only go to show how little definite information we have of its great extent and value. As one instance out of many is the report that Dr. King brings of spruce timber of great size found growing in our territory along the new boundary line between Canada and Alaska. In this connection I cannot refrain from again respectfully calling attention to the necessity for exploration in our new districts.

The early history of Canada is much enlivened by the accounts of the journeys of the pioneer explorer into hitherto unknown regions. The explorer and the missionary during the French regime went hand in hand, and their names are written far beyond where the settler of to-day has yet gone, but private exploration is a thing of the past. Men to-day are too busily engaged in personal advancement to permit of the gratification of a spirit of adventure if such should continue to exist, and the result is that we know practically as little of the heritage we possess beyond the settled districts as we do of Africa or Australia. It is true that the Geological Survey has done all that could be expected of it with the limited means at its disposal, but it seems to me that the day has now come when the people of the country should have the means of knowing the character and natural resources of their own unoccupied possessions. The government should know in advance of settlement the character of the unsettled districts, so as to direct immigration aright; so that mineral land might be set aside as such; agricultural land devoted to the agriculturist, and land unsuited for agriculture but on which timber is growing reserved permanently for timber.

## FOREST FIRES.

The past summer in western Alberta and British Columbia has been exceedingly dry. In British Columbia scarcely any rain fell from early in the spring up to about the beginning of September, and in some parts even later. The result was that bush fires were very general. The air was so filled with smoke for several weeks as to render coast navigation dangerous. In view of the danger to which the timber in the railway belt was exposed, the forest fire rangers were employed almost continuously, and, in addition, in case of several fires, additional help was obtained. I am glad to be able again to report that through their efforts under the able supervision of James Leamy, crown timber agent for the district, very little merchantable timber was destroyed in this belt.

4-5 EDWARD VII., A. 1905

An increased number of rangers were also employed along the foothills of the Rocky mountains, and with one exception they seem to have been equally successful in preventing destruction from this cause. The exception referred to is the disastrous forest fire along the Crow's Nest Pass in southern Alberta on timber limits owned by the Hon. Peter McLaren. The reports say that three fires were started on this property, one near the railway, another somewhere in the interior of the limits, while another came over the mountains from the neighbourhood of Fernie. Every effort was made by the fire rangers, the owner of the limits and the Canadian Pacific Railway to check the fires, but owing to the dry character of the woods and a strong wind that was blowing at the time considerable destruction of timber was caused. Full reports of the extent and damage of this fire have not yet been received.

The number of forest fire rangers regularly employed during the present season in the several districts is as follows:—

Railway belt in British Columbia (besides a large additional number employed fighting fires), under James Leamy, crown timber agent. . . . .	10
East slope of Rocky mountains between the international boundary and the North Saskatchewan river, under forest ranger Joseph E. Stauffer. . . . .	12
Edmonton district, under forest ranger John A. C. Cameron. . . . .	4
Prince Albert district, under forest ranger A. L. Robertson. . . . .	3
Moose Mountain, under forest ranger John Rutherford. . . . .	2
Riding Mountain—North side, under forest ranger Thos. Young. . . . .	5
Riding Mountain—South side, under forest ranger J. W. Thompson. . . . .	2
Turtle mountain, under forest ranger C. A. Walkinshaw. . . . .	1
Spruce woods. . . . .	1
Total. . . . .	40

The protection of our natural forests is a matter of supreme importance to the whole country, and one that has been almost entirely neglected in the past. The spectacle witnessed by the traveller passing through our unsettled forest country is sad indeed. On every hand he beholds the charred remains of the old time forest. He sees this as he journeys through Nova Scotia, New Brunswick, Quebec, Ontario, the Northwest Territories, and, sad to say, this destruction is not least if not greatest in the giant woods of the Pacific slope. Everywhere this destruction of public property is before his eyes, and it is humiliating to confess, as we must do, that the fires which caused this great loss were not only permitted but in most cases caused by our own people. The settlers in these regions on the one hand laboured with all the energy characteristic of the backwoods pioneer to create wealth, while on the other hand they lighted the torch which resulted in greater loss to the country as a whole than was caused by all the conflagrations that have ever occurred in our settled districts.

#### FUTURE DEMAND FOR TIMBER BY THE PRAIRIE SETTLERS.

With the rapid settlement of the prairies, which is now only beginning, will come a greatly increased demand for lumber, far greater than would be required by an equal number settling in a wooded country where the material for building, fencing, &c., is largely obtained from that growing on the homestead. The prairie settler has to look to the forests lying beyond the Saskatchewan to the north and to those of the Rocky mountains and British Columbia to the west to supply his wants in this respect, and he has a right to expect that this supply will be permanently maintained.

## SESSIONAL PAPER No. 25

The demand from these quarters for lumber and shingles has already within the past few years greatly increased the value of timber limits adjacent to the prairies as well as those in British Columbia, and as the government collects taxes and dues on these limits the expenditure of money in preventing their destruction is a judicious investment of the public funds.

I cannot close this report without again expressing very great satisfaction at the assistance this branch of the department has received from various quarters in the prosecution of its work. The railways have co-operated in various ways to assist both in the work of tree planting and in fire guarding. The North-west Mounted Police have as usual been active in preventing the spread of fires wherever their posts are established, and the Hudson's Bay Company, through the courtesy of Mr. Chipman, the commissioner, have again posted up our notices of warning against the careless use of fire throughout the length and breadth of the vast forest territory embraced in the field of their operations.

I have the honour to be, sir,

Your obedient servant,

E. STEWART,

*Superintendent of Forestry.*

**APPENDIX No. 1.****REPORT OF NORMAN M. ROSS, B.S.A., B.F., ASSISTANT SUPER-INTENDENT OF FORESTRY.**

INDIAN HEAD, ASSA.,  
September 25, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

SIR,—I have the honour to submit my fourth annual report of work carried out under your direction. This report dates from October 10 of last year.

At that time I was at the nurseries at Indian Head as the seedlings were then being dug up and heeled in ready for packing and distribution this spring. When the work was completed I went to Banff, where it is intended to set up a forestry exhibit in the Park museum, to see what space would be available for this purpose, and also to get some idea as to what the exhibit should consist of in order to be of most general interest. Towards the end of November I returned to Ottawa and remained in the office there during the greater part of the winter. In February I came back to Indian Head to attend a two days' institute meeting at which I delivered an address on tree planting, and also to make arrangements for the erection of the buildings put up this summer in our new nursery. I then returned to Ottawa expecting to remain there till spring opened up. Owing, however, to the sudden death of Mr. Geo. Lang, who had been looking after the work here, it was necessary for me to go back to Indian Head about the middle of March, and take charge of the work personally. As we have so far been unable to find a suitable man to act as foreman in the nurseries, I have had to remain here practically ever since, attending to the erection of buildings, fencing and other details in connection with starting a new place.

As there has been so much to look after in this way it was impossible for me to undertake any inspection work this summer as I have done in past seasons. The number of applicants in the Territories has greatly increased, and three inspectors



4-5 EDWARD VII., A. 1905

were needed to cover the ground this year. Mr. Archibald Mitchell has gone over the same ground as formerly, namely, Alberta and west Assiniboia west of Maple creek. Mr. Angus MacIntosh has inspected along the Arcola branch of the Canadian Pacific Railway, the main line from Fleming west to Wolseley, and the Prince Albert branch. Mr. John Caldwell was given the Yorkton branch, the main line from Maclean west to Caron and the Soo line from Moose Jaw to North Portal.

