

CANADA.

REPORTS

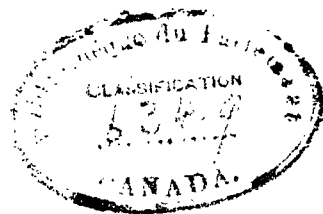
ON THE

FORESTS OF CANADA.

With Précis by Dr. Lyons, M.P., of certain Papers submitted
therewith.

(A Map will be found at page 7.)

Presented to both Houses of Parliament by Command of Her Majesty.
April 1885.



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1885.

[C.—4376.] Price 7½d.

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REPORTS ON FORESTS.

GOVERNOR-GENERAL THE MOST HON. THE MARQUIS OF LANSDOWNE, G.C.M.G.,
to the RIGHT HON. THE EARL OF DERBY, K.G. (Received December 22, 1884.)

Government House, Ottawa,
December 9, 1884.

MY LORD,

WITH reference to the concluding paragraph of my Despatch of the 28th June last,* on the subject of the proximate exhaustion of forests so far as the question relates to the Dominion of Canada, I have now the honour to forward to your Lordship herewith a copy of a communication from the Department of the Secretary of State for Canada, enclosing copies of the replies received from the Lieutenant-Governors of the various provinces on the subject.

31st Oct.
1884.

On receiving these reports I caused the papers to be referred back for some directions to the Department of the Secretary of State, from which they have now been returned.

I have, &c.

The Right Hon. the Earl of Derby, K.G.,
&c. &c. &c.

(Signed) LANSDOWNE.

Enclosure 1.

DEPARTMENT OF SECRETARY OF STATE FOR CANADA TO THE GOVERNOR-GENERAL'S SECRETARY.

MY LORD,

Ottawa, October 31, 1884.

WITH reference to Lord Derby's Despatch to his Excellency the Governor-General, of the 21st November last, on the subject of the proximate exhaustion of forests as far as the question relates to the Dominion, a copy of which was referred to this Department, and to the Order of his Excellency in Council with regard thereto of the 14th June last, I have the honour to transmit to your Lordship herewith a copy of the replies received by the Secretary of State from the Lieutenant-Governors of the various provinces of the Dominion on the subject.

Accompanying the reply from the Lieutenant-Governor of Quebec are a number of Acts and pamphlets.*

I have, &c.

The Viscount Melgund,
Governor-General's Secretary.

(Signed) G. POWELL,
Under Secretary of State.

Enclosure 2.

Government House, Charlottetown, Prince Edward Island,
July 7, 1884.

SIR,

I HAVE the honour to acknowledge the receipt of your Despatch of the 2nd July instant, transmitting to me for the information of my Government, and in order that the information sought for may be supplied for transmission to the applicant, a copy of a Despatch from the Right Hon. the Secretary of State for the Colonies, enclosing a copy of a note addressed by R. D. Lyons, M.P., requesting to be supplied with such information as is obtainable on the reported proximate exhaustion of forests, so far as the question relates to the Dominion of Canada, I beg to state that

* Not printed.

there are now no forests of any extent in the province of Prince Edward, where they have disappeared under the axes of the settler and the lumberman.

G. Powell, Esq.,
Under Secretary of State,
Ottawa.

I have, &c.
(Signed) T. HEATH HAVILAND,
Lieutenant-Governor.

Enclosure 3.

Government House, Winnipeg, Manitoba,
October 21, 1884.

SIR,

I HAVE the honour to enclose herewith a letter from my Minister of Agriculture, in reply to a copy of a Despatch from the Right Honourable the Secretary of State for the Colonies, transmitted to me in your Despatch of the 2nd July last, requesting to be supplied with such information as is obtainable on the approximate exhaustion of forests.

Hon. J. A. Chapleau,
Secretary of State, Ottawa.

I have, &c.
(Signed) J. C. AIKINS.

SIR,

Winnipeg, September 9, 1884.

I HAVE the honour to state in further reference to your letter of July 14th last, transmitting to this Department a copy of a Despatch from Earl Derby to the Governor-General in reference to the reported proximate exhaustion of forests, as follows:—

The forest and timber limits in this province are entirely under the control and administration of the Dominion Department of the Interior, which is therefore in possession of all official information in reference to them.

During the rapid construction of the main line of the Canadian Pacific Railway, during the years 1882 and 1883, large quantities of timber were used, but as the main line has now reached the Rocky Mountains the progress of construction is necessarily slower and much less timber is required, and the principal portion of it is obtained from those mountains. This Department has adopted means to prevent as much as possible the destruction of timber by fire, and is endeavouring to secure the rigid enforcement of the Prevention of Fire Act. Steps have also been taken for the establishment of an annual arbor day, on which the general planting of trees throughout the province will be encouraged.

Your obedient servant,
(Signed) A. A. C. LA RIVIERE,
Minister of Agriculture, Statistics of Health.

Enclosure 4.

Government House, Halifax, Nova Scotia,
July 29, 1884.

SIR,

REFERRING to Mr. Under Secretary Powell's Despatch of the 2nd instant, in which information respecting the proximate exhaustion of forests in Canada was applied for, for the purpose of being forwarded to the Right Honourable the Secretary of State for the Colonies, to be transmitted by him to Mr. R. D. Lyons, M.P., I have now the honour to state that, having requested my Government to furnish me with any information in their power, I have received two reports, one from the present and the other from the former Deputy Commissioner of Crown Lands, which I beg to enclose herewith.

I have, &c.
The Hon. the Secretary of State for Canada, (Signed) M. H. RICHEY,
Ottawa. Lieutenant-Governor.

Crown Land Office, Halifax,

July 25, 1884.

SIR,

In reference to the letter of Mr. R. D. Lyons, M.P., referring to the reported proximate exhaustion of Canadian forests, I beg to say that, having made inquiry of several gentlemen engaged in the lumbering business in this province, I find that in all probability all, or nearly all, the timber lands will have been cut over, for the first time by or perhaps before the expiration of six years from this date; but it does not follow that the timber supply will then be exhausted. It is found that by carefully husbanding those trees which are too small for conversion into lumber at the time of the first cutting, after 15 or 20 (years), a second cut nearly equal to the first can in many localities be obtained, consequently, if it were not for forest fires, those lands which are carefully looked after would never become denuded of their timber.

It is true, however, that the supply of pine and spruce is rapidly becoming exhausted, and that the lumbering interests of our province will ere long become of less importance as each year rolls by.

There is a considerable quantity of hemlock timber in this province, but in many sections of the country it is being rapidly destroyed for the purpose of securing the bark, which is extensively used for tanning leather.

This province a few years ago could boast of a large quantity of heavy birch, but of late years much of it has been converted into ton timber and exported.

Of late years portable saw mills have been somewhat extensively used, and, if I am not mistaken, much smaller timber is cut by them than by the Gang Mills.

A large proportion of the area of our province is held by agriculturists, who hitherto appear to have taken but little interest in the preservation of the forests; the most of them have stripped more land of its timber than was actually necessary and have not been as careful of the remainder as they should.

As it is well known, forest fires have done an immense amount of damage in our province, and large tracts of country once covered with a stately growth of pine, spruce, &c., &c. are now almost barren.

It is to be regretted that the lumbering and agricultural portion of our population was not more fully alive to the importance and necessity of preserving the forests of the country. Had proper care been taken to prevent forest fires, and preserve the growing timber, the forests would be in a much more thriving condition than they are to-day.

I have, &c.

Honourable C. E. Church,
Provincial Secretary, Halifax.

(Signed) JAMES H. AUSTIN.

A few generations ago the greater part of the continent of North America was an unbroken forest from ocean to ocean. That those great forests are being rapidly depleted is well known, and the fact is fully recognised by men well informed and in a position to know the evils resulting, physically as well as commercially, from the insensate destruction of forests. Many sections of country in the Old World now sterile were prosperous and fertile before the destruction of their forests, and without proper care and forethought the language put into the mouth of the Indian many years ago (referring to stripping the soil of its trees) may in a degree become true—

“The realms our tribes are crushed to get,
“May be a barren desert yet.”

This knowledge is well evinced by the much and able writing in the North American press, by able and exhaustive official reports on the subject, and by the various legislative enactments at Washington, Ottawa, and in the several states of the Union. The law of Massachusetts passed in 1878 to encourage plantations of timber trees on land not worth over \$15.00 per acre is here referred to, as the climate and trees of that State, as also New Hampshire and Maine, are very similar to those of Nova Scotia, and we may very properly follow their example in this matter.

It is matter of record that the forests of Nova Scotia had not been visited by any great fires until 1784, just 100 years ago. The few Indians then in the province had the forests divided among their families.

The country was then nearly all covered by a soft wood forest. The most thin and rocky portions had a fair mixture of white pine with spruce and fir. The deeper soils of

the soft wood land were chiefly occupied by hemlock, with a few large spruce and black birch.

The aborigines, as well as the early French settlers, were careful never to make fires in the woods in the dry season of summer. In 1783, however, a great number of refugees and discharged soldiers came into the country and many new settlements were formed. The following year no rain fell in June, the latter part of May and first ten days of July. Fires were kindled in the clearings by the new settlers, and it is reported that within a fortnight two thirds of the province were burnt over.

Except what is cultivated or under water every part of the peninsula of Nova Scotia would now be covered with trees were it not for the destruction by fires, which scourge the country more or less every season.

Forests create and gradually improve the soil and climate of a country. The axe makes sad havoc, but may be regulated; fires are terrible. It is to be hoped, however, that an earnest effort to do so on the part of those in authority may prevent a repetition of the destruction from that source.

The writer had occasion upwards of 42 years ago to travel over a large section of wilderness country lying east of Halifax, and in doing so he traversed many miles of open barrens. The burnt stumps, trunks, and roots of spruce and white pine trees, many of large dimensions, were at that time scattered all over the barrens, and their remains may still be seen; although the surface has been burnt over many times within the last 45 years, still the forest goes on reproducing itself and being burnt down and will continue to do so until active means are resorted to for having the forest fires put out as soon as observed.

Nova Scotia as a timber producing country will rank favourably with any section of North America, the trees may not be as large because they are younger, but the timber lands of Nova Scotia possess powers of reproduction that can hardly be surpassed, example:—

Suppose 18 inches diameter to be the standard adopted by a lumberman in felling trees, that is, he will fell no tree of a less diameter, and that he cuts from his land every tree of that dimension and upwards (generally about 50 trees to the acre), let the forest then rest for 15 years when the same quantity of that dimension and upwards may again be taken. If active measures were adopted to put a stop to the ravages of forest fires and to prevent the felling of trees of a less size than inches diameter at 10 feet from the butt, I am sure that Nova Scotia will continue to be a timber producing and exporting country for all time to come, as our best timber lands can never be used for profitable agricultural purposes.

As an instance of the marvellous productiveness of our forests I would instance a small section of 8 or 10 square miles through which the Sackville River flows. Up to the year 1840 every house in Halifax was built of timber from that section, and, as every one knows, it has produced an enormous amount of cordwood, house frames, boards, deals, wharf logs, shingles, &c. ever since. Within three years the writer has travelled through every part of the section referred to, and it appears as far from exhaustion now as it did 40 years ago. The trees are not large, but they are tall and healthy; perhaps, not many up to two feet diameter. When a tree has got to be one foot in diameter it makes wood very fast, and is profitable to cut after it exceeds two feet. This may be assumed as a fair sample of our lumber lands. It is a shortsighted reckless love of gain and a lack of care for the future that induces the cutting down of young trees—the loss is simply enormous.