The following figures show plainly the great increase in tree planting, and the necessity for an additional staff of inspectors:—

In 1901	there were on the list for the Territories	166	names.
In 1902	“ “ “ “	355	“
In 1903	“ “ “ “	580	“
In 1904	“ “ “ “	1,009	“
In 1901	“ “ “ Manitoba	303	“
In 1902	“ “ “ “	678	“
In 1903	“ “ “ “	1,069	“
In 1904	“ “ “ “	1,209	“

The number on the list for each year is not made up altogether of fresh applicants, the old ones are kept on, that is, those who have complied with our regulations, and they are also visited to see that the plantations set out are being properly cared for. Many of the men who planted in 1901 and 1902 have continued adding to their plantations each spring until some now have several acres under trees.

The inspection in Manitoba has been carried out by Mr. A. P. Stevenson assisted by Mr. Roland Craig and Mr. Hugo Wallin. It will be noticed that there is a much greater proportional increase in the number of applications in the North-west Territories than in Manitoba. This is chiefly due to the much larger immigration and new settlement in the Territories. A very large number of these new settlers too are from the western States, where the benefits of tree-planting have been fully demonstrated. Most of these people are anxious to plant immediately in order to obtain shelter as soon as possible.

This spring there were distributed from the Brandon and Indian Head nurseries something over 1,800,000 seedlings and cuttings of native maple, ash, elm, cottonwood, Russian poplar, and willow. All of these with the exception of 150,000 cottonwoods were grown on our own nurseries. These cottonwoods were obtained as formerly in North Dakota. Since 1901 we have distributed the following numbers of trees:—

1901	58,800
1902	466,000
1903	917,950
1904	1,800,000
Total	3,242,750

Besides this number about 2,000 lbs. of maple and ash seed have also been sent out; in all a sufficient amount of material to plant up about 1,300 acres.

On the whole the trees sent out have done exceedingly well, and with only a few exceptions are carefully attended to. In the reports of the inspectors a more detailed account will be given of the success of the different varieties in each district. The maple, ash, elm, and willow seem to do well over the whole of the west. From recent reports the cottonwood in south-eastern Manitoba does not seem to be entirely satisfactory, but in other districts it appears to be the fastest growing tree we have. The cottonwood is a tree which seems to thrive best on the heavier soils and in moist places. In south-eastern Manitoba, however, the main difficulty seems to be with a rust fungus which affects the foliage; but the district where this is prevalent seems at present to be very limited. The cottonwood too is looked upon with disfavour by many on account of its killing back in the winter. This, however, does not seem to affect the growth of the tree to any extent in the majority of cases. The wet falls of

## SESSIONAL PAPER No. 25

recent years and the consequent late growth, which does not give the young shoots an opportunity to properly ripen before the heavy frosts, account no doubt for the rather large amount of killing back during the past few seasons. After the trees are three or four years old the winters do not seem to have any effect on them, at least the older trees on the experimental farm here have shown no sign of killing back for several years.

The Russian poplar we do not distribute very much, as it has been found that after they get to be a few years old they become subject to the attacks of borers and fungi. Mr. Mitchell reports that two-year old trees planted at Gleichen in Alberta and at other points are already being affected by this fungus. When the trees are young it seems to attack the stem at the point where the root commences, and rots the outer wood and the inner layer of bark, thus destroying the circulation of sap.

The elm and ash, especially the latter, seem to be coming into more general favour. They are both very hardy and are longer lived and produce better timber than either the poplar or willow, although they are slower in growth. The ash is very readily raised from seed, the elm not quite so easily, the seed being scarcer and, unless sown under the proper conditions of soil and moisture, it does not seem to germinate at all evenly; hence we cannot distribute this variety in such large quantities as either the maple or ash, although it is without doubt the best broad leaf tree we have. The conifers, with the exception of a limited number of white spruce and native tamarac, have not been sent out at all. We have several thousand one and two-year old seedlings growing in the nursery here, but they will not be ready for shipping for some time yet. The conifers, such as Scotch pine, tamarac, white spruce and jack pines, will undoubtedly prove most important trees for planting on the plains, and in this connection I would refer to a suggestion made in my last report that some work should be done in the tamarac, spruce and jack pine belts, to ascertain as nearly as possible their rates of growth, under natural conditions, upon which could be based some estimate of what such varieties might be expected to yield under cultivation.

This spring a number of seedlings of one and two-year old Scotch pine were planted as an experiment in the sand hills on the west end of the Spruce Woods reserve in Manitoba. The young plants were set in the sod without any previous preparation of the soil, and, although the planting was done late in the season and the seedlings not as strong as might be desired, the plantation is fairly encouraging. I visited this in September and found that from 35 to 45 per cent of the two-year old seedlings had made very fair growth. The one-year old plants were practically no good, as the roots were too small. Some seed of Scotch pine and jack pine was sown at the same time in holes dug in the sod. This has come up thinly, but many of the seeds will come up next spring, as the soil being nearly pure sand does not retain the moisture at the surface very long, and consequently the seeds, owing to late sowing, did not get a fair opportunity to germinate. I hope, however, that we may continue the planting next spring under more favourable conditions, and I have no doubt we may then expect better results.

## FORESTRY EXHIBIT.

According to your instructions an exhibit was prepared for the Dominion Fair, held at Winnipeg early in August. This consisted of blocks of wood of the native trees grown naturally and under cultivation, seed of native varieties, leaves pressed and mounted, and one, two and three-year old seedlings growing in boxes. There were also several photographs of plantations taken throughout the west and of seedlings under cultivation in the nursery. Mr. Hugo Wallin assisted me in preparing and setting up this exhibit, and remained in charge during the time of the fair, when the specimens were removed to Brandon for the local fair at that place.

4-5 EDWARD VII., A. 1905

## NURSERY WORK.

As in former years, we have grown our stock on the experimental farms at Brandon and Indian Head. From an estimate of the seedlings, made in August, I obtained the following figures:—

## GROWING AT BRANDON.

Maple.....	842,620
Native ash.....	622,184
Total.....	1,464,804

## ESTIMATE OF SEEDLINGS AT INDIAN HEAD NURSERY, AUGUST 12, 1904.

*Large enough for Distribution.*

<i>Maple—</i>	
Sown spring, 1904.....	210,053
Sown fall, 1903.....	332,376
	542,429
<i>Ash—</i>	
Sown fall, 1902.....	650,534
<i>Elm—</i>	
Two years.....	2,500
<i>Russian poplar—</i>	
One year cuttings.....	2,200
Total available for distribution.....	1,197,663

## TOO SMALL FOR DISTRIBUTION.

Maple.....	505,039
Ash.....	774,931
Elm.....	60,000
Birch.....	5,694
	1,345,664

## CONIFERS.

<i>Larch—</i>	
European transplants.....	3,470
Two year seedlings.....	29,444
One year seedlings.....	12,006
Native transplants.....	1,252
	46,132
<i>Scotch pine—</i>	
One year transplants.....	15,800
Two year seedlings.....	34,104
One year seedlings.....	42,488
	92,392
<i>Pinus Murryana—</i>	
One year seedlings.....	13,764
<i>Pinus Banksiana—</i>	
One year seedlings.....	9,250
<i>Pinus Montana—</i>	
Two year seedlings.....	11,820
	34,834

## SESSIONAL PAPER No. 25

*White spruce—*

One year transplants. . . . .	2,615	
Two year seedlings. . . . .	5,229	
One year seedlings. . . . .	2,728	
		10,572

*Douglas fir—*

One year seedlings. . . . .	37,296	
Two year seedlings. . . . .	200	
		221,426

Total at Brandon available for distribution. . . . .	1,464,804
“ Indian Head available for distribution. . . . .	1,197,663
“ “ too small for distribution. . . . .	1,345,664
“ “ Conifers. . . . .	221,426

Total stock estimated in nurseries. . . . . 4,229,557

On the whole this has been a very favourable season for nursery work, the maple and ash having done especially well. The maple came up somewhat thinly owing to the seed being three years old, as there was difficulty in collecting any fresh last fall, and the season before that there was a good deal of the seed affected by a fungus disease destroying its germination. We shall have, however, an ample stock to supply all demands next spring. Owing to the poor quality of the elm seed procured last summer, I regret to say that we shall have no seedlings of this variety to distribute next spring. The elm is grown two years in the nursery, or more correctly, is sown in July of one year and gets fairly started before fall, and is then allowed to remain the whole of the following season before being dug up. This year we procured good seed, but the first sowing made early in July owing to very dry weather was not very successful. A second sowing made in the middle of August has come up very thickly, though the seedlings are of course small and will not make such good plants next year as would those of the previous sowing had they germinated properly.