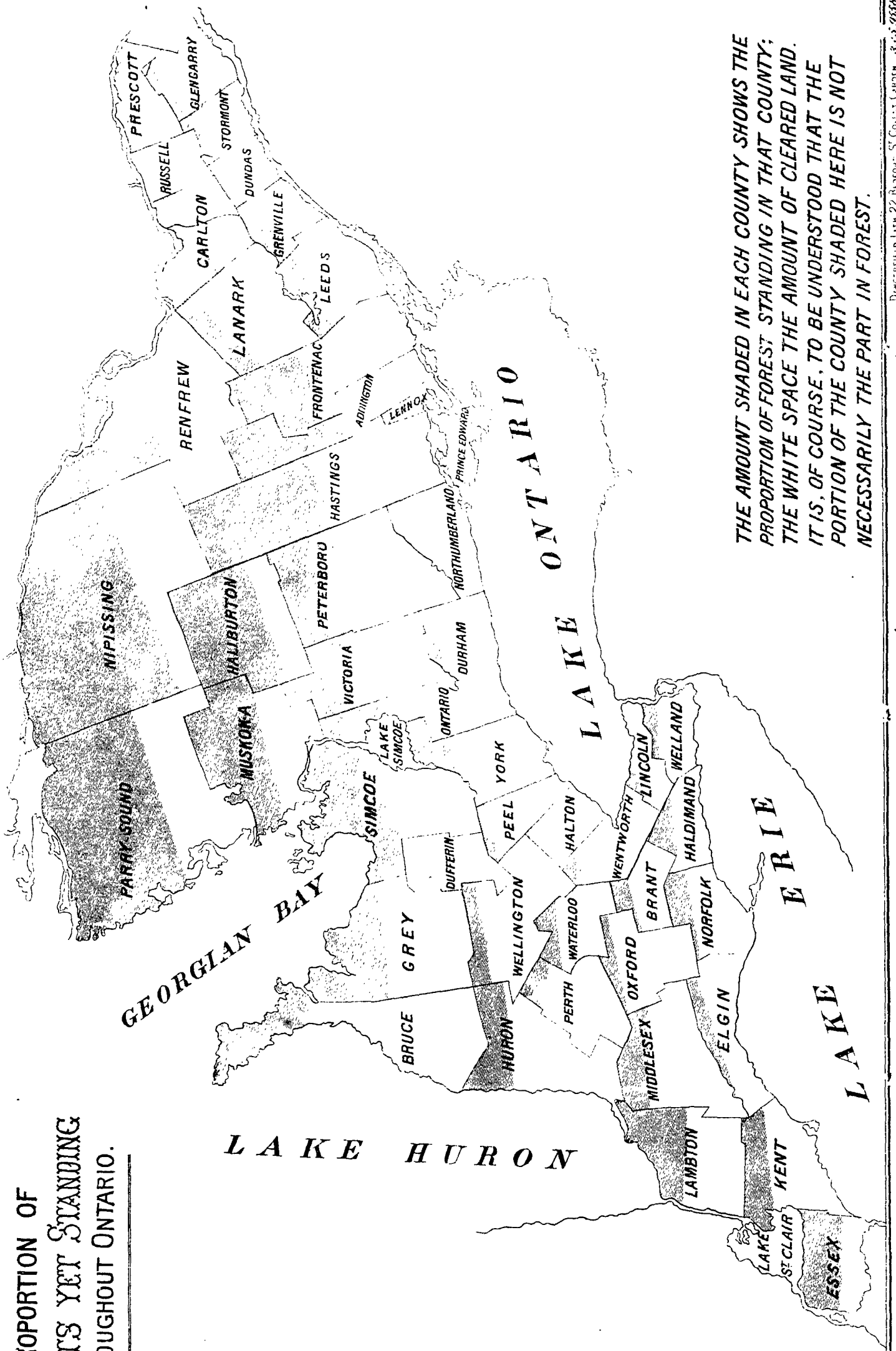
There is no discretion practised or any protection to the forest in Nova Scotia. Every man is allowed to cut as he pleases. Saw mills of every form and variety are to be found wherever a stream exists large enough to turn a wheel for a few months a year, and the trees are cut and carried to the mill from seven inches diameter and upwards, those not large enough for small deal are made into staves, laths, or shingles.

The annual timber production of Nova Scotia has never been correctly estimated, but from returns obtained I know it to be greater by several millions of feet than is generally supposed.

From the above remarks it will be seen that there is no reason to anticipate any sudden or even defined period for the extermination of our forests, but that they are gradually being exhausted is true, and it is proper to look this fact fairly in the face.

The following brief explanation will make clear. It has already been stated that every tree from seven inches upwards, or large enough to be of commercial value, is felled and carried to the saw mill. The age of a tree may be correctly known by the annual rings or layers of wood observable in a horizontal or cross section of the trunk, a manifest difference in the thickness of the layers proportionally with each other will also be

**PROPORTION OF
FORESTS YET STANDING
THROUGHOUT ONTARIO.**



THE AMOUNT SHADED IN EACH COUNTY SHOWS THE PROPORTION OF FOREST STANDING IN THAT COUNTY; THE WHITE SPACE THE AMOUNT OF CLEARED LAND. IT IS, OF COURSE, TO BE UNDERSTOOD THAT THE PORTION OF THE COUNTY SHADED HERE IS NOT NECESSARILY THE PART IN FOREST.

observed, likewise of the same layer in different parts of its circumference; the former difference depends upon the nature of the season in which each individual layer is formed, the latter upon local circumstances, accidents to branches, &c.

This is the only known rule by which the age of a tree may be determined.

Ten trees were examined with the following result—

Red spruce	-	-	9	inches diameter = 43 rings (years).
Black „	-	-	$9\frac{1}{2}$	„ „ 51 „ „
„ „	-	-	$9\frac{3}{4}$	„ „ 54 „ „
Red „	-	-	$9\frac{1}{4}$	„ „ 54 „ „
„ „	-	-	10	„ „ 58 „ „
White pine	-	-	9	„ „ 58 „ „
„ „	-	-	16	„ „ 72 „ „
Red spruce	-	-	16	„ „ 43 „ „
„ „	-	-	13	„ „ 44 „ „
„ „	-	-	12	„ „ 47 „ „

The above were taken from within a few hundred feet of each other, but these, however, would probably be a fair average.

The difference in growth could well be accounted for by the different degrees of shelter.

(Signed) W. A. HENDRY.

Halifax, July 1884.

Enclosure 5.

Government House, Toronto,
September 3, 1884.

SIR,

ADVERTING to the request contained in your Despatch of the 2nd ultimo, I have the honour to enclose herewith for transmission to the Right Honourable the Secretary of State for the Colonies, for the information of the applicant, Mr. R. D. Lyons, M.P., (1) a map showing the proportion of forests yet standing throughout that portion of Ontario south of the Ottawa and French rivers, and (2) a copy of a report specially prepared by Mr. R. W. Phipps, Clerk of Forest Preservation, Ontario, upon the subject of the reported proximate exhaustion of forests as far as the question relate to the Dominion of Canada.

15 Aug.
1884.

I have, &c.

The Honourable the Secretary of State,
Ottawa, Ontario.

(Signed) JOHN BEVERLY ROBINSON,
Lieutenant-Governor of Ontario.

SIR,

Toronto, August 15, 1884.

IN answer to the inquiries contained in the letter of R. D. Lyons, Esq., M.P., Dublin, which, accompanied by letters from the Earl of Derby and the Under Secretary of State for Canada, has been forwarded to me, I beg to reply that—

There are in the province of Ontario 18,000 square miles of land known as timber limits, that is land on which lumbermen have purchased the right to cut lumber for a certain period, renewable yearly, and on which lumber, when cut, they also pay certain dues to Government in proportion to its amount. Some of these limits are but freshly entered upon, having only been given out last year, others have been held for longer periods, and some for many years. There exist, however, no data by which to form an exact idea of how long it would take, at the present rate of consumption, to exhaust the timber of these lands.

Concerning the amount of timber lands possessed by Government on which no license to cut has yet been given, I would say that the timber limits sold last year extended as far north as 15 miles beyond Lake Nipissing. North of this point, and extending east to Sturgeon River, and west to Michipicoten River, is a tract of country which there is reason to believe from various reports of those who have travelled across it, contains about 20,000 square miles of forest, possessing much valuable and merchantable timber.

Concerning the older and more settled parts of Ontario, an idea may be gained of the amount of forest left standing therein from a map which I enclose, forming part of a Forestry Report sent in by myself to the Ontario Government last year. In the darker shaded portions much of the country is yet held under license by lumbermen, and forms part of the 18,000 square miles already referred to. Throughout the lighter shaded

districts, which are of course the longest settled, there still remain many small portions of valuable timbered land, now far from the track of the lumberman, used for little but local purposes, and not adding an appreciable item to the amount exported, such large pine trees as grew in these in fact, pine furnishing the principal lumber exported, have to a great extent been removed thence. It would be difficult to estimate the aggregate area of these scattered portions in the hands of private owners, but they would hardly amount to 1,000 square miles.

As the letter of Mr. Lyons asks information concerning Canada generally, as well as the United States, it may be remarked that the province of Quebec possesses 48,000 square miles of timber land which are under license, and 44,000 not under license.

That part of Canada known as the North-west Territories, including Manitoba, and lying beyond Ontario, and this side of the Rocky Mountains, possesses here and there tracts of well wooded land, not containing, however, more timber than, even if these forests be well preserved, will be required for the use of the inhabitants of those regions.

Many of the slopes of the Rocky Mountains are well wooded, and beyond them British Columbia contains very large forests of almost untouched pine and other valuable woods. No exact data, however, exist as to what area the amount of forest in the North-west Territories and British Columbia would comprise.

In the province of New Brunswick there are 9,000 square miles of forest area not under license and 3,500 miles under license.

In Nova Scotia there is no special lumbering law, and though I have written to officials of that province for late information, I have not yet received it. In 1878 the amount of ungranted lands in Nova Scotia was 3,800 square miles.

In the United States the timber lands yet remaining in the possession of the Government amount to 132,000 square miles. Some statistics lately issued by the United States Forestry Department give the amount of pine lumber in 13 of the principal pine producing states of the Union as 248 billion feet, and the last year's cut as $8\frac{1}{2}$ billion feet, or about 28 years' supply.

With regard to the duration of the timber supply of the Dominion of Canada, no accurate calculation can be made, as no data exist whereby to determine the amount of merchantable timber standing in the forest area. To obtain this would require surveys more extensive and costly than any which have yet been attempted. A general idea can be given by observing that altogether the area of timber lands in the Dominion is calculated to be about 280,000 square miles.

For many years past statements have been made concerning the possible exhaustion of Canadian forests, and very diverse opinions have been expressed on the subject by persons of apparently equal experience and knowledge. It appears to me that when it has been stated that there is but five or there is but ten years' supply remaining, this may fairly be understood to refer to the possibility of obtaining timber of the same sizes as we have hitherto cut. It is probable that over a great extent of this territory many of the largest trees have been taken out. But it should be remembered that the forest has great reproductive power, that young trees continually replace the old, and that in 20 years' time trees now but of medium size will furnish excellent timber. The duration of our timber supply also largely depends on the measure of care to be taken in the future in the preservation of our wood lands. For many years little or no pains were bestowed in this matter, and throughout large districts, the settler having followed the lumberman, the field took the place of the forest. The ravages of forest fires, too, have in many places greatly injured our timber lands. Of late years more attention has been paid, and it is probable that throughout all the provinces active measures will shortly be taken for the preservation of the forests. These measures, it is likely, will include the setting aside of large districts for forest purposes, and the regular maintenance of officials charged with the duty of preventing the occurrence of fires. The Ontario Government have been active in prosecuting inquiries concerning this important subject, and further legislation thereon may immediately be expected. Undoubtedly if the careless methods of lumbering pursued in former years were to be still continued, no means of forest preservation adopted, nor any methods employed to prevent the ravages of fire, the duration of the Canadian timber supply would be greatly lessened. But this is not likely to be the case, public attention having been called to the necessity of a more careful method of procedure. In my opinion there is no doubt that if care be taken of the remaining forests of Canada a very large portion of them will continue in a perpetually reproductive condition, capable of furnishing an annual yield equal to the present yearly cut. It is probable that the districts already cut over will not for many years furnish trees of as large a size as some of those originally found there, but they will, with care, constantly yield much excellent timber. On the other hand the forests of British Columbia when railroad and shipping facilities shall have

given them better access to markets, will give, it is stated, timber of a size larger than most yet exported.

Geo. E. Lumsden, Esq.,
Assistant Secretary.

Yours respectfully,
(Signed) R. W. PHIPPS,
Clerk of Forest Preservation,
Ontario.

Enclosure 6.

Government House, Victoria,
August 30, 1884.

SIR,

I HAVE the honour to enclose a Minute of my Executive Council, dated the 16th instant, upon the subject of the reported proximate exhaustion of forests within the Dominion referred to in a Despatch of the Right Hon. the Secretary of State for the Colonies, dated November 21st, 1883.

The Hon. the Secretary of State,
Ottawa, Canada.

I have, &c.
(Signed) CLEMENT F. CORNWALL,
Lieutenant-Governor.

REPORT of a Committee of the Honourable the Executive Council, approved by his Honour the Lieutenant-Governor the 16th August 1884.

THE Committee of Council have had under consideration a Despatch from the Right Hon. the Secretary of State, dated 21st. November 1883, addressed to his Excellency the Governor-General of the Dominion, concerning the reported proximate exhaustion of forests within the Dominion, a copy of which was forwarded to his Honour the Lieutenant-Governor of British Columbia, and referred to the Hon. the Chief Commissioner of Lands and Works, who reports as follows :—

The southern and western portion of British Columbia is a densely-wooded country, both mountains and plains being covered with thick and stately forests. To the north and east there is less timber and of an inferior quality.

The prevailing timber throughout is coniferous, and of different varieties.

The forests of British Columbia of economic value embrace an area situated between the Cascade range of mountains and the sea coast, and extending from the 49° to the 55° parallel of north latitude, together with Vancouver and adjacent islands and the Queen Charlotte Group.

The Douglas pine, or red fir (*A. Douglasii*),—which is esteemed the most valuable timber for masts, spars, and lumber, and of which it has been written : “ So closely do the trees stand, and withal so tall and straight, that the united navy yards of the world might draw thence their supplies for years without more than partially exhausting these spacious and majestic forests,”—covers that portion of the above area between the southern boundary of the province and about a parallel drawn through the northern extremity of Vancouver’s Island.