For tree planting in general the season has been very favourable, in Assiniboia, at least. The spring was cool, with plenty of rain, and there has been a fair amount of moisture throughout the season. The fall so far has been exceptionally wet, and it is just possible that this may induce late growth, and consequent freezing back of the young shoots when the hard frosts commence.

## COLLECTION OF SEED.

This has been a good year for seed of all varieties. In the spring we collected about 50 to 60 pounds of elm seed. Arrangements have been made with the Half-breeds in the Qu'Appelle valley to pick all the maple and ash seed we shall require. Mr. MacKay has also allowed us to pick a good deal of maple seed from the trees growing on the experimental farm here. Several bushels of jack pine seed were collected in the Cypress hills and sent in by Mr. Mitchell, who also gathered some white birch seed in Alberta. A few bushels of white spruce cones picked by the ranger in the Spruce Woods reserve, have also been shipped here.

## THE NEW NURSERY.

As mentioned in last year's report, the northeast quarter of section 11, township 18, range 13, west of the second meridian, one mile south of Indian Head, was set aside for the purposes of a forest nursery, as our work had increased to such an extent that the limited space that we could use on the Brandon and Indian Head farms was

4-5 EDWARD VII., A. 1905

far too small. Last summer thirty-five acres of this land was broken and backset, and was this spring planted to trees, tree seed and oats, ten acres being left fallow in order to bring it into more thorough cultivation for sowing seed this fall.

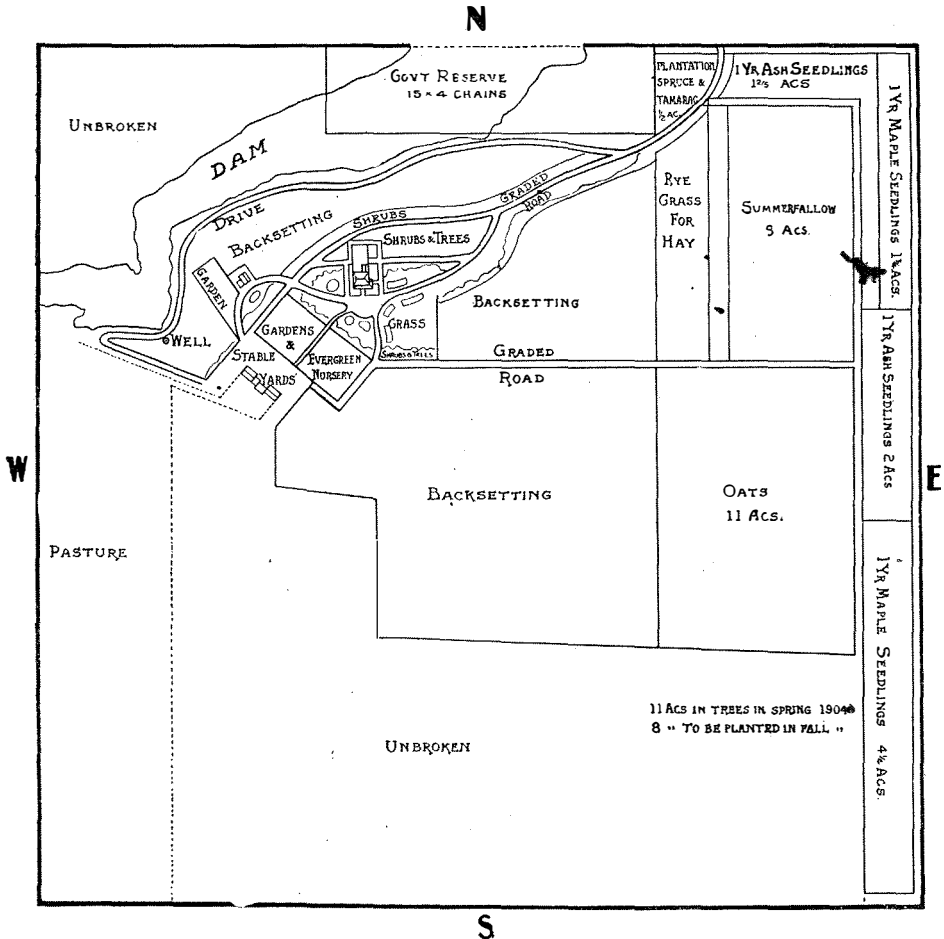
This season about forty acres more has been broken and backset. A good stone basement stable, 30 x 37 feet, a packing and implement shed, 40 x 20 feet, a dwelling house for the foreman and manager and another one for the men have been built. A

# NURSERY STATION

INDIAN HEAD, ASSA.

1904.

SCALE 9 CHAINS TO 1 INCH.



good fence, consisting of four strands of barbed wire on cedar posts set a rod apart, has also been put up around the whole place. The necessary roads and drives have also been laid out, and most of them are now graded up. The implements and horses for

## SESSIONAL PAPER No. 25

working the place were purchased during the summer, and I am glad to report that everything is now in a very satisfactory condition. Next spring all the work will be centralized here, as nothing will be grown at Brandon. This will greatly facilitate the work, and considerably reduce the expense in proportion to the amount of seedlings raised.

This spring a belt of five rows of trees was planted on the east and half way along the north sides of the nursery. The trees were maple, cottonwood and willow. Their growth this year has been most satisfactory. A small plantation of over half an acre of native spruce and tamarac was also set out. The young trees were put 3 feet x 3 feet, and would be about five years old, the seedlings having been got in the sand hills east of Brandon two years ago and then transplanted into the nurseries here. The result of this planting is far better than I hoped for, as out of about 3,500 trees set out not more than ten at the outside have died. The situation is very exposed, perfectly bare of all shelter, and on newly prepared ground.

While in the office this winter I prepared a small bulletin on general tree planting for the prairies. The bulletin is well illustrated with photographs of plantations taken in different parts of the west and others showing the seedlings of the different varieties growing in the nursery, to illustrate more plainly the methods of cultivation recommended in the text.

I am, sir, your obedient servant,

NORMAN M. ROSS,

*Assistant Superintendent.*

## APPENDIX No. 2.

## REPORT OF ROLAND D. CRAIG, B.S.A., F.E., ASSISTANT IN FORESTRY.

BRANDON, MANITOBA,  
October 16, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Department of the Interior,  
Ottawa.

SIR,—I beg the honour to submit herewith the first report of my work in the service of the forestry branch. I entered the service on April 1, 1904, and until April 27 was engaged in clerical work in the office at Ottawa. On that date I left for Manitoba to assist in the shipment of the trees from the nursery in Brandon to the Manitoba applicants. The number of applicants to receive trees was 771, and the number of trees distributed 1,145,500, made up of the following species: maple, 598,925; ash, 333,825; cottonwood, 171,250; elm, 39,725; willow, 1,775.

The flood of the Assiniboine river greatly delayed the shipment and made it necessary to haul over half the trees to the railway station at Chater. The shipping was finished, however, on May 17, after which we sowed the maple seed for next year's trees.