North of this line, including Queen Charlotte Islands, the Douglas fir does not occur in large areas. Here yellow cypress, red and white cedar, and white pine predominate, and are perhaps of little less commercial value than Douglas fir.

The geographical formation of the coast presents numerous and far-reaching inlets, which afford access to the forests and greatly facilitate lumbering.

The interior of the province is but sparsely timbered. The eastern portion, watered by the Columbia and Kootenay rivers and their tributaries, contain large areas of timber of great commercial value.

In refutation of the assertion that Canadian forests are within six years of exhaustion, so far as this province is concerned an extract may be quoted from the Government prize essay of 1872, by the late A. C. Anderson :—

“ The forests of British Columbia are productive of an *inexhaustible* supply of timber of the most serviceable kind.”

Exported and milled timber have so far made no diminution in the available supply.

The Committee concur in the Ministers’ Report, and recommend that a copy of this Minute, if approved, (be forwarded ?) to the Hon. the Secretary of State for Canada, with a request that it be transmitted to the Right Hon. the Secretary of State for the Colonies.

Certified.
(Signed) JNO. ROBSON,
Clerk Executive Council.

Enclosure 7.

Département des Terres de la Couronne,
Section des Bois et Forêts.

Québec, 2 Octobre 1884.

MONSIEUR,

J'ai l'honneur d'accuser la réception de la dépêche du Très Honorable Secrétaire d'Etat pour les Colonies, en date du 21 Novembre dernier, demandant tous les renseignements possibles relativement à l'épuisement des forêts du Canada.

En réponse j'ai reçu instruction de vous transmettre une Copie du Rapport de Mr. A. J. Russell, ex Agent des bois, à Ottawa, sur la condition dans laquelle se trouvent actuellement les forêts de la Province de Québec, ainsi que Copies des lois et règlements de ce département, concernant la vente et l'administration des bois sur les terres de la Couronne.

Au sujet des Communications de Mr. Little publiées dans le "Times" de Londres, allant à dire que les forêts de l'Amérique du Nord seraient détruites sous une période de six ans, je dois aussi vous dire que ce Monsieur dans une entrevue avec l'Honorable W. W. Lynch, Commissaire des Terres de la Couronne pour la Province de Québec, a déclaré que l'avancé en question se rapportait aux forêts des Etats Unis et non a celles du Canada.

A L'Honorable Secrétaire Provincial,
&c. &c. &c.
Québec.

J'ai l'honneur, etc.
(Signé) TACHÉ,
Asst. Commissaire T. C.

MEMORANDUM on the CROWN TIMBER FORESTS of the Province of Quebec and the Subjects submitted at the American Forestry Congress, at Montreal, in August 1882 that might be applicable thereto.

Before proceeding to consider how far the experienced and scientific information and practical suggestions contained in the addresses delivered and the articles read at the meetings of the Forestry Congress, and the discussions that followed, may be of use to us, it may be well to take a glance at the extent and character of our own forest regions; to assist us in judging of their capacity to meet the demand for home use and exportation likely to be made upon them in future.

Laurentian
Forest
zones.

Commencing on the north shore of the Gulf of St. Lawrence, at the boundary between Canada and Labrador, we first come in view of the great broad band of Laurentian Forest Highlands. After skirting the Gulf and River of St. Lawrence for 650 miles, it falls back above Cap Tourment, and sweeping round westward, in rear of the old Seignorial Settlements that occupy the northern portion of the great plain of the St. Lawrence, strikes the Ottawa below Grenville, and following it, more or less closely, crosses that river at Portage du Fort, covering all that part of Ontario north and east of Lakes Huron and Superior, and extending, throughout, back to the northern boundary of the Provinces and far beyond it, sweeping northward with great breadth, between Lake Winnipeg and the Silurian low lands of Hudson's Bay to the Arctic Ocean.

As the territories included in the 190,000 square miles or thereby that the Province of Quebec embraces of this vast region, though more or less alike in geological and physical formation, differ materially in the character and value of their timber forests, it may be suitable to consider each of them separately before speaking of that part of the Province lying south of the St. Lawrence. It differs from them on the important particular of being a country generally suitable for cultivation, and largely so occupied, while the territories on the north side, though about 177,800 square miles in extent, exclusive of the settled country between the Laurentides and the St. Lawrence and on the Ottawa, and the fertile basin of Upper Saguenay, do not contain a portion of arable land fit for cultivation equal to one fourth part of their area. And much even of that small proportion, from coldness of climate in the northern parts or from difficulty of access and inter-communication where scattered in small blocks, or from both causes combined, will long be too far below the ordinary standard of agricultural value to attract settlement or admit of cultivation being profitable or of the settlers living permanently even in moderate comfort, excepting through the means of the market for produce and the employment afforded them, by a continuance of the manufacture of timber, which to be permanent must be carried on, on a moderate scale, with that ever

increasing care for the preservation of the forests, which it is now manifest that the permanent interests of the timber trade, the settlers, the public revenue, and of the country generally will in future require. Generally unarable.

It is evident therefore that by far the greatest portion of this vast forest region of upwards of 177,800 square miles in area, fit for nothing else, must remain a timber forest for ever, increasing in value as timber becomes more scarce elsewhere; though capable nevertheless of maintaining a sparse but hardy population in comparative comfort by the development of the resources of its mines and of its forests, if cared for and preserved. Fit for forest farming for ever.

Returning to our point of commencement, the first or gulf section of this vast forest region may be described as extending from the eastern boundary of the Province of Quebec westward to the line of longitude 65° west, 320 miles in direct length, and its area may be estimated as 32,000 square miles. From the very little we know of it owing to its interior waters being unsurveyed, it seems as yet comparatively valueless as a timber yielding country. Gulf section of it.
Laurentian Forest zone.

It is watered by several large rivers, but with little exception there is no information about them before the public, beyond the position of their mouths, of them more is known about the River St. Augustin than any of the others. On it timber of a fair quality is said to abound at 15 miles up from the shore of the gulf, along which the intervening country to a great extent, from actual absence of soil of any kind, is described as excessively barren, likewise the upper parts of the hills, and the same is said of much of the interior plateau. The St. Augustin is the Indian highway to the Ashuawipi, the great River of Labrador, that flows eastward to the Atlantic. There are also the more powerful rivers, the Natasquan, the St. John, and the River Romaine (which is the greatest), and the River à la Pie, or Magpie, which from the ascertained position of its sources seems the longest. Gulf section.
Its chief rivers.

The country on these rivers is described by Mr. Chisholm, who had forty years' experience in that country, as being very mountainous, for a hundred miles back, in ridges winding in all directions, and between them glens or ravines in many parts thickly wooded with fir, spruce, and birch, with, in other parts, swamps, where the larch grows tall, though of no great size, being crowded closely. Ascending to the interior, he says the country becomes more level, thinly interspersed with black spruce trees in groves. I would here remark that the black spruce tree, the "Abies nigra" of Michaux, though generally very small, is more valuable for its strength and durability than the white or the grey spruce, and I may add that I found the balsam fir, or sapin, grown near the gulf far more durable than that grown in the interior townships south of Quebec; and I have heard it said by men of experience that vessels built of timber that grew in the maritime parts of Quebec and the Lower Provinces lasted longer than those built at Quebec and Montreal of timber of the same kind from the interior of Canada. Laurentian Forests.
Gulf section.
Character and superior durability of its timber.

This is a question that merits investigation, as greater strength and durability would render the spruce and larch trees of this territory under consideration much more valuable for use as railway ties than like timber grown in the interior of the Province, and we know the demand for railway ties (which require renewal so frequently) will in future increase enormously, as it has done in the United States, and with it the value of such timber in this territory may become of importance. Gulf section.
May yield superior railway ties abundantly.

As the timber of this territory is generally small, and far from abundant, and the rivers are obstructed with high falls and rapids, and even the ruggedness of the country will be an obstruction, lumbering operations on it will be expensive compared with the value of the timber when got out, but expensive river improvements will be much less necessary for the descent of saw logs and railway ties than for square timber. River obstructions less important for them.

The adjoining territory embraced between the line of longitude 65° west and a north-westerly line from the mouth of the River Manicouagan, with a frontage on the Gulf and River St. Lawrence of about 180 miles and a maximum depth back from the mouth of the Manicouagan to the height of land at its source of about 250 miles, is about 48,460 square miles in area. The Manicouagan section.

Though resembling the preceding in physical character, it differs from it in being rather better known, from having had its main rivers generally surveyed or explored by judiciously ordered surveys, but which from the great extent of the country necessarily left extensive tracts between them quite unknown. It differs considerably also in having lumber of a good quality in greater abundance, especially in the southern part of it, say for 40 miles north of the St. Lawrence, including even scattering pine of value.

Mountainous.

The reports of the surveyors show this territory to be more or less mountainous throughout. Near the gulf the summits of the ranges rise occasionally from 1,000 and 1,300 to 1,700 feet in height, and the plateau at the watershed is from 1,500 to 1,700 feet in height, with mountain summit near the sources of the River Moisie, the Outarde River, and the Manicouagan of 3,000 and 3,700 feet above the level of the sea.

Moderate river improvements wanted. Large birch, spruce and larch on parts.

Much expenditure in improvements would be necessary to make these rivers and others of this territory fit for the descent of square timber, but much less would be required for getting out saw logs, and they will no doubt ultimately be got out with profit, and probably flatted tamarac and spruce. Both are to be found occasionally of a fair size even in the northern parts of this territory. Professor Hind on descending a hill, burnt bare above, passed through a luxuriant forest of birch, spruce, and larch trees of a size that would have done credit to Western Canada, and a little before that he found "birch of a fine growth not less than 15 inches in diameter at an elevation of not less than 1,700 feet, and a belt of spruce, some very fine, that averaged 18 inches in diameter;" on the other hand he speaks elsewhere of the trees being generally stunted further south (about latitude 51° north), and of the great brûlé extending to the plateau of Labrador.

Manicouagan section. Large spruce on parts, elsewhere timber stunted.

At top of the Ridge Lake he speaks of distant mountains of great height (with well wooded valleys between) on which vegetation ceases at two thirds up their sides.

The River Outarde. Poorly wooded. Rear parts may be found better as in other cases.

On the River Outarde Mr. Bignell reports the timber to be fir, spruce, bouleau, aspen, and cypress for 200 miles up from the coast, and beyond that the timber was small black spruce to its source near the height of land. The general character of the timber here shown is not favourable, but we know that the timber on the tributaries of some rivers is better and more abundant than on the main rivers, and I have known extensive timber limits rejected on first exploration as worthless, and wooded only with poplar and birch, that afterwards, when better known, commanded fair prices for timber found on them.

Manicouagan and Outarde are twin rivers in position and character.

The River Manicouagan is a twin river to the Outarde. Their mouths and their sources are adjoining respectively.

River Manicouagan valley fit for settlement in parts.

The timber on them is much alike, only pine is mentioned as occurring occasionally on the lower and middle course of the Manicouagan, the banks of it are more rugged and it flows in a lower bed, which may perhaps be the cause of some appearance of pine, and also of frost in the fall not setting in early which would admit of grain and root crops being raised on some tracts of good land upon its banks. Beyond the long lakes on its two upper branches the timber is only small spruce and tamarac up to the height of land.

River Pentecote has better land and timbers.

On the River Pentecote, which enters the gulf 65 miles north-eastward of the Manicouagan, though the country is mountainous, there is more good land along the river than on the Manicouagan and the timber is better; (some very fine) spruce and tamarac along its course of 80 miles with a little pine near the coast, and the land and timber seems even better on the Trinité, which enters half way between the Pentecote and the Manicouagan, and more pine is to be found on it as reported by Mr. Bignell.

River Trinité still better.

This territory and the one described before it form together the less known, inferiorly wooded and comparatively untouched, as yet, portion of the vast forest region of the province of Quebec. They embrace an area of about 80,460 square miles. The general inferiority, and (in) parts, absence of timber, is due to the poverty and shallowness and in parts to the entire absence of soil where successive fires have burned off the thin covering of vegetable matter from the rocks, and not the coldness of the climate, which is really most suitable for the growth of spruce, and fairly so for tamarac.

Area of Manicouagan section and general characters. General character of the Gulf and Manicouagan sections unfavourable in many parts.

The thinness of the coating of vegetable matter over the rocks in parts of these two territories causes it to dry up in hot weather and become exceedingly combustible, greatly aggravating the tendency to wide-spreading forest fires, while the absence of moisture stunts the growth of the trees, such parts of these two territories will necessarily always be unfavourable for the growth of wood; but in the other parts of them, forming the greater part of their area, where the soil is more generally sufficient to sustain even a moderate growth of wood of kinds there prevalent, great quantities of it will, no doubt, be taken out with profit for purposes for which such timber, though generally small, may be serviceable as the timber of more favourable forests becomes scarce and high in price.

Great Central section behind the old settlements.

The next great portion of the northern forest region of the province of Quebec it may be convenient to take a view of as a whole, is that commencing at a north-westerly line from the mouth of the River Manicouagan, and extending westward to the eastern watershed of the River Gatineau, including the Saguenay, the St. Maurice, and the Lower

Ottawa territories, leaving the Upper Ottawa territory to be considered separately for statistical convenience.