From May 23 to 27 Mr. Stevenson and I set out an experimental plantation of Scotch pine in the Spruce Woods timber reserve, about five miles from Sewell. Five thousand one-year olds and 4,500 two-year olds were planted in spots four feet apart, from which about one square foot of sod had been removed. We also sowed one pound each of Scotch pine, jack pine and lodge pole pine seed in spots similar to the planting spots. The soil on which this experiment was conducted was almost pure sand,

4-5 EDWARD VII., A. 1905

with a covering of unbroken sod and procumbent juniper. The water table, judging by the sloughs in the vicinity, was from 4 feet to 6 feet below the surface. The plantation is partly protected on the north by a clump of spruce, and the aspect is very gently south-east. During the planting and for nearly a week afterwards the weather was dry and hot, thereby militating against the success of the plantation.

On August 23, in company with Mr. Stevenson and Mr. Wallin, I inspected the plantation and found approximately 40 per cent of the two-year olds and 12 per cent of the one-year old pines alive, and of the seed 30 seedlings of Scotch pine could be found, 130 lodge pole pine, and 20 of jack pine. These results indicate that one-year olds and even two-year olds are too small to be successfully planted under those conditions. It was noticeable that the seedlings succeeded best in the deeper holes and that shade from the south was beneficial.

Since June 1 I have been engaged in the inspection of plantations and of ground prepared for plantations, in the following localities: along the Canadian Pacific Railway, the Souris section, Arcola branch to Sinclair, Estevan section, Lyleton branch, main line from Brandon to Winnipeg, Portage la Prairie to Gladstone, and along the Canadian Northern from Winnipeg to Portage la Prairie.

In the plantations I have inspected I have estimated that at least 90 per cent of the trees are alive and growing well. Of the different species I would say that of maples 92 per cent are alive; ash, 95 per cent; elm, 85 per cent; cottonwoods, 75 per cent; Russian poplar, 60 per cent; willow, 90 per cent. Many cottonwoods have been killed during the last year by rust, and some have winterkilled on account, no doubt, of growing too late in the fall. The Russian poplars are very unsatisfactory on account of their susceptibility to the black rot.

On the whole the plantations have received very good care, and the owners are enthusiastic over the results of their labours. The effect of cultivation on the vitality and the rate of growth is very marked.

I would suggest that in future the ash seedlings be kept in the nursery until two years old, for the one-year olds are so small that the planters do not appreciate their value and on account of their relatively slow growth for the first few years they should be given some advantage over the quicker growing species such as cottonwood and maple. Maples and cottonwoods transplant best when one year old.

There are many applications for evergreens, and in view of their value as a winter shelter, spruce and Scotch pine should be included in the distribution as soon as possible.

At present I am looking after the heeling in of the maple and cottonwood seedlings at the nursery in Brandon.

I have the honour to be, sir,

Your obedient servant,

ROLAND D. CRAIG.

SESSIONAL PAPER No. 25

## APPENDIX No. 3.

## REPORT OF HUGO CLAUGHTON-WALLIN, F.M., TREE PLANTING INSPECTOR.

INDIAN HEAD, ASSA.,  
September 25, 1904.E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

SIR,—I have the honour to submit herewith a report of my work carried out under your instructions.

I left Indian Head July 18, for Brandon, where I continued for a few days my work of preparing exhibits for the Dominion Exhibition at Winnipeg, which work I had started at Indian Head. I arrived at Winnipeg on the 22nd. After having, under your and Mr. Ross' supervision, arranged the forestry exhibition there, I was left in charge of same. At the close of this exhibition the forestry exhibits were moved to Brandon, where I, after helping Mr. Rowan to get it in shape for the Brandon fair, left him in charge and went to Killarney, Manitoba, where I joined Mr. A. P. Stevenson, inspector of tree planting. After having for ten days accompanied him on inspection work I started my own work of inspection on August 24, and have since then visited 280 farmers; the Canadian Pacific Railway main line from Brandon to Kirkella, Forest Extension, Miniota branch and Canadian Pacific Railway North-western branch from Minnedosa to Gladstone being that part of my district hitherto gone over.

I am very pleased to say that in most places where the trees have been properly planted, well hoed and cultivated, surprisingly good results are obtained; and the cases where the trees owe their death or slow growth to the neglect of their owner to take proper care of them are really very few. I found some plantations north of Griswold, Oak Lake and Virden, where the percentage of dead trees, especially among the cottonwoods, was rather large—from 15 per cent to 20 per cent in some places. When making remarks on it I got the answer that the seedlings were at the express office for some time before the applicants had a chance to get them unpacked, the cause being the flood of the Assiniboine river. This delay in their planting out may have caused some of the trees to heat or, if not packed so closely, to dry out.

I will try to give an approximate percentage of the various kinds alive.

*Elm.*—Not many of them were sent out to the parts I have visited, but they seem to do well. Ninety per cent alive.

*Ash.*—Has given a very good result. They make a rather slow growth the first summer before they get accustomed to the new soil, but seem to be just as hardy as the Manitoba maple. In fact I dare say that I have found a larger percentage of living trees among them than among the maples. Ninety per cent alive.

*Manitoba maple or Box elder.*—Ninety per cent alive.

*Cottonwood.*—About 88 per cent alive. At a few places I found some dead specimens among the cottonwoods of 1902 and 1903. I can find no other cause for it than that they have been killed back last fall, sometimes only the young sprouts, but sometimes to the root, the late growth not being ripe enough to stand severe cold. But I do not think that as an average more than 5 per cent are dead. It was especially around Forest I found that trouble.

The instructions of the department have as a rule been punctually carried out.



4-5 EDWARD VII., A. 1905

A mistake very often made by the farmers is their preparing their land too close to buildings.

I am, sir,

Your obedient servant,

HUGO CLAUGHTON-WALLIN.

#### APPENDIX No. 4.

##### REPORT OF A. P. STEVENSON, TREE PLANTING INSPECTOR.

NELSON, MANITOBA,  
September 21, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

SIR,—I have the honour to submit the following brief report on the work done by me under your instructions as tree planting inspector in connection with the work carried on in this province by the forestry branch of the Department of the Interior.

In accordance with instructions received from you in February of this year, I addressed a series of farmers' institute meetings during the month of March. Meetings were held at the following places in Assiniboia: Moose Jaw, Pense, Lumsden, Regina, Edgely, Qu'Appelle, Sintaluta, Wolseley, Summerberry, Grenfell, Broadview, Whitewood and Moosomin. These meetings were fairly well attended, in a number of cases over seventy being present. The subjects taken up and discussed at these meetings included an outline of the benefits of a good shelter belt to the prairie farmer from a money point of view in adding value to the farm, as well as from the aesthetic side. The government's co-operative scheme was outlined, small sections of timber were shown which give a good object lesson on the quick growing properties of some of our native trees when grown under proper conditions, such as are set forth and advocated by the forestry branch, all of which appeared to be duly appreciated by those present.

Arrangements were also made to address a series of farmers' institute meetings in Manitoba, but on account of the snow blockade it was found to be impossible to carry out these arrangements.

The spring was cold, late and backward, and on that account it was April 25 before preparations were begun for the shipping out of trees by the forestry branch at Brandon. The premises used for the packing and handling of our trees on the experimental farm during the past two years were found to be entirely too small to accommodate this spring's operations; consequently a large tent, sixteen by twenty-four feet, was hired for a few weeks and used in addition. Mr. Roland Craig, who had recently joined the forestry branch, arrived in Brandon on May 1, and assisted in the work of packing and distributing. This work started on May 2, and over 100,000 trees per day were shipped out till the 7th, when the Assiniboine river rose and flooded the entire valley, cutting off all communication with the experimental farm and Brandon, no team being able to cross between these two places till the 20th. After considerable difficulty teams were secured and trees were carted to Chater, and all further shipments were made from that place. All shipments were completed on May 17. Altogether the shipping season had been one of the most unfavourable in my experience principally on account of the extreme hot weather setting in as soon as the late spring opened, trees bursting out almost in full leaf in two or three days.