This great division, containing an area of 81,128 square miles, is distinctly different from the foregoing; lumbering operations having for many years been successfully carried on in various parts of it; in its forests pine of the best quality is, or in some parts may be said has been, more abundant, and they adjoin the rear of the older or are associated with the advancing new settlements of the province.

The north-westerly line from the mouth of the Manicouagan is arbitrarily assumed as the eastern boundary of this great division as (though imperfectly) indicating the general position of the gradual and irregular transition to the better wooded country, whose forests have already been more or less lumbered upon or are, to a considerable extent, held under license from the Crown for that purpose.

This great central division embraces the Saguenay, the St. Maurice, and the Lower Ottawa territories.

The Saguenay territory, embracing two Crown timber agencies, is the first in ascending the St. Lawrence.

In the eastern part of it, between the assumed boundary line, from the mouth of the Manicouagan and the River Saguenay, the chief rivers that fall into the St. Lawrence are the Betsiamites (of which nearly the whole of its course of probably 260 miles flows through this division) the Portneuf, the Sault aux Cochons, and the Escoumains.

The three latter, though much smaller, have yielded proportionally much more good timber (including some pines), though in parts denuded by old forest fires, and though originally well wooded the future supply from them must be very small.

On the Betsiamites, above the 40th mile, the timber is very small and vast brûlés are prevalent, which cannot yield timber of value till reproduced in the remote future.

The area from which the Saguenay draws its waters seems, as far as known, to be about 24,000 square miles, and its most important feature is its great geological trough or basin (in which Lake St. John is situated) containing over three millions of acres of fertile arable land.

As the depression of this basin below the mean surface of the earth, as represented by that of the mountainous country around it, is such as to give it, on Humboldt's data, a climatic temperature equal to that of a latitude two and a half degrees further south, which, together with the richness of the soil, besides making it the best wheat growing country in the province of Quebec, gave it originally a fine growth of wood, including pine of a good quality, which was found on the River Mistassini 85 miles further north than the limit of the growth of pine in the valley of the River St. Maurice.

Owing to my practical experience I was most forcibly struck with these advantages of soil and climate 30 years ago, while making an exploration in the interior by order of Government for the purpose of verifying the truth of what seemed almost incredible statements on the subject made by a few public spirited clergymen and gentlemen of high standing from the Lower St. Lawrence, which I had the opportunity of most amply sustaining. But, owing to these advantages and the demands of the lumber trade, what remains of the best timber forest of the Saguenay must soon be swept away to make room for what should be the most prosperous settlements in the province.

However, from the generally mountainous character and extensive area from which the many large branches of the Saguenay draw their waters, there will always, with proper care, be a sufficient supply of spruce and larch and other wood, after its pine is almost or altogether cut away, to sustain a considerable export trade in lumber. For there will always be a great preponderance of unarable forest land remaining in the surrounding country, and we know from explorations made, that larch of a great size is found occasionally as far north as the height of land between the St. Lawrence and Hudson's Bay waters.

And, notwithstanding that there are great tracts desolated by fires, even they, when there is soil enough, are undergoing nature's process of restoration by a vigorous growth of deciduous trees, chiefly poplar and birch, whose falling leaves restore fertility. I saw much poplar and white birch of a fine growth for making saw logs in some parts of the Saguenay country, where the land is doubtless now under cultivation, that would be most valuable in prairie lands for house building. Forty years ago I examined, down to the foundation, the walls of an old house then being cut open; they were of hewn poplar, and all perfectly sound. It was built by missionaries 180 years ago, but had ever since then been inhabited.

On the southern tributaries of the Saguenay that interlace with those of the St. Maurice there is much good soil, and where the trees fit to make saw logs of have been cut away, the small trees left, if not destroyed by fire, will soon be of a useful size.

Great Central division, including the Saguenay, St. Maurice, and Lower Ottawa territories.

The Saguenay territory.

Rivers below the Saguenay.

River Betsiamites

Area of the Saguenay Valley.

Cause of warm climate around Lake St. John.

Pine grows far north on the River Saguenay owing to climate admitting.

Other woods prevail in higher parts of this territory. Will yield much spruce and larch.

Saguenay territory continued.

Fine poplar on parts.

Undersized
pine left
uncut
matures
rapidly.
Striking
instances.

This remark is applicable to all timber regions as I have had ample occasion to notice. In one case where no error could occur, a small timber berth with well marked outlines, which had been stripped of every tree fit to be a saw log under an able manager, was cut over again by him eight years afterwards, when, by the increased size of the small trees formerly left as unfit, a greater number of saw logs were made from them than were got by the first cut eight years before; this could not take place where settlement was advancing, where the small pines are more convenient for settlers' use in building and fencing than large ones are. On the Gatineau I passed through an extensive grove of young red pine trees of fine growth that had previously been three times completely cut over since the commencement of lumbering there.

Saguenay
territory.

Reverting to the Saguenay, there is an extensive unknown tract, probably upwards of 15,000 square miles in area, commencing about 60 miles north from Lake St. John, seemingly drained on the east side by the head waters of the Paribouka, and westward by the large branches of the Mistassini and of the Chomouchuan. We may safely assume that it is covered by a broad band of poplar, birch, spruce, and tamarac (larch). Much of it, as seen on the south side of it, of a fair growth, and behind that, towards and about the height of land, the there prevalent stunted black spruce with extensive brulés interspersed throughout. The character of the timber of the two Saguenay agencies will be best seen by the totals cut on Crown lands from 1856 to 1881 inclusively, viz., of square timber 7,969 pieces, of which 343 were of white pine, 3,531 of red pine, and 4,095 of spruce and other kinds of wood; of saw logs there were 1,164,844 of pine and 3,432,185 of spruce, or, say, three times as many spruce as pine logs.

Timber and
saw logs on
which Crown
dues were
paid 1856
to 1881.

The minor descriptions of wood goods are omitted as unnecessary for this comparison, nor does it include the timber and saw logs of pine and spruce from private lands, the quantity of which from private lands where settlement is advancing is very considerable. In 1856 and 1857 there were nearly twice as many pine logs cut as spruce. In the following 20 years, the proportion of spruce logs gradually increased, and more rapidly during the last five years, in which there were very nearly 13 times as many spruce logs as pine taken out, the annual cut of pine logs during the last five years having fallen irregularly to about half what it was in the early years, indicating that the pine is becoming scarce, while the spruce continues abundant in the Saguenay country. The total of Crown timber revenue that accrued from the two Saguenay agencies during the whole period was \$369,670 $\frac{1}{10}$. Of what may have been collected during the several years prior to 1856 that lumbering was carried on in the Saguenay country I have not been able to find any published record.

Saguenay
territory.
Decrease of
pine logs
and great
increase of
spruce.
Crown
timber
revenue,
1856 to
1861.

The area of them held under licenses from the Crown to cut timber is 4,462 square miles.

St. Maurice
territory.

The next section of the great central division of our northern forest region is that of the St. Maurice. Consisting chiefly of the area of 16,000 square miles drained by that river and its tributaries, with the addition of the waste lands of the Crown on the River Batiscan and lesser streams between it and the rear of the seigniories on the St. Lawrence. The area under license from the Crown to cut timber is 9,824 square miles. The St. Maurice territory, though it has no such extensive tract equal in fertility and climate behind its old settlements on the St. Lawrence as the Saguenay has at Lake St. John, surpassed the Saguenay originally in the value of its timber forests, owing to the greater proportion of pine on its middle and lower course and on the tributaries therein joining it. In general position the St. Maurice is from one degree in its upper course to two degrees in its lower course south of the Saguenay, though inferior to the Saguenay in climate, owing to the advantage the latter has in temperature from its comparative depression below its surrounding country. At Kikendatch, on the Upper St. Maurice, potatoes seldom or scarce come to maturity, though it is, on the same latitude as the settlements on Lake St. John in Upper Saguenay, the best wheat growing country in the province of Quebec. The same broad band of poplar, birch, spruce, and tamarac forest, interspersed with extensive brulés already mentioned as prevailing along the northern limit of the growth of pine, sweeps down southward as the line of colder temperature does, covering the head waters of the St. Maurice down to Weymontacheuc, and northward behind this zone of poplar and birch there is here, as elsewhere along the height of land and beyond it, the country where scrubby stunted black spruce woods, interspersed with burnt barrens predominate. But even there, at the height of land, a fine grove of larch trees (some of them of great size) was found by P. L. Surveyor Bignell, in accordance with the important fact that on suitable soil larch could be successfully cultivated in the coldest parts of the province far north of the limits of the growth of pine.

Area.

Licensed do.

St. Maurice
territory.

Climate.

Stunted
wood and
barren at
source.
But larch
trees of
great size
found there.

Though the country drained by the St. Maurice and its tributaries is less than two thirds of that of the Saguenay, the growth of pine in its forests has been greater, notwithstanding the unfavourable character of the upper and more elevated part of its valley. But the pine on its lower tributaries has been very much cut away; but where there is a young growth preserved from fire and the axe its yield will doubtless be considerable.

The quantities of timber cut on Crown lands alone in the St. Maurice territory, from 1856 to 1881 inclusively, have been, of square timber, white pine, 56,921 pieces and red pine 5,453 pieces (up to the year 1864, no square pine taken out since). Of other woods, 9,257 pieces. Of white pine saw logs, 4,190,895 pieces. Spruce saw logs 1,740,546 pieces. In the first 15 years the quantities were 2,110,527 pine saw logs against 562,071 spruce, and in the last 10 years 2,080,368 pine against 1,178,475 spruce saw logs. In 1881 the number of pine saw logs was 114,371 and of spruce 112,224, or nearly equal. From which we may infer that it is becoming more difficult to maintain the same superior production of pine, as formerly, over spruce.

The Crown timber revenue that accrued from the St. Maurice territory, from 1856 to 1881 inclusively, as shown by departmental returns, was \$1,103,970⁷³/₁₀₀, including dues on all descriptions of wood goods from Crown lands, ground rents, &c., &c.

The next district of this central division of the great Laurentian forest region is that designated the Lower Ottawa territory or agency, including the vacant and the waste lands of the Crown on the northern tributaries of the Lower Ottawa, from the boundary of the St. Maurice territory to the watershed dividing the valley of the Rivière aux Lièvres from that of the Gatineau. It embraces the valleys of the River Assomption, the River du Nord, the Rouge, the Petite Nation, the Blanche, and the du Lièvre, with other smaller tributaries of the Ottawa, the total of the included areas being 11,256 square miles, of which 6,035 square miles are covered by licenses from the Crown to cut timber, and there is much private land.

These rivers mentioned lie altogether within the pine growing zone, excepting Rivière du Lièvre, the main branch of which for 40 miles, in direct distance down from its source, is in the poplar, birch, spruce and tamarac region, which, sweeping over from Weymontacheuc on the St. Maurice and the Mauouan, intersects the du Lièvre at the head of Lake Megomangoos, and continues westward over to and across the east and west branches of the Gatineau in the Upper Ottawa territory adjoining. The predominant pine bearing character of the Ottawa country begins to be apparent in the returns of timber cut in this territory on which dues accrued to the Crown from 1856 to 1881 inclusively, which were squared white pine 106,398 pieces, squared red pine 943 pieces, other woods, principally birch, 38,459. White pine saw logs, 5,735,931 pieces. Spruce saw logs, 383,354, or one to 15 of pine very nearly. Of the square white pine, 95,155 pieces were cut in the first 15 years, and 11,243 in the following 10 years to 1881 inclusive. Of squared red pine, 809 pieces in the 15 years and 134 in the 10 years following. Of other squared timber, 22,125 were cut in the 15 years and 16,334 in the last 10. Of the pine saw logs, 3,374,896 were cut in the 15 years and 2,361,035 in the last 10. Showing a decrease of about 10 per cent. in the average annual cut of pine logs. While of the spruce saw logs, 35,501 only were cut in the 15 years and 347,853 during the 10 years stated, showing an increase to about 14 times the annual average of the 15 years preceding. It is noticeable that the total of pine saw logs from the Lower Ottawa territory during the whole period is about one fourth greater than that from the St. Maurice territory, though the latter has about double the area of the former.

The Crown timber revenue from the Lower Ottawa territory from 1856 to 1881 inclusive, including ground rents on timber licenses, &c., amounted, by departmental returns, to \$1,093,297. It is to be borne in mind, with respect to the quantities of timber from Crown lands here given for the years mentioned in the foregoing territories, for the purpose of showing the character and capacity of their forests, that, in addition to what is shown, these territories, but especially the St. Maurice and Lower Ottawa, have yielded large quantities of square timber and saw logs cut on private lands during the period stated and for many previous years; and that, apart from what was actually cut on Seigniories, timber and saw logs were occasionally passed as being so, if brought down streams flowing through the Seigniories, though really cut on Crown lands behind. It is also especially to be remarked as important in relation to subjects of forestry, and the future lumber trade of the province of Quebec, that, apart from the old Seigniories, or parishes on and near the St. Lawrence and in its great plain, only one

St. Maurice territory—*continued.*
Timber from Crown lands, 1851 to 1882.
Great decrease of pine and increase of spruce cut.
Crown timber revenue, 1856 to 1881.

Lower Ottawa territory.

Lower Ottawa territory.
Area.

Chiefly in pine zone.

As shown by timber from Crown lands from 1856 to 1881.

Increasing proportion of spruce logs cut.

Lower Ottawa territory.

Crown timber revenue for 1856 to 1881.

General remark.
Timber from private lands or in previous years to large amount not included hitherto.

quarter of the areas of the foregoing three sections is arable land fit for settlement, and the remainder can be profitable only as timber forests for ever.

Before proceeding further westward it may be proper to take a glance at the part of the province of Quebec, south of the St. Lawrence, from Gaspé inclusively upwards. The area of which is about 34,200 superficial miles.

Area of Quebec, south of the St. Lawrence, more suitable for cultivation.

Notwithstanding that it is traversed by the Great Shikshak or Notre Dame Range, broken in groups of varied character and elevation, it is well known that fully three quarters of its area, owing to its more favourable geological formation and character of surface, is more or less suitable for successful cultivation.

Pine in Gaspé.

Even in the district of Gaspé, barley much exceeding in weight and (as found on careful analysis completely made) containing 10 per cent. more saccharine matter than barley grown in the district of Montreal could be cultivated as profitably as wheat in the interior of the province. Pine grows well in the peninsula of Gaspé, including the county of Bonaventure; but, owing to the general prevalence in many parts of a heavy growth of brown birch and maple, and other hardwood trees pine was originally less abundant, and is now scarce, much of it having been cut away; but large brown birch is abundant and the growth of cedar in Gaspé is unequalled in size and quality. I measured one over 15 feet in circumference, and it was straight and without a branch for about 40 feet. Excellent sound cedar is abundant, and is the best wood for building of the fishing boats of the coast, owing to its lightness and durability; and brown birch is increasing in value now that walnut has become scarce.

Cedar and hardwood large and sound.

River Restigouche. Pine much cut away.

Westward the pine on the tributaries of the Restigouche has been very much cut away for square timber. The rivers falling into the St. Lawrence, though long lumbered upon for saw logs, still yield a considerable proportion of pine. As the populous old settlements of the Seigniorics on the St. Lawrence, the Yamaska, and the Richelieu, and of the eastern townships and Megantic, and the increasing new settlements behind them, occupy the chief part of the country west of the Chaudière Valley, there is but little timber cut on Crown lands there, and much of what remains will be required for local consumption. In the whole of the part of the province of Quebec south of the St. Lawrence the timber and saw logs cut upon Crown lands, from 1856 to 1881 inclusively are as follows, viz. :

Eastern townships and Megantic.

Crown timber cut in the districts south of the St. Lawrence, 1856 to 1881.

Of square timber, 52,162 pieces of white pine, 3,828 pieces of red pine, and 102,788 pieces of all other woods. Of saw logs, pine, 1,563,353 pieces, and of spruce pine, 6,326,346, of which respectively, of squared white pine during the first 15 years 44,530 pieces and 7,632 during the last ten years; and of other woods 48,151 pieces in the first 15 years and 54,635 pieces during the last ten years. Of pine saw logs 952,030 pieces in the first 15 years and 611,323 pieces in the last ten years. Of spruce saw logs 2,793,894 pieces in the first 15 and in the last 10 years 3,532,452 pieces.

Area under timber licenses.

The extent now under license from the Crown to cut timber in this division of the province is only 7,575 square miles, and the total revenue from timber and saw logs, from 1856 to 1881 inclusively, is \$1,467,974 $\frac{5}{100}$.

Spruce timber still abundant.

As much of this south division is already settled country, or rapidly becoming so, and the moderate proportion of the pine it contained originally is largely cut away, it cannot continue long to yield any considerable supply. But as spruce is of quick growth, besides being still abundant, the annual yield of it may be continued for many years with little diminution, and the supply of birch be much increased with the probable increase of demand.

UPPER OTTAWA TERRITORIES.

Reverting to the north side of the St. Lawrence, the Upper Ottawa territory remains to be considered. As the whole of it for 25 years previous to confederation was included in one Crown timber agency, under the same system of management and under one common revenue accounts, till divided between Quebec and Ontario by their old boundary, the Ottawa, on confederation, as two separate agencies, but under my charge as previously and as they have been jointly and severally for upwards of 30 years, it may be appropriate, in relation to forestry as the general subject of this memorandum, to take a general view of the whole as a forest country of chief importance, while carefully distinguishing the yield of timber from each, and the revenue therefrom, as closely as practicable through periods of mixed account and early obscurity that required much labour in investigation for results of little value.

The River Ottawa as surveyed is about 790 miles in length from its principal mouth at Bout de l'Isle below Montreal to the source of its east branch, but the source of its north branch reported by fur traders to be the main stream may, when ascertained by

survey, prove the Ottawa to be over 800 miles in length, measuring by its very involved and tortuous course. Nevertheless the source of its east branch is less than 200 miles in direct distance from its mouth. It nearly equals the Rhine in length of course and the area it draws its water from, but the mean volume of water it discharges into the St. Lawrence is about three times the mean outflow of the Rhine as given by D'Aubuisson. There are geographical and meteorological causes which, combined with the universal prevalence of forests and the length of unbroken cold in winter, seem to account for this difference. The area drained by the Ottawa and its tributaries, as far as ascertained and shown in the latest official maps, is about 60,080 superficial miles. Before the surveys of late years it was estimated at 80,000, of which 19,757 are in the Province of Ontario and about 40,334 are in the Province of Quebec.

The River
Ottawa.

The following are the principal tributaries of the Ottawa and their lengths of course in miles (including sinuosities of their channels), from the head of Lake Temiscaming downwards. On the Quebec or north-east side. The Kippawa 123, M. Dumoine 130, Black River 128, Coulonge 140, Gatineau 340 probably, Du Lièvre 244, North Nation, Rouge 140, North River 77, L'Assumption 117. The last five in the Lower Ottawa territory. On the Ontario side the Blanche, Montreal River 186, Matawan 60, Petewawe 155, Bonnechere 110, Madawaska 255, Mississippi 110, Rideau 116, South Nation 135. The tributaries of the Ottawa above Lake Temiscaming are few, generally small, and their courses mostly unsurveyed and unknown.

Its tribu-
taries.

The Upper Ottawa territory of the province of Quebec extends from the eastern watershed of the River Gatineau, dividing its tributary waters from those of the Rivière du Lièvre up to the head of Lake Temiscaming and the line there established at the western boundary of the province of Quebec, having an extreme breadth westward of 200 miles and 200 in depth northward from the mouth to the source of the Gatineau. Its depth thence westward for nearly 200 miles is almost altogether unknown, and till the position of the height of land dividing the Ottawa waters from those of Hudson's Bay is determined by survey throughout that distance the area of the Upper Ottawa territory can only be imperfectly approximated as 29,523 square miles. The area here given is calculated on the last published Departmental map of the provinces, though, as stated in my report to the Department of Crown Lands of 6th May 1880, it has been already discovered that the waters of Hudson's Bay extend far south of the supposed boundary thereon delineated, covering not only a considerable portion of Block A, but also 209 square miles of timber berths granted by the Department; on the other hand it is stated by some who profess to have seen it that there is a large branch, apparently the main stream, that enters Lake Bouchette from the north, up which the narrator, a fur trader, said he had canoed three days, on his way to Meciscan, in the Hudson's Bay territory; it was widely distant, he said, from the east branch which he had also ascended. Of the northern tributaries of the Upper Ottawa mentioned the entire courses of the Kippawa, Dumaine, Black River, and Coulonge, and three-quarters of that of the Gatineau lie within the pine growing zone, and embrace by far the best pine growing forests in the province in extent and in the size and quality of the timber. In the township of Thorne, 20 years ago, I measured a pine tree 18 feet 4 inches in circumference at 5 feet from the ground, and within sight of the Parliament Hill, Ottawa, I measured some about 16 feet in circumference and 180 feet in height, but trees of such girth are scarce. On a lot containing 197 acres, 17,383 pine saw logs were proved to have been cut in four years, or about 88 logs to an acre; and on 21st instant four timber berths, containing together an area of 145 square miles, situated about a hundred miles up Black River, were sold at public auction for £208,100 to experienced saw-mill owners of Ottawa. That is at the rate of of \$2.24 an acre, lakes and streams included. Besides which the purchasers have to pay the usual annual ground rent of \$2 a square mile, and the ordinary Crown dues or price of each log they may cut of 11 or 22 cents according to the size of them. The sale was by order of Chancery on decision of a suit in law (such timber berths were to be had for the asking, free of price, when these were first acquired from the Crown). It will be seen that pine must be abundant to yield a profit on such a purchase, besides the cost of manufacturing it into sawn lumber, and berths as well wooded as these are numerous in the pine growing region of the Ottawa. There are tracts, however, where hardwood predominates, with pine interspersed, which is of the best quality from the richness of the soil and not being crowded. But towards the northern limits of its growth, where it is intermingled with poplar birch and cypress, it diminishes in size and quality. The upper quarter of the course of the Gatineau lies within the broad zone of poplar, birch, cypress, and tamarac (larch) country that extends towards the height of land. The country at the source of the west branch of the

The Quebec,
Upper
Ottawa
territory.

Its area
still not fully
ascertained.

Large sized
pine.

Great yield
of saw logs
per acre.

Very high
price of
limits at
public
auction.

Pine absent
on Gatineau.
Head waters.

Great central summit of surrounding country from which the main rivers diverge.

Gatineau is the great central summit of the high lands, between the waters of the Ottawa and those of Hudson's Bay. This is prominently indicated by the fact that within a distance of 20 miles rise the east branch of the Ottawa, flowing to Lake Temiscaming, the Gatineau flowing south to the Ottawa, the Meciscan branch of the Notaway flowing north to Hudson's Bay, and the St. Maurice flowing east before turning south to the St. Lawrence, and beyond them the Rupert River flowing north and then westward to Hudson's Bay, and the Saguenay flowing east to the Lower St. Lawrence,—all rivers of 300 or 400 miles in length diverging from the high summit region, the elevation of which gives it a temperature too cold for the growth of pine, though tamarac and spruce in parts attain a great size.

River Ottawa, towards its source.

Much of the country at the sources of west branch of the Gatineau is bare rocky *brulé*. Near the Gatineau, but 25 miles south of its source, is the source of the east branch of the Ottawa (in a lower and more fertile valley), near which there are some pines, then flowing westward in a more fertile valley for 50 miles, through inferior woods, pine begins again to appear, increasing in quantity and quality, though generally scattering among other woods that prevail of an inferior description.

Broad depression in height of land towards Abitibi.

Respecting the height of land for 170 miles west from the source of the Gatineau we have almost no information till approaching the Labyrinth Lake portage to the River Abitibi, where it sinks into the broad plateau of about 900 feet in height above the sea level, which, with in parts detached hills, extends westward by the sources of the Blanche to the north angle of the Montreal River. Here, owing apparently to advantage in climate, due to less elevation above the sea, and actual comparative depression, pine of a fair growth abounds in groves, and continues to appear occasionally northward to one degree beyond the latitude where it is last seen in the high country on the head waters of the Gatineau.

River Quinze or main Ottawa above Lake Temiscaming.

The River Quinze or Main Ottawa enters the head of Lake Temiscaming, near the west boundary of the province of Quebec, 42 miles south of the height of land or north boundary, and 31 miles south of latitude 48° north. The source of its east and possibly main branch at the head of Lake Capemachigama, 32 miles south of the height of land and 21 south of latitude 48° north, is 190 miles in direct distance from the mouth of the Quinze, though 366 by the exceedingly crooked course of the river. The superior character of timber and abundance of good pine above mentioned is more or less prevalent in Block A., which occupies 2,141 square miles between the Quinze and the height of land. About 60 miles in direct distance up that river pine becomes gradually scarce and scattered, and white birch, spruce, poplar and fir prevail. Though much more pine than is supposed may as usual be found on more complete exploration, it is evident but little pine will be furnished from the remaining tract of a hundred and thirty (130) miles in length, lying upon and north of the Quinze and between it and the height of land. But ultimately it will yield permanently a very considerable supply of spruce and other wood.

Good pine in Block A.

Scarce above it, but spruce abounds.

Areas licensed and unlicensed.