## SESSIONAL PAPER No. 25

We completed the sowing of five acres of maple seed on the 20th, and shortly after I went to the Spruce Woods south-east of Sewell, accompanied by Mr. Craig, for the purpose of planting a quantity of Scotch pine seedlings. No preparation of the soil had been made, the trees being planted in the soil pretty much as nature left it. Five thousand one-year and 4,500 two-year old Scotch pine were planted. These trees were all grown in the first place at Indian Head by forestry branch officials. Three pounds of pine seed was also sown of the following varieties: Murrayana, divaricata, and sylvestris. We finished planting all of the above on May 27. On August 23 the place was visited and examined, and the following results were found: 1-year Scotch pine, 12 per cent alive; 2-year Scotch pine, 40 per cent alive; of seed sown, Murrayana gave 125 seedlings above ground; sylvestris, 30; divaricata, 20. The above list of trees planted I consider fairly good when the conditions are considered. The weather at planting and for a week after was dry and hot; consequently the 1-year olds have nearly all died, while the 2-year olds, with more vitality and better roots, made a fair showing. Three-year olds would, I have no doubt, give even a better showing. The small results from the seed sown can be explained to a large extent by the carrying off of the seed by birds. This difficulty could be obviated by mixing red lead with the seed before sowing.

I began the work of inspection the beginning of June. Mr. Craig accompanied me on this work till the 13th, when he started alone on the work of inspection in the south-western part of the province, and later on the main line of the Canadian Pacific Railway from Brandon to Winnipeg.

On August 11 Mr. H. C. Wallin joined me at Killarney and accompanied me till the 20th, when he took up the work of inspecting in the northern part of this province.

One million one hundred and sixty-eight thousand five hundred and ninety-five trees were sent to 771 applicants this spring within the province of Manitoba. The varieties of trees sent out consisted of Manitoba maple, elm, ash and cottonwood. The total number of applications for trees to be visited in Manitoba this summer is 1,209. These are widely scattered all over the province. Up to the present date I have inspected the farms of 400 applicants. It has been noted that the trees sent out this spring have done remarkably well. Ninety-five per cent are alive. This fine showing is the result of having abundance of rain during the months of June and July. I regret to have to report that a number of the trees planted in 1902 and 1903 in the district west of Crystal City have been injured during the past winter. Ten per cent of the cottonwood trees are dead. I noticed trees of this variety that had been planted eight years dead this spring in this same district. The maples also showed some injury, being cut back to the ground in some instances, but all were growing up again vigorously. On the other hand, from Crystal City east no damage whatever was noticed, but fine growths of from ten to twelve feet high, planted 1902, are to be found. I have noted with satisfaction this year the behaviour of the ash tree. Where the cottonwood and maple were cut down this tree has stood without the slightest sign of injury. It has had also the prejudice against it of being a slow grower, but this has been largely overcome this year by its fine sturdy growth, and where mixed with maple its growth is equally as fast as the latter. The greatest enemy of the elm on the prairie is the jack rabbit which appears to delight in browsing off this tree. A shot gun is the only sure remedy.

Concerning the general condition of the trees in the groves set out under the forestry branch supervision, I might say that with the exception of the district named, 85 per cent of 1902 trees are growing, 80 per cent of 1903 trees are growing and giving splendid results. I notice that in a number of plantations set out in 1902 no further cultivation will be necessary, the trees entirely shading the ground, rendering the growth of grass and weeds impossible.

It is rather difficult to arrive at a proper conclusion as to the cause of the death of so many young and also old trees in the south-west of Manitoba this spring. I think the yellow rust on the leaves of the cottonwood weakened the vitality of the trees last

4-5 EDWARD VII., A. 1905

fall. This followed by a severe winter resulted in a large number of deaths this spring. With the maple a heavy frost during last September, while the young wood was full of sap was a considerable factor in the killing back, I have no doubt.

This co-operative tree planting scheme is growing in favour each year. As fine groves are beginning to show up all over the prairie all shades of opinion are applauding the movement and sincerely hope the good work will go on.

Your obedient servant,

A. P. STEVENSON,

*Tree Planting Inspector.*

### APPENDIX No. 5.

#### REPORT OF ARCHIBALD MITCHELL, TREE PLANTING INSPECTOR.

MACLEOD, ALBERTA,

October 8, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

SIR,—I have the honour herewith to submit the following brief report of the work done by me in 1904 in connection with the Forestry Branch of the Department of the Interior.

On instructions from you, I joined Mr. M. D. Geddes, of Calgary, at Pincher Creek, on February 29, and with him addressed farmers' institute meetings at Pincher Creek, Fishburn, Claresholm, High River, Okotoks, Spruce Vale, Carstairs, Didsbury, Olds, Innisfail, Markerville and Red Deer. At most of these places two meetings were held. In all I addressed nineteen meetings, and a great deal of interest was taken in forestry matters. In travelling through the country last year, I remarked a great lack of knowledge as to the training of shade and ornamental trees. Nearly every farmer makes an attempt at growing a few trees of this class, but they are usually very branchy, and easily broken and destroyed for want of a little judicious pruning. Wherever, therefore, I could get specimens, at the evening meetings, besides briefly explaining the co-operative system, I gave a demonstration in pruning, using actual specimens, and giving reasons for everything done.

In the more wooded country, from Olds to Red Deer, I warned the farmers against a complete clearing of their lands, and advised the retention of about twenty or thirty acres of trees as windbreaks, and for the supply of firewood and fencing material in the future, as well as for the regulation of the rainfall. I pointed out the importance of looking upon such as part of their regular crop and advised protecting it, and dividing it into equal areas, one to be cut over every year for the supply of the farm. Every portion so cut over would restock itself, and at the end of the rotation the first area would be ready for cutting again. I showed also how it would be possible to improve the quality of the timber by restocking bare places in the cut-over areas with ash and elm seedlings, and by small spruce and tamarack plants pulled from the swamps in the neighbourhood. This was well received at the meetings, and in this connection I should like respectfully to draw your attention to this side of farm forestry, and suggest that steps be taken to find the size of plantation necessary for the needs of the farm, and to maintain the humidity of the country, the most desirable rotation, and whether a clear cut or a selection system, and the best means of

## SESSIONAL PAPER No. 25

improving the timber of the more wooded portion of the country, and so on. Some farms in northern Alberta are already completely cleared. Forestry is a branch of agriculture. The average farmer knows very little about it, and it seems to me that much good work could be done by your branch in this direction.

I commenced inspection work on June 6. There has been an increase of 103 applicants in my district over those of last year. We have had a very dry summer, especially in southern Alberta and western Assiniboia, and yet I am pleased to report the percentage of living trees planted in 1904 is very good, namely, maple, 67 per cent; cottonwood, 83 per cent; Russian poplar, 96 per cent; ash, 88 per cent, and elm, 87 per cent. Several maple consignments were heated in transit, which brings down the average somewhat. In the irrigated country, contrary to what might have been expected, I found many plantations suffering from the drought. Early cultivation had been neglected, and the water was applied too late. Those who could not irrigate knew they had to depend on their hoes and cultivators for success, and as a result their trees were clean and in excellent condition. An idea still prevails there, and indeed it does in most of the west, that trees will not grow without artificial watering. This is entirely erroneous, and as far as I have seen wherever plantations have got ordinary care and without any irrigation there has not been the slightest sign of distress on account of dry weather. Of course where irrigation has been judiciously used the results have been very good.