The area licensed in the Quebec Upper Ottawa territory, under 529 Crown timber licenses, is 19,269 square miles, of unlicensed waste lands 7,773 square miles (estimated), besides private lands. As the Upper Ottawa territory of Ontario, as before mentioned, formed so long part of the same agency as to administration and accounts as that of Quebec, and its trade has been so long linked with that of Quebec as its market, having hitherto furnished about two thirds of the whole supply of square timber which sustains its export trade, it may be proper to take our proposed notice of it here, and then exhibit the product in timber and revenue of each of the Upper Ottawa territories together. The Upper Ottawa territory of Ontario includes within its outlines an area of 17,163 square miles, apart from the area of 2,294 square miles on Ottawa waters below it. Its chief rivers—the Blanche, the Montreal River, the Matawan, the Petawawe, the Bonnechere, the Madawaska, the Mississippi, the Rideau—have been already enumerated, and their lengths, of course, stated as tributaries of the Ottawa. The Blanche flows through an unusually fertile arable country covered with a fine growth of hard wood trees, with no pine on its course except a few trees at a lake at its source on the height of land, but on the head waters at the Quebec boundary good pine becomes abundant. On the Montreal River good pine originally extended up to the 62nd mile, but even since 1866 fires have done much damage. North of that poplar, birch, and spruce prevail. The country between the Montreal River and Lake Temiscaming is held to be valuable timber land, but at the western watershed bounding this territory pine is absent. Pine is abundant in the country on the west side of the Ottawa down to the Matawan and all below it, back to the rear boundary of the territory and beyond it. The chief part of the Upper Ottawa agency of Ontario, forming about three-quarters of its entire area, is that lying southward of the River Matawan, including the valleys

The Upper Ottawa territory of Ontario.

River Blanche.

The Montreal River.

General characters of Upper

of its south branch, the Amable du Fards, the Petewawe, the Indian River, the Madawaska, the Bonnechere, the Mississippi, and the Rideau, which, like the valleys of the Moira and the Trent in the adjoining agency westward, originally contained the most extensive and richest pine forests in the old provinces of British North America. On the River Bonnechere, for instance, I passed through two large timber berths, equal to a large township in area, generally covered with hardwood trees often 100 feet in height; yet they yielded in the course of 40 years' dues on square pine timber and saw logs, paid into my office, equal to nearly three dollars an acre; and they are still yielding some dues and ground rents, being still of value though much cut up by settlers and lumbering. On the Quebec side there are tracts that long ago yielded as much. On both sides of the Ottawa there are pieces and considerable tracts of unarable land, though rich in the soil, so wooded that should be reserved carefully as forests for ever, under careful management, gleanings, and thinnings utilised, and the surplus young trees transplanted to replace the larger ones taken away as soon as private enterprise, with such encouragement as Government may be able to afford, may see that it would be worth while to do so. Beyond the Ottawa valley and French River north-westward Ontario has but little pine to contribute, it is limited to a belt extending from 30 to 40 miles north from Lake Nipissing and Lake Huron, beyond which recurs a zone of 120 miles in breadth, which extends to Lake Superior, that, with the country behind it, has no pine to contribute.

But from the country on Hudson's Bay waters, claimed by Ontario, great quantities of excellent spruce, tamarac, and yellow birch timber and sawn lumber, will doubtless be brought out by rail, before very many years from what is called the level clay country of the north, which also contains much good land fit for settlement, and there is good coal in the lower valley of Moose River. The country between the northern boundary of the province of Quebec and Hudson's Bay, though it has a good growth of pine for 20 miles north of the Quebec boundary, about the portage to Lake Abittibi has much less timber of value or land fit for cultivation owing to the fact recently discovered that the fine growth of wood seen along its rivers, especially north of Lake Abittibi, often extend less than a mile back, and that the greater part of the country between and behind, is covered by low peat bogs of great depth, the wetness of the climate being highly favorable to the growth of the plant, the decay of the under parts of which as it grows produces the bogs gradually increases their depth. They may become of incalculable value for the enormous supply of fuel stored up in them, which might be furnished at a moderate price in our cities for domestic use, and many manufacturing purposes, and the soil that underlies these bogs being of a retentive and durable kind, will, where it may be uncovered, yield heavy crops of hay and oats, barley or rye, like the lands reclaimed from "Blairs Drummond Moss" in Scotland and others.

But the supply of timber it can yield at any future time will be much less than what the country claimed by Ontario will yield, especially with Canada Pacific Railway to carry it out in the form of sawn lumber.

Very little information of any kind is before the public respecting the country east of Lake Abittibi and the valley of the River Hurricanaw, the head waters of which reach down below lat. 48° north to within 10 miles of Lake Victoria on the Ottawa. It would seem very desirable to have an exploratory reconnaissance made of the valley and course of that river. Its waters extend about 20 miles further south than those of the Abittibi where much good pine was found. It seems desirable also to learn something as to its minerals. A copper formation was discovered considerably to the eastward of it by Mr. Richardson of the Geological Department. Profitable mining in that region, if possible, might be of value to the province of Quebec to which it naturally belongs.

The following exhibits the total numbers of pieces of squared white and red pine and other woods, and of pine saw logs cut in the Upper Ottawa territories of Quebec and Ontario, on Crown lands, and also on private lands from 1826 to 1881 (30th June) inclusively, that is, before and since confederation as closely as can be learned from the records of the Crown Timber Office, Ottawa:—

Ottawa territory in Ontario.
Exceedingly rich in pine.
Instance.

Similar tracts on Quebec side.

Upper Ottawa, Ontario.

Limited range of pine zone, north of Lakes Nipissing and Huron.
Much richer in wood is the territory on the Hudson's Bay waters claimed by Ontario.
Country north of Quebec has less wood owing to peat bogs.
Value in future of peat bog regions north of the province of Quebec.

Little known country north of provincial boundary.

Cursory explorations of its waters desirable.

Upper Ottawa territory, Quebec.

From 1826 to 1866 inclusively.

Summary of
timber and
saw logs
from Crown
and private
lands since
1826.

	Square Timber.		Pine Saw Logs (only).	
	Ontario.	Quebec.	Ontario.	Quebec.
White pine - - - -	3,048,382	1,739,094	4,084,258	2,230,056
Red " - - - -	1,714,412	978,064	—	—
Other wood - - - -	255,950	146,019	—	—
Totals - - - -	5,018,744	2,863,177	4,084,258	2,230,056
Deduct from private lands - - - -	1,074,418	612,931	874,349	498,804
Cut on Crown lands - - - -	3,944,326	1,751,246	3,209,909	1,731,252

From 1867 to 1881 inclusively.

	Square Timber.		Pine Saw Logs (only).	
	Ontario.	Quebec.	Ontario.	Quebec.
White pine - - - -	1,925,247	1,119,382	17,920,850	17,277,103
Red " - - - -	485,141	118,626	—	—
Other wood - - - -	238,874	63,319	—	—
Totals - - - -	2,649,262	1,301,327	17,920,850	17,277,103
Deduct from private lands - - - -	615,879	244,895	3,380,275	2,679,412
Crown timber - - - -	2,033,383	1,056,432	14,540,575	14,597,691

Total recorded product, Upper Ottawa Agency, 1826 to 1881, 30th June.

Ontario, 7,173,182 pieces pine.	494,824 other woods.	22,005,108 saw logs.
Quebec, 3,955,166 "	209,338 "	19,507,159 "
Total <u>11,128,348</u> "	<u>704,162</u> "	<u>41,512,267</u> "

Upper
Ottawa
territory—
continued.

It will be seen that the foregoing table gives a more complete exhibit of the yield of timber from the Upper Ottawa territories than I had the means of making for the other territories, owing to its being compiled from the records of my own office, and my transactions as agent for the two Upper Ottawa territories for upwards of 30 years, with the records of my predecessors for 26 preceding years, though imperfect. As the transactions and the revenue of the Crown Timber Office of Ottawa annually, are greater than the totals in the remainder of the two provinces taken together, and extend over a much longer period, and the Ottawa agency was more regularly systematised from the commencement, its records afford a more perfect view of this branch of the public service, especially as regards the effect of injudicious systems of settling lands for settlement.

Advantage
of selling
land subject
to duties on
timber, if
adopted when
recom-
mended.

In illustration of which, I beg to refer to the line of quantities of timber and saw logs cut on private lands (of which proof was given) in the period from 1867 to 1881 at the foot of the foregoing table, by which it will be seen that there passed as private (free of duty) during these 15 years, 244,895 pieces of square timber and 2,679,412 saw logs from the Quebec side of my agency, and 6,815,879 pieces of square timber and 3,380,275 saw logs from the Ontario side of it, and that if they had been subject to duty at the rate of $1\frac{1}{4}$ cents a foot on the square timber, computing them at the minimum rate as averaging 50 cubic feet each, and the saw logs at the old lowest rate of 10 cents each (not $12\frac{1}{2}$ cents, the ordinary average in Quebec) the duty on them accruing to Quebec would have been \$421,000 $\frac{37}{100}$, and to Ontario \$722,921 $\frac{9}{100}$, making together \$1,143,951 $\frac{87}{100}$, which I am necessarily in condition to say decidedly was unnecessarily lost to the public. Had the principle of selling public lands at a reduced price, subject to the conditions that the timber cut on them should be paid for at the usual rates of dues to the Crown when it went to market, been adopted when officially suggested, and

sustained by detailed demonstrative definite evidence in 1852, or even when again submitted, and its applicability and advantages demonstrated in the 10th clause of my evidence before a committee of the Legislature in 1855, on the management of the public lands, had it been then adopted, not only would the above amount have been saved to the provinces, but also necessarily a nearly similar amount in the other Crown timber agencies, whose timber transactions are, taken together, nearly as great as those of my late agency, but also, in addition thereto, the dues that would have accrued on timber and saw logs cut during the previous 15 years on lots sold between 1852 and 1866, amounting with this addition in all to over \$3,000,000. Besides which, there is the large amount which would accrue had the principle been established on timber that must continue in future to be cut on the part of the lands more lately purchased, especially which would cover any reduction in the price of the lands sold.

Loss by its
not being
adopted.

I am led to express myself so fully and decidedly here, because, as my 36 years' experience has necessarily made me thoroughly acquainted with the matter, I feel it to be my duty to vindicate to the utmost the action taken last spring by the Government of Quebec and the Legislature in passing the enactments of 45 Vict. c. 10. It may be thought that the above estimate of the amount that would have accrued had the sale of Crown lands, subject to payment of the usual dues on timber cut on them, been established 20 or 30 years ago, as it embraces duties on all kinds of timber besides pine, would give an exaggerated view of the profit to the revenue to be expected from the enactments of last spring, which reserves only the pine. But it will be found, on computing dues in the quantities of squared pine timber and pine saw logs given in the annual return of timber from Crown lands in the Departmental Report for 1881, by the increased rates established by Order in Council of 28th November 1880, as since modified, that the dues on pine timber and pine saw logs alone, at the new rates, will amount to several thousand dollars more than the total of dues that accrued on timber and saw logs of all kinds for that season at the previous rates. Notwithstanding a slight decrease on the quantity of pine in some parts of the province, cut from Crown lands, together with a great increase in the proportion of spruce saw logs made, the quantity of pine saw logs and squared pine timber when reduced to a common measure, has been on the whole increasing, though at an uneven rate. Thus, when the number of pieces of squared pine cut in the province as returned for 1881 is cast into saw logs by computing that the tree from which each piece was made would have yielded three saw logs (as the finer trees only are used for making squared timber), and the number so obtained is added to the number of pine saw logs returned for that year, the sum will be found to be over 5 per cent. greater than the yearly average of pine timber and saw logs, from Crown lands deduced from the totals of them as recorded for 15 years past, computed in the same manner.

Increase of
pine cut—
continued.

As the yield of pine continues to increase, though in a fluctuating manner, it will be many years before the revenue from the pine reserved by the enactment of last spring permanently declines; for as, even when the yield of pine diminishes through scarcity of it, the rate of dues on it may justly be augmented on account of its then necessarily increased value. It is to be observed in favour of the reservation that it is notorious that very many lots of Crown lands, whether subject to the conditions of actual settlement or not, are purchased simply for the purpose of lumbering upon them. Of course the very best timbered lots are selected, where the duties on the timber (the payment of which is in this way evaded) may or rather would, if paid, amount to from four to 12 times the price of the lot.

Nearly all this is lost to the province that seldom secures an actual settler in return; for such pine land is generally unfit for settlement and is exactly of the kind which for the common good of the country should be carefully preserved from the fires of clearing and reserved, and its young timber be allowed to grow up in forest for ever.

Reservation
of pine will
prevent
purchase of
lots under
pretence of
settlement
but only for
the pine.

The Act reserving the pine will put a simple self-acting stop to all such purchases to the injury of public interest and revenue in future. By analyzing the return of ordinary dues on timber cut on Crown lands, in 1881 it will be found that three quarters of the amount is derived from white and red pine timber and pine saw logs, and the remaining quarter from all other kinds of timber and saw logs, and minor descriptions of wood goods of all kinds. In the foregoing table it is to be observed that square timber and saw logs only are included, and all other wood goods are omitted as unimportant for the object of the foregoing brief table. The dues accrued from them are, however, included, of course, in the following equally brief exhibit of the revenue accrued from Crown timber dues in the upper Ottawa territories of Quebec and Ontario respectively from 1826 to 1881 inclusively, being from the remotest period of which there are any records in the Crown Timber Office, Ottawa.

Upper
Ottawa
territories
of Quebec
and Ontario
summary of
dues accrued
on each since
1826.