Last winter's frosts did some damage as usual in freezing back part of the previous summer's growth. In the case of the maple the better the cultivation the better the tree seems to be able to stand the winter. Some of the 1902 maples are now seven to eight feet high. The cottonwoods seem to kill back considerably the first two years and then harden up and keep their growth. Some of the 1901 cottonwoods made three and four feet last year, which stood the winter well, while 1903 trees just beside them were killed to within a few inches of the ground. Very few are completely killed, and the roots are usually able to send out vigorous shoots.

For the better success of the plantations, I would respectfully suggest that in the instructions sent to each applicant pressing directions should be given to cultivate between the trees as soon as they are planted. This is very important, especially if a dry spell should occur immediately after planting.

I should like also to suggest that the L method of spade planting be given in the instructions as an alternative to the plough planting. The latter method is excellent when an efficient ploughman is at hand, but most of the settlers are not first-class ploughmen, and I have not seen a really good specimen of plough planting yet. The rows are usually crooked and irregular in width, and sometimes the opened furrow is neglected and not filled in. This summer I have shown each new planter how to plant after the L method, getting a spade and actually planting a tree before him. This method is not much slower than the other, one man working alone being able to put in about 1,000 plants per day. It is useful alike for cuttings and rooted plants, and has the further advantage of giving the least opportunity for the drying out of the under soil, as that is only exposed in very small quantity and for a very short time.

The working of the L method is briefly as follows: The perpendicular cut of the L is made first. The horizontal one is then made by thrusting the spade down about two-thirds of its length. The handle is depressed and then pushed well forward, which movements cause a hollow to appear under the blade. A plant is thrust into this, the spade jerked out, the earth falls on the root, and it is then trodden firmly. A slight motion of the foot throws a mulching of loose earth around the trees, and the operation is complete. Where the growth of the cottonwood has been very rapid, as it usually is in the second year, I have advised cutting back the summer's growth to about two-thirds of its length. This helps the wood to harden before the fall storms or early frost strikes it. Perhaps if this were also inserted in the instructions to planters it might become more generally known, and might help to get the plantations over their early years more easily.

4-5 EDWARD VII., A. 1905

While in the Cypress hills south of Medicine Hat I collected a quantity of pine cones for the nursery, and also while in the Innisfail and Beaumont districts I collected some white birch seed.

I have the honour to be, sir,

Your obedient servant,

ARCHIBALD MITCHELL.

### APPENDIX No. 6.

#### REPORT OF ANGUS MacKINTOSH, TREE PLANTING INSPECTOR.

INDIAN HEAD, ASSA.,

October 24, 1904.

E. STEWART, Esq.,

Superintendent of Forestry,

Department of the Interior,

Ottawa.

SIR,—I have the honour to forward you my report upon the tree planting inspection work with which you entrusted me last June. At that time Mr. Ross, your assistant, gave me a list of settlers that I had to visit in the southern and eastern parts of Assiniboia; and when I exhausted that list, about the end of August, and reached Indian Head, he supplied me with another which took me into the north-western part of the territory, and also into Saskatchewan.

In Assiniboia I found that the most of the settlers who for the last two or three years had availed themselves of the Dominion government's offer of free trees, had not only carried out the instructions and rules under which they got them, but that some of them had become enthusiastic in the matter of tree planting. The success of those who gave the trees they got the necessary care and now have flourishing plantations, has been the means of stimulating their neighbours to try and do likewise. Wherever I went the desire to make prairie homes more comfortable and picturesque by tree planting was manifest. To the lover of trees, engaged in inspection work, the long weary drives, fording creeks, wading through sloughs, and sharing the rough couch (always hospitably given) of settlers beginning life in the North-west, are in a measure compensated for by the sight of thriving, though small, plantations of trees dotted here and there over the treeless plains, and trees that have only been planted three or four years, standing from six to eight feet in height.

The plantations made under government guidance I generally found successful. There were of course a few exceptions, but the exceptions were invariably due to neglect on the part of the owners.

The hardness of trees was put to a severe test last winter, which was an exceptionally hard one, but I am glad to say that all the varieties sent out by the government, excepting a few cottonwoods in the Fleming, Moosomin and Wapella districts, have stood the test.

In northwestern Assiniboia and up the Prince Albert line into Saskatchewan I travelled over a good deal of country where a number of the applicants I had on my list were new-comers that amid other and more pressing work had not been able to thoroughly prepare ground for trees. They are all, however, most desirous to begin and to shelter and embellish their homes with trees. There will be quite a number of trees required for that part of the North-west next year. Wherever plantations were

## SESSIONAL PAPER No. 25

made they were a success, and I anticipate still greater success in the future when settlers come to thoroughly understand the care and attention that should be given to trees on the prairies.

I averaged the failures amongst the trees planted last spring, on the places I visited, at 10 per cent, and the percentage of older trees that succumbed to the severity of last winter at about the same figure. The greatest loss was among the cottonwoods. Manitoba maple, ash, elm and Russian poplar stood the winter better.

The number of places I visited was 288.

I am, sir,

Your obedient servant,

ANGUS MacKINTOSH.

## APPENDIX No. 7.

## REPORT OF JOHN CALDWELL, TREE PLANTING INSPECTOR.

REGINA, September 17, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

SIR,—I have much pleasure in herewith submitting to you my report on forestry work in my district this season.

My route for the season was the Manitoba and North-western Railway from Minnedosa to Yorkton, the Miami line from Indian Head to Moosejaw and the Soo line.

The forestry work has only begun, but interest in the work is growing fast, which will mean a heavy demand to supply the wants of the farmers.

The varieties planted so far consist mostly of maple, cottonwood and ash, also a few elm, Russian poplar and Russian willow. The native maple is a good reliable old standby, easily grown, easily transplanted, and a very useful all-round tree. The cottonwoods have done fairly well. In some places they have frozen back considerably, but generally come again. I am still in favour of a proportion of cottonwood. Sometimes they are tall and slim and should have the top shortened when planting; otherwise they will become top heavy and lop over. The ash is, of course, a slow grower, but is sure to prove a long liver and a valuable wood. Probably 85 per cent of all varieties of seedlings planted are growing. Very few Russian poplars or willows have been sent out, and there is quite a call for these hardy fast-growers. I am very much in favour of sending out quite a lot of Russian laurel, French laurel and the acutifolia willows rooted or in cuttings. Rooted is best, and I will say that of all the trees grown in this country French laurel is the hardiest; also a fast grower and will do well on either high or low land. The Russian laurel is fairly hardy and a very pretty tree. None of these two laurels have been sent out, and I am much in favour of growing large quantities. Willow cuttings can be grown at 75 cents per thousand and rooted at probably \$2 per thousand. There is a prejudice against the Russian poplar in eastern Manitoba on account of the fungus, but from Brandon to Calgary the finest looking trees we have are the Petrofsky Russian poplar, about thirty-five feet high and probably fourteen years old. There are also a few cottonwood (I think native) looking about the same size and just as nice. If we plant a variety of all our best trees in all the different districts we will soon see which trees are most suitable in each district. I would send out poplars in cuttings; if they once get started they do best that way.

4-5 EDWARD VII., A. 1905

I was very much pleased to see such large quantities of splendid stock growing at Brandon and Indian Head for distribution, and I was especially well pleased to see the success that has attended the raising of young evergreens, principally spruce, pine and larch, at the nurseries at Indian Head. Of all trees to make home homelike and cheerful, there is nothing like the evergreens, and the propagation of these conifers should be very much encouraged.

We may find it a little harder to induce farmers to put out plantations for posts and wood, but it will pay them well to do so. I am burning my summer wood at Virden from land that was bare prairie fourteen years ago. The experimental farms are splendid examples of what can be done, and all farmers in open districts should fall right in line in planting out forest trees.

The forestry work, as far as it has gone, is very hopeful and encouraging.

I am, sir, your obedient servant,

JOHN CALDWELL.

## APPENDIX No. 8.

### REPORT OF JAMES LEAMY, CROWN TIMBER AGENT, NEW WESTMINSTER, B.C.

NEW WESTMINSTER, B.C.,

November 10, 1904.

E. STEWART, Esq.,

Superintendent of Forestry,  
Ottawa.

SIR,—I have the honour to submit herewith my report for the past season of what has been done in this province under my supervision respecting forest fire protection.

I might say at the start, that we had an exceptionally dry season, probably the driest for very many years, and although there were numerous outbreaks of forest fires in various districts, comparatively very little damage was done to the timber within the railway belt. This can be accounted for by the efficient work accomplished by the fire rangers, of whose efforts I cannot speak too highly.

One of the outbreaks of fire which occurred during the summer was in Yoho Park, at the summit of the Rocky mountains, which did considerable damage to the young growing timber. This fire was attended to by the park ranger, who employed a number of assistants. He was also assisted by some of the Canadian Pacific Railway employees.

Two other fires occurred in this park, one at the first crossing of the Kicking Horse river and the other at Palliser Crossing. Little or no damage was done at either of these fires, as they both started on ground which had already been burnt over, and were extinguished by Mr. Ashdown, the fire ranger, before much headway had been made.

A very serious fire occurred on the upper Columbia river, outside the railway belt, on lands owned by the provincial government. A large quantity of timber was destroyed, and it required strong efforts on the part of the fire ranger to prevent the flames spreading to the timber inside the belt. I am pleased to say he was successful, and that no damage within the belt occurred. I do not know the origin of the fire in this instance.

Another large fire occurred east of Donald. It started outside the railway belt, and burnt over a considerable portion of ground, doing damage to much of the young

## SESSIONAL PAPER No. 25

growing timber. The ranger in this district went to work with a large gang of men, and succeeded in keeping the fire outside the limits, no damage being reported. This fire is supposed to have been started by lightning, as it came from a direction where there were no settlers, and no other cause can be assigned for the outbreak.

A fire occurred, too, at the head of Beaver river, burning over a large area, but as it was confined principally to the summits of the mountains, but small damage was done to the merchantable timber. This district is looked after by Mr. Frank Ashdown, who did very efficient work all summer in the prevention of the spreading of fires.

Another fire occurred at Silver Creek, near Albert Canyon, which got under considerable headway, and did some damage, owing to the fact that it was almost impossible to get men in the neighbourhood to fight the fire. However, the ranger succeeded in getting a gang together, and was successful in preventing much loss to the timber in danger.

From Albert Canyon to Revelstoke numerous small fires were reported along the line of the Canadian Pacific Railway, but in each instance they were promptly extinguished, with little or no loss to the timber threatened. The fires along the Illicilliwaet river were supposedly started by sparks from locomotives, and along the Columbia river, north and south of Revelstoke, the cause for fires has been assigned to an electrical storm passing over that vicinity, immediately after the occurrence of which fires were observed in seventeen different places. All were promptly extinguished by the fire ranger, who employed a large number of men to help him.

A very large fire occurred at Fish Creek, on provincial government lands, at one time endangering the mining town of Camborne, which is situated just at the boundary of the railway belt. This fire was attended to by Mr. Bullard, to whom much credit is due for the prevention of any damage to the timber within the belt, though at one time a large loss seemed inevitable.

Only one fire was reported in the valley of the Eagle river. This was supposed to have been started by the railway employees at a place known as Bowie Siding. The sectionmen at once came to the assistance of the fire ranger, and in consequence little or no damage resulted.

Numerous fires occurred in the Shuswap Lake district, all of which were supposed to have been started by settlers in clearing their lands or by Indians. The latter have been known to start fires in the woods with the intention of encouraging the growth of wild berries. A serious fire occurred at Seymour river, which empties into Shuswap lake. This, too, was on provincial lands, and a large area of fine timber was destroyed. The fire was kept outside the railway belt, however, and I am glad to say that no damage was done on this side of the belt. A large number of men were employed in preventing the spreading of these fires, the Columbia River Lumber Company having to close down their mills at Kualt and turn out all hands to assist. Little damage was done at any of these outbreaks, and this was entirely due to those who lent their help in extinguishing the flames when they were first noticed.

Fires occurred at different intervals on the Spillimacheen river, but were attended to by the ranger and by men employed under him. Here, too, no damage of any worth was done to the timber within the belt. The fires on this river were started, it is thought, by some one with the intention of destroying the timber throughout that district. One man was known to have threatened to do this, and on leaving Enderby for Mable lake seven different fires occurred after he passed up the road. I instructed the fire ranger to immediately arrest him, but before this could be accomplished he had disappeared from the country, and has not been seen since. I may say here that it is extremely difficult to obtain eye-witnesses of actions of this sort, and without this evidence no magistrate will convict.

A few fires occurred in the Kamloops district, but did not do any serious damage. The Kamloops Saw Mill Company rendered excellent service on many occasions, by putting on men when danger threatened and were at all times of great assistance to the fire ranger in that vicinity.



4-5 EDWARD VII., A. 1905

Small fires were reported at Lytton and west of this town; no damage, however, the ground having been in each instance already burnt over.

Only one fire occurred within the railway belt in the coast district, on limit 'B.' This fire was undoubtedly set with the deliberate intention of destroying the timber on this limit, by parties desirous of settling on the land in question. The fire ranger, Mr. Johnson, succeeded in subduing the fire before much damage had been done. This fire, I might mention, occurred as far back as May last.

Large fires occurred on provincial lands up the coast and in the Crow's Nest Pass district; also on Vancouver Island. In many cases vast areas of timber were destroyed and at one time the smoke from these fires along the coast was so great that it rendered navigation both difficult and dangerous. On the American side fires were very prevalent, and much damage was done to the timber. In the Kootenay district provincial lands again suffered, and much destruction of valuable timber was reported.

On consultation with the fire rangers employed under my supervision, I feel I can assure you that in the railway belt not more than two million feet of merchantable timber was destroyed by fire during the whole season, extending from the beginning of May to the middle of October; however, I am sorry to say that a large quantity of young growing timber, which would be valuable in the immediate future, was destroyed. It would be impossible to estimate the quantity of this latter timber.

That the owners of timber limits in this province appreciate the efforts which have been made by myself and the fire rangers under my supervision will be evidenced by the letters of appreciation which I have received from them and copies of which have been forwarded to you, also letters in the same strain received by the Deputy Minister of the Interior. It has been a hard, trying season, and it is certainly gratifying to know that what has been done has been well and successfully done. The fire rangers deserve great credit for their work, which has been arduous and in many instances dangerous.

In conclusion, I would again respectfully suggest that the provincial government be requested to declare a close season for setting out fires, say during the months of June, July and August. While this might appear to be a hardship to parties anxious to clear their land for cultivation purposes, this might be overcome by the fire rangers being empowered to issue a permit to each person desiring to set out a fire during said close season, providing, of course, that the party in question could satisfy the ranger that the fire would not be allowed to spread beyond the area to be cleared, and that he would give proper and careful attention to the same. This system, I think, would work well in this province, and would prove the means of saving a large quantity of timber, which otherwise would be in constant danger of destruction.

All of which is respectfully submitted.

JAMES LEAMY,  
*Crown Timber Agent.*

SESSIONAL PAPER No. 25

## APPENDIX No. 9.

## REPORT OF JOS. E. STAUFFER, FOREST RANGER.

DIDSBURY, ALTA., October 15, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

SIR,—I beg to submit a report of the work done by the forest fire rangers under my supervision in Alberta during 1904.