Period.	Ontario.	Quebec.	Totals.	Years.
1826 to 1834 - -	\$ 169,078	\$ 46,023	\$ 215,101	9
1835 to 1851 - -	931,735 ⁵⁶ / ₁₀₀	460,643 ⁷⁹ / ₁₀₀	1,395,379 ³⁵ / ₁₀₀	17
1852 to 1857 - -	153,058 ⁴² / ₁₀₀	282,879 ²¹ / ₁₀₀	735,937 ⁶³ / ₁₀₀	6
1858 to 1866 - -	896,096 ²⁷ / ₁₀₀	609,861 ¹⁵ / ₁₀₀	1,505,957 ⁴² / ₁₀₀	9
1867 to 1881 - -	3,279,538 ²² / ₁₀₀	3,439,832 ⁵⁸ / ₁₀₀	6,719,371 ¹⁰ / ₁₀₀	15
1826 to 1881 - -	5,732,506 ¹⁷ / ₁₀₀	4,839,240 ³⁰ / ₁₀₀	10,571,746 ⁵⁰ / ₁₀₀	56

Not having yet received the usual annual returns of collections of timber dues made at Quebec by the Collector of Crown timber and slide dues for 1882, on clearances transmitted by me, of rafts from my Quebec and Ontario agencies, I am unable to include, completely, in this summary the amount of revenue that accrued from them up to the close of the period they were under my charge; it is only for the last 30 years that they have been exclusively so.

Period I
have been
in charge of
them,

For six previous years there was a collector of Crown timber dues, who was my colleague in the settlement of contestations and head of the Crown Timber Officer. My duties were then limited to the awarding of timber berths to the applicants entitled to them, under regulations, and defining their limits, with the duty of inspecting the collector's accounts and transactions if I saw any cause for doing so.

In October 1852 his duties were added to mine.

and the
amount of
my time.

Upper
Ottawa
territory.
Amount of
revenue to
the provinces
and the
Dominion, in
timber and
slide dues
while under
my charge.
Advantage
and economy
of combining
the collection
of timber and
slide dues.

Of the above amount of \$10,571,746⁵⁰/₁₀₀, \$8,846,814¹⁵/₁₀₀ accrued under my charge and direction, and to complete both of these sums the amount of dues accrued, in 1882 about \$681,787⁵⁴/₁₀₀ has to be added, which will increase the total accrued in the Upper Ottawa agency for Quebec and Ontario to \$11,256,534⁴⁰/₁₀₀ and the portion of it that accrued under my charge, as Crown timber agent, to \$9,531,601⁶⁹/₁₀₀ to which should be added as a chief branch of my official duty the collection since 1864 of \$1,527,200³⁷/₁₀₀ of slide and boom dues for the Dominion Government, increasing the dues accrued to the three Governments I served to \$11,058,802⁶⁰/₁₀₀. I mention the collections of slide dues in the foregoing as giving the opportunity of explaining the advantage of the collection of timber and slide dues being combined. It greatly facilitates and tends much to secure the accurate collection of both. The same timber and the same men are dealt with at the same time. The returns of the timber rangers of their inspections, supported by sworn statements of cullers, afford the means of effectively checking the accuracy of the certificates the lumberers give the deputy slide masters, which through careless error or fraud might be quite erroneous, as to the numbers of saw logs especially, and as to where they came from. On the other hand, the assistance the Dominion officers of Inland Revenue and Customs and their collections of canal dues, are authorised to render, at the request of the Crown timber agent, in preventing the departure of vessels or the passage of barges loaded with lumber through canals is often of the greatest importance in securing the payment of timber dues. On the River Ottawa no boats or barges loaded with lumber are allowed to pass through the canals without permits from the Crown timber agent. Such permits are occasionally withheld for the enforcement of the payment of timber dues, and the detention of the boats (till released by direction of the Crown timber agent) is always promptly effected by the officers of the Dominion.

Other
important
duties of
the Crown
Timber
Office,
Ottawa;
Timber
licenses and
surveys.

The business and accounts connected with the collection of the timber and slide dues for the three Governments form about two thirds of the duties and labour of the Crown Timber Office, Ottawa; and the preparation and issue, annually, with necessary alterations of the 529 timber licenses in the province of Quebec and the 245 in Ontario which together cover an area of 26,448 superficial miles of the Upper Ottawa territories, with the intricate investigation of obscure conflicting rights in the cases of contestations as to bounds and the issue of instructions for the surveys of them form the remainder, of which the last mentioned form the most difficult of the duties of the office.

Practical and scientific men alike who attended the meetings of the American Forestry Congress, held at Montreal in August last, could not fail to be deeply

impressed with the very great, we may say, unexpected, amount of highly interesting instructive, and important information embodied in the articles read, the addresses given and the discussions that took place on the various subjects brought forward.

The Forestry Congress.

Even different views, when elicited, gave with advantage the results of greater variety and scope of observation. The valuable timber of our forests is being rapidly destroyed by the commercial demand for it and by desolating fires, and we must now distinctly bear in mind that we have no new fields to fall back on for the white pine that gives our trade its special value. Elsewhere the increasing scarcity of wood for fencing and building, and especially fuel, which has already long been felt, and in some of our oldest settlements is increasing the difficulty of living, and consequently diminishing the value of farms even in situations otherwise favourable.

When we take all this into consideration, together with the consequent ultimate decay of the chief export trade of the port of Quebec, and—what is not to be overlooked—the revenue derived from it, we can hardly over estimate the importance of the objects of the Association, and the obligation we are under to the eminently experienced and talented American and Canadian gentlemen of the Association who have so earnestly devoted their time and attention to the subjects of forest preservation and cultivation, so specially important to the future prosperity of our province of Quebec, obviously adapted by its favourable geographical position, and the unfitness of much of it for other cultivation, to be a timber yielding and timber trading country for ever.

Its interesting and highly important objects and proceedings.

For the object of this memorandum it is proper that any remarks I may have to submit should be confined to such parts of what was read or said at the meetings of the Congress as may be more or less applicable to the management of our provincial public forests, and to the profitable re-forestation by private enterprise of worn out or unarable fields, and the planting of trees of most valuable kinds everywhere where they might be useful or ornamental.

On tree planting.—The able paper by Dr. Hough, the talented Chief of the Forestry Branch of the Department of Agriculture of the United States, advocating the planting of trees along railway lines, and the information it contains on the great and rapidly increasing consumption of small trees for railway ties in the United States, merit the greatest consideration, in view of the like increasing demand for railway ties that must continue increasing for our Canadian railroads. He says 2,200 to 3,000 are used in every mile, sometimes 3,500, and that there are 100,000 miles of railroads in the United States; average duration of a tie is five to eight years, and that 30,000,000 to 50,000,000 of ties will be required for the 100,000 miles each year, which he computes at the rate of 500 ties to an acre, will require 60,000 to 100,000 acres of woods each year to be cut over, to provide which—he says justly, that allowing the trees 30 years on an average to attain the necessary size—there should be 18 to 30, say, 25 acres of woodland to every mile of track either along the road, which in many cases would be desirable to prevent drifts, or where the land could be had at less cost, as near it as economy might dictate, counting in the cost of transport of the wood when cut, if remote.

Dr. Hough on tree planting along railways. Railway ties, number required annually in the United States.

As far as 60 years' experience, chiefly in wooded countries, road engineering, or in charge of public forests, may enable me to judge I can endorse Dr. Hough's views and calculations on this subject (and those of the other members of the Association respecting it) which are applicable to tree planting generally, as regards the selection of kinds most suitable to the soil and the object intended, and the treatment of them.

Among the trees recommended for such planting, the black walnut for many obvious reasons was most strongly advocated by several eminent American and Canadian members. Among the latter, the most prominent and practical, was the Hon. Mr. Joly, well known for the energetic interest he takes in everything for the general good, like the present movement, which is the object of the American Forestry Association; he has set the example on a large scale, in commencing the cultivation of the black walnut in the province of Quebec (it is stated that he planted 10,000 walnut trees in one season recently). The diminishing supply of walnut in the United States and its rapid disappearance have greatly increased the price of it in the wood market, and consequent profit in producing it, which is much sooner obtainable from its well known rapidity of growth, which is stated by Mr. Joly is nearly three times as rapid as that of pine, and still more so than that of spruce, and he estimates that an acre planted with black walnut would in 40 years yield \$10,000.

Recommends black walnut, as does also the Hon. Mr. Joly, who has planted it largely.

Its valuable qualities and estimated profit.

When we add that black walnut stands next to mahogany for furniture and oak for structural purposes, that fence posts of it lasts over 25 years, and that from its strength and hardness and great durability it makes superior railway ties, even its fruit is valuable,

Its durability, strength, and fruit.

and finally that it makes excellent firewood, belonging to the same family as hickory that burns well green. "Thus," to use the words of George B. Emerson, "it has almost " all the qualities desirable in a tree."

We may add here that the butternut, which is of the same genus as the walnut, though inferior in hardness and colour, resembles it in durability under heat and moisture, and its extensive usefulness for furniture is well known, so also is its rapidity of growth.

The Catalpa
Speciosa.

The "Catalpa speciosa" is of much repute in the Northern and Western States. It is found, Dr. Hough says, to be hardy and very durable. Its wood is light (so much the better for engineering) yet strong enough for most purposes of construction. It has been used to advantage in bridge timbers where exposed to the weather. It is a favourite material for fences, is easily worked, and durable as shingles, and is found serviceable as railroad ties. Dr. Warder, in a paper read at the Congress in August last, speaks of their lasting 12 years or twice as long as cedar. Durability is of great importance, it doubles the value of wood for structures exposed to weather, for all practical men know that in rough wood work, in rough calculation, the workmanship costs as much as the timber. Dr. Warder doubted if the Catalpa would grow in Canada. Mr. Robert Burnet, of Picton, latitude $45\frac{3}{4}^{\circ}$ north, said 100 plants from Illinois were set in 1880 in the spring to test if they would succeed, but it will take years to ascertain the result. Mr. D. C. Burson, of Topoka, sent a paper, which was read, on the Russian mulberry, an exotic introduced into the western prairies by the Mennonites, where it is now coming into great use as a tree to bring returns to the present generation. It grows rapidly, stands transplanting well, and is ornamental. The fruit is very good and plentiful, and the wood is as durable as red cedar and is useful for furniture; the leaves are the best food for silkworms. It grows to a great size and rapidly. Trees sown seven years ago are now 25 feet high and 6 to 8 inches thick. Its fruit is used as a dessert and makes a pleasant light wine. Its very valuable qualities seem to render the ascertaining if it will thrive in this country worthy of special encouragement. A paper on the European larch was read by Mr. David Nichol, of Cataragui, stating that the American larch, called tamarac, when young can hardly be distinguished from it. The European is quick growing. It brings the quickest and most certain returns to the grower, succeeds well on poor land, and almost in any climate. In Europe it is the best wood for masts and spars. It is very strong and does not warp or shrink, and is much used in shipbuilding. It improves the soil as its leaves add more than the tree takes from it. Its resinous nature makes it better for shingles than pine or cedar. It is large enough in 35 or 40 years for every useful purpose, and in 50 years it is found on an average to attain a diameter of from 30 to 40 inches at 3 feet from the butt. In Europe its larch is very durable. The frigate built from the Duke of Athol's larch plantations was ranked a second time as A 1 from its continued soundness.

Dr. Warder
on its dura-
bility, &c.

Mr. Burson
on the
Russian
mulberry.
Many good
qualities.

Mulberry
fruit and
wine.
Mr. Nichol
on European
larch.

Canadian
larch.

Our timber, unless where grown near the sea, is less durable than timber of the same kind grown in the maritime parts of Europe. Our larch of Canada generally is less durable than the European, but in other respects has the good qualities of the European, such as freedom from knots, strength and solidity, and, even under certain circumstances, durability. (The contractor for the rebuilding of an old military stockade on the Richelieu found the old posts, where of cedar, decayed to a spindle at the surface of the ground as old cedar fence pickets become, but where of larch (*l'épinette rouge*) they were decayed only one-eighth of an inch in, but all inside of that was as sound as ever). Mr. Nichol says larch should not be planted with other trees, they seem to injure it. In a little hedge row of larches I put one little grey spruce half their height. They were neglected, and grew up to 25 feet in height, but the nearest larch to the spruce turned abruptly 10 feet back from the line, and there resumed its perpendicular growth. The tamarac was originally taller and older than the spruce. Our tamarac (larch) in the Lower St. Lawrence is good and comparatively durable. West of Lake Temiscouata I saw an exceptional one it is true, over 10 feet in girth and 100 in height. The average contents of the square tamarac from the Ottawa is 40 cubic feet to each piece; red pine only 33 feet. As the larch is the best quality of timber we have for many purposes, and is found in the most northerly parts of the province of Quebec at the sources of the Moisie and the Saguenay to attain a large size, and with care can be transplanted young, with great success, it is evident that the otherwise useless underwood of our tamarac swamps could very profitably be employed in converting many of our worn fields, overgrown with thistles, and even whole abandoned lots of land into valuable forests, though inferior in profit to the cultivation of black walnut. The "Pinus sylvestres" or Scotch fir, which is the principal prevalent pine of the north of Asia and Europe, and is much valued by European shipbuilders is stated by Emerson in his

Superior
value of
Lower St.
Lawrence
larch.