The forest area of Alberta, from the international boundary to the North Saskatchewan river, was last spring divided into suitable districts and a forest fire ranger appointed in each district. Each ranger was instructed to keep warning notices posted up at all public and conspicuous places; along the trails leading to and through timber; on and around all timber berths, and also on a building of each settler living in, or within five miles of, timbered country. He was also instructed to get all the settlers in his district interested in the necessity of protecting our forests from fire, and thus endeavour to receive their co-operation in the prevention of the same. These rangers were also instructed to do everything possible to prevent the spread of fires, and where necessary to employ assistance for that purpose. Considering that the rangers were all new at the work, I must state that each did his work very satisfactorily.

We had several fires this year, but only one that resulted very seriously. This was a fire south of the Crow's Nest Pass Railway near Blairmore, Alberta, which destroyed valuable timber on timber berth Nos. 80 and 179. About July 17 a fire started near the south fork of the Old Man's river, on timber berth No. 80. Fire Ranger C. B. Miller, with several men, endeavoured to keep it north of the river, but it got across, but was checked at Canyon Creek. The cause of this fire is unknown, but it is said to have been started by lightning.

On July 23 a fire started on the Canadian Pacific Railway right of way in the grass near Crow's Nest lake. Near the place where the fire started, and on the edge of the right of way, was a pile of dry logs placed there by the construction gangs of the Canadian Pacific Railway. The fire reached these dry logs and immediately got beyond control, the prevailing high winds carrying it very rapidly in a southeasterly direction until it reached the fire burning on the south branch of Old Man's river. The total area burnt over amounts to one hundred square miles approximately.

There was also a fire near the head waters of the Medicine river, which burnt over a large area, but the damage was not great on account of the same area having been burnt over several years ago.

I am, sir, your obedient servant,

JOSEPH E. STAUFFER.

4-5 EDWARD VII., A. 1905

## APPENDIX No. 10.

REPORT OF C. A. WALKINSHAW, FOREST RANGER FOR THE TURTLE  
MOUNTAIN TIMBER RESERVE.

BOISSEVAIN, MAN., October 13, 1904.

E. STEWART, Esq.,  
Superintendent of Forestry,  
Ottawa.

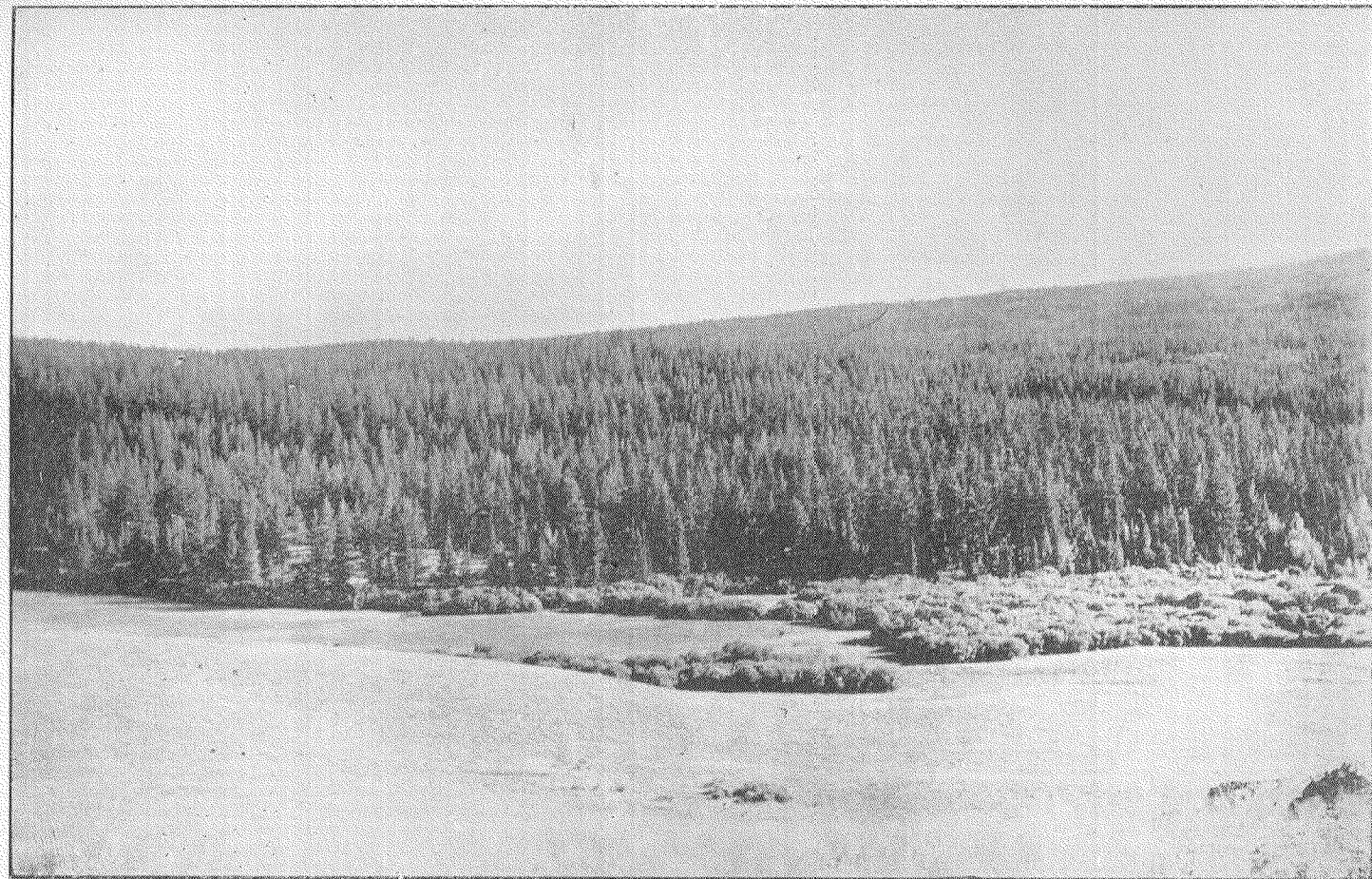
SIR,—I beg to submit to you my report on Turtle Mountain permanent timber reserve for the past year.

I am happy to state that for growth of young trees and freedom from fires this has been the best year in the history of the reserve. My assistants and myself have been so diligent in patrolling the reserve that not one single fire has occurred so far this year. I may also mention that the house and stable built this year in the reserve for the accommodation of the ranger has been of great value, as he is on the ground at all times and in a position to stop fire coming from the American side. The young trees on some sections have made wonderful growth. Two or three years ago they were almost bare, and to-day there is a beautiful young forest. I confidently expect in five or six years to have a grand reserve, provided of course that a sharp lookout is always kept for fire. I may also say that I make it a point of my work to request the settlers on the American side to be as careful as they possibly can in burning off their ground not to let fire get away from them. Every man promised that he would not set fire where it was likely to run and do damage.

We will keep a strict watch till the end of the season which is drawing now to a close.

I am, sir, your obedient servant,

CHARLES A. WALKINSHAW,  
*Forest Ranger.*



LONG LAKE TIMBER RESERVE, SOUTH-WEST OF KAMLOOPS, B. C.



IN THE FOREST NEAR GLACIER, B. C. TAKEN BY W. S. VAUX, OF PHILADELPHIA, PA.





BRITISH COLUMBIA LUMBER WOODS, SHOWING LOG ROAD.



CEDAR TREES (*THUYA GIGANTEA*) IN STANLEY PARK, VANCOUVER, B. C.



FORESTRY NURSERY STATION, INDIAN HEAD, N. W. T.





SCOTCH PINE SEEDLINGS (5 YEARS OLD), GROWING ON FARM OF G. & B. SPRING-RICE, NEAR  
SPENCE, N. W. T.