The "Pinus
sylvestres,"
Scotch fir.

“Trees of Massachusetts” as being the most valuable of European pines that could be introduced into America. It is not liable to blight or fungus. It bears extreme exposure to cold and storms. It would thrive in Canada where pine cannot possibly grow, and is excellent as a sheltering screen for other trees, and would form a more valuable substitute for our pine, rapidly departing, than our spruce is, owing to its known superior qualities. In Scotland it sells for one half more in price than spruce timber does, though (probably in part from its greater abundance) for little more than half the price of larch. It is more durable and less knotty than spruce, but having spruce we are less immediately in need of it. The ash tree—on which Mr. Arthur Bryant, of Prinston, Illinois, read a paper. White ash is the most generally useful tree for all purposes for which strength, elasticity and lightness are requisite, such as for agricultural implements, carriage making, handles of tools, &c., &c. black ash is useful and ornamental for pillars and inside finishing, and it makes durable fence rails. For most of these purposes it is important for home use, though insignificant in our export trade. It is easily transplanted and grows rapidly. It is a tall, straight, and handsome tree. I had one in a field, which, when cut down, measured 112 feet in length; it was 10 feet in girth. Our white pine, however, though the planting of it and cultivation would not be so soon repaid as that of some other trees, is on account of its great value and the great demand for it for home use and exportation, that we should be most anxious to preserve the growth of even by cultivation. For the purposes of general carpentry and house finishing and cabinet work of various kinds it has no equal, and the extent of the climatic zone in which it thrives, seems to be slowly but steadily contracting, and its power of reproducing its kind diminishing from some natural cyclical law or climatic cause, for it is remarkable, speaking of the valley of the Ottawa, near the northern limit of its growth, even in fertile hardwood lands, where pine of the best quality and largest growth are commonly found, there are often no young pines growing up to replace them, though it be even in what is called the white pine country of old Canada. White pine is long of coming to maturity on account of the great size it attains, but it is quick of growth nevertheless, for where cultivated on good soil and uncrowded by other trees, it increases from half an inch to three quarters of an inch in diameter annually. Some eminent American writers err, in thinking that as a universal rule pine does not thrive on land of limestone formation, for when I first looked on the site of the city of Ottawa and its environs, exclusively of stratified Trenton limestone formation, it was (excepting a partially cleared portion) covered with thick woods in which white pine was predominant after three large rafts of it had been cut within the site of the city and its suburbs. Two or three lofty specimens still remain within a mile of Parliament buildings, about 15 feet in girth and 180 feet in height. The reasons are nearly similar for preserving and cultivating our red, originally designated Norway, pine (being nearly the same), but it took 40 years’ experience to enable British purchasers to discover that it was inferior in durability to the Norway red pine, and that it was inferior in value to our white pine, which, from the similarity of name, they took to be the same as the white wood of the Baltic, a much inferior wood. The red pine, however, being harder than the white pine is more valuable for flooring, especially when there is much wear, being more durable if not exposed to the weather. It makes better fuel than white pine, as it can be burned while still green. Yet it is much less liable to be killed or injured by being scorched than white pine. At an evening meeting at the Queen’s Hall, the Hon. Mr. Joly, with great clearness defined what the advancing progress towards the destruction of our forests urgently requires of us in saying that “both the preservation of our existing forests, and the creation of new forests in regions where they do not exist, are absolutely necessary” adding that in view of the inevitable emergency, which all must admit to be steadily approaching, it was gratifying to see that the Government and Legislature of the province of Quebec, by the enactments of the last session of the provincial Parliament, alluding to chapters 10, 11, and 13 of 45 Vict., and especially to the last, for the encouragement of timber planting, had taken the lead in initiating the true course of action for successfully meeting that emergency. In so expressing it he most happily, and with truthful force and clearness, put the highly creditable action of the Government and Legislature before the audience; but to do full justice to the amendment of the system of the sale of public lands would from its importance have required too great a departure from the more immediate subjects before the meeting but which may render further explanation necessary. After briefly recurring to further proceedings of the Congress, the Hon. Mr. Loring, the President of the Forestry Association, concluded a highly interesting address which he gave on the general subject of forestry, with an estimate of the time it will take to exhaust the timber grounds in the several States of the Union; summing up with the conclusion that, in the course of one generation, the present

Very hardy and durable.

General usefulness of white, and even black, ash.

White pine; great importance of maintaining the growth of it by preserving, and even planting it.

Our red or Norway pine.

Hon. Mr. Joly on the imperative necessity for action in preservation of our forests.

And his appropriate encomium on the action of the provincial Government and Legislature in the matter.

Hon. Mr. Loring’s powerful statement of the im-

pending early exhaustion of United States forests and consequent great demand on ours.

Arbor day holiday proposed by the Hon. Mr. Joly.

Mr. P. White. Value of timber destroyed by fire.

Lumbering less destructive.

Destruction of timber by fire.

Hon. Geo. Bryson.

Patrolling fire inspectors recommended.

Mr. J. K. Ward.

Reservation of part of the lot for timber.

forests of the United States will be almost entirely exhausted ; which may be considered as usefully instructive to us, as certainly assuring us of the exhausting demand that long before the close of that term will be made on our forests to meet the requirements of the American market. The warning manifest in the facts given by Mr. Loring is timely ; and the wisdom of entering without delay on a course of action to meet the emergency as it advances, is obvious, whether it comes sooner or later than estimated.

Before closing my remarks on Mr. Joly's address I should have noted his judicious proposal of establishing an arbor day as an annual public holiday as calculated to give permanency to the recollection of the object of it, by linking it to the regular recurrence of a day of enjoyment of healthful recreation. The history of all holidays unquestionably demonstrates the soundness of this conclusion.

Mr. P. White, M.P. for Renfrew, Ontario, in a vigorous, clear, and succinct verbal address on the loss to the province from forest fires, estimates the value lost annually by them in the Ottawa District at twenty millions of dollars, meaning, doubtless, the value that the destroyed forest would otherwise have yielded compared with average annual value of timber exported. This estimate may be thought excessive ; but when we bear in mind that in addition to the value of the marketable timber, the fire destroys not only the smaller timber that would in future years yield successive cuts of equal value to all that was then marketable, but also in severe cases all the seedlings and seed cones, the germs of any future growth of pine till they are casually carried there after successive generations of the berry, the cherry, the poplar, birch, and spruce. Whereas the thinning out of the larger trees by the lumbermen, if not followed by widespread fires, hastens the growth of the younger trees that are to replace them, and might do so for ever. In speaking of the endeavours of the lumberers to prevent the setting of fires Mr. White justly remarks that the authority of Government is necessary, and, in his stating, in his position as a representative of the lumber trade, that the trade would not object to a special tax to meet the expenses of Governmental supervision, he has judiciously taken an important preliminary step tending to strengthen the hands of the Government in taking action. His suggestion that the period during which the burning of brush by settlers is interdicted should be extended to the months of June, September, and October, deserves serious consideration. Mr. Wright of Massachusetts, in relating his experience of forest fires in the west, said the fires started through the carelessness of settlers did infinitely more damage than the Indian fires. This is generally true, as every man who has lived a backwood's life for years knows well. But of all settlers the pretended settler, whose sole aim is to use the pretence of settlement to enable him to strip a lot or two of a fine growth of timber ; he makes a great "slash" by simply cutting down the trees on several acres, say from four to twenty acres, and when it has dried enough to render the tops and foliage of the trees highly combustible he chooses "a fine day for a burn" when there is wind enough to cause the fire to spread well, and then sets fire to it in many places, and this scorched "chopping" with a few round logs laid up in a square form is, when required, sworn to in formal affidavit as so many "acres under improvement" or probably as "cleared and cultivated" "with a dwelling house thereon." This abuse is too well known in its various forms and degrees in the Ottawa country. In one case on the Ontario side of my agency the doing of the settlement duties on 14 lots to secure the timber free of dues had, I was informed on good authority, destroyed the pine on nearly the extent of a township.

The Hon. George Bryson of Pontiac, whose position in the Legislature of the province and his almost life long residence in a lumbering country and intimate experience in its trade, and in the commencement of its settlements, (gives) weight to his opinions, concurs with Mr. White in recommending that patrolling fire inspectors be appointed by Government, and in the extension of the period of interdiction of the burning of brush, with the addition that it should include the month of May, as it is then the fires have their beginnings and gradually spreading become more conspicuously destructive as the dry, hot weather of summer advances. These suggestions will be remarked on further, on the conclusion of this memorandum.

Mr. J. K. Ward, whose long experience in the lumber trade qualifies him well to judge of it, spoke of the great destruction of timber by forest fires, and suggested the importance of establishing a reservation of 10 acres of standing wood in every hundred acre lot by its being sold ; subject to that condition the 10 acres to be free of price. His suggestion was made with a view of preserving necessary wood for fuel, fencing, &c. for the inhabitants, in consideration of their welfare. Dr. J. B. Hurlburt in one of the articles read by him suggested a reservation of 25 acres, for such purposes, which would be still better than 10, for the interest of the settlers in future. Such a reservation would be very easily

made, but would be practically difficult to maintain. It might be retained unsold by the Crown, but to cover the loss in the price of the lot, the price per acre should be increased one third, for the value of the lot would be soon enhanced by the reservation of the wood in the 25 acres, by limiting the cutting on it annually to its annual average growth under penalty of confiscation of the reserved quarter. It should be reserved in detached clumps unconnected with the boundaries. In the old settlements in the province, where remaining woods were naturally in the rear ends of the lots, a fire getting into one swept over all that were on the line, from their being adjoining each other. Mr. Saunders, of London, Ontario, read a paper on the growing of poplar for the making of paper and charcoal, for which the demand and price of certain kinds of poplar had of late been greatly enhanced, such as the aspen and the white poplar and others. He says the balsam poplar or balm of Gilead will prove almost if not equal in value. It is the most rapid in growth and the easiest to transplant. The very branches or tops if cut or broken off will thrive if planted. I fell from the top of one 50 feet in height, taking the top piece, which broke off with me. I planted it, it is now a thriving tree, over five feet in girth.

Mr. Saunders on poplar.

Mr. B. F. Fernow read an able and exhaustive article on the conditions of forest growth, for which his European experience and education in forestry qualified him. Referring to the threatened difficulty of meeting the enormous demand for railway ties, when the use of iron for that purpose was spoken of and objected to, he said that in his country, where the government owned alike the forests and iron mines, it used iron superstructures to carry the rails instead of wood sleepers extensively, though having ample command of both, from which it is apparent that iron is sufficiently suitable—a fact that is, though remotely, of considerable importance to our country, that has an inexhaustible supply of iron ore, the same means of obviating the difficulty as Prussia. The most important part of the proceedings of the meetings of the Congress, as far as practically concerned the management of the public forests of Canada, was the appointment of a Committee, consisting of Mr. P. White, M.P., Mr. J. K. Ward, Dr. Mohr, the Hon. George Bryson, Professor Hough, and Mr. P. E. Fernow, to memorialize the Governments of the United States and Canada on the necessity of protecting their public forests.

Mr. B. E. Fernow. Iron extensively used instead of ties in Prussia.

Special committee. On memorial to the Governments to protect timber forests.

The report of this Committee, presented by the Hon. George Bryson, and adopted by the Congress, recommends:—

Adopted by Forestry Congress.

1st. The reservation of all pine and spruce lands unfit for settlement, for lumbering purposes exclusively.

2nd. The prohibition of the burning of brush by settlers in the vicinity of fir trees during the months of May, June, September, and October (July and August burning already interdicted in the province of Quebec).

3rd. The division of the timber country into districts, and the appointment of police under a superintendent with magisterial powers, whose duty it shall be to detect and punish offenders, and provide for the extinguishment of fires.

4th. The cost of the maintenance of this protection might partially be met by the imposition of a moderate tax on the parties owning or leasing timber lands.

On this subject I would remark that it has become a practice of the chief lumberers on the Ottawa to enforce every precaution in their power on their people for preventing such fires not only on their own premises, but also by having their rafts or saw logs accompanied by one or two reliable persons, whose duty it is to see that all necessary or other fires are duly extinguished. It is also a common practice when any of their men are discharged from their works to send a reliable person with them to see that all fires that there may be occasion to make are duly extinguished, and that no unnecessary fires be made.

Precautions against fires now used by lumber men.

It would seem most desirable that the reliable men so employed, by and on the responsibility of the lumberers, should be clothed with most ample powers as constables, and that the inspectors should have the necessary powers as magistrates.

I would particularly remark here, with regard to the interdiction of the burning of brush, that a point of importance has been overlooked in suggesting the period when it is interdicted, that is the unsuitableness of fixing one and the same period for the whole province, notwithstanding the great difference there is in the length of the seasons in different parts of it; May and October should be excepted from the interdiction on the eastern extremity of the province of Quebec, otherwise the clearing of land for cultivation in settlements there would in some seasons be rendered impossible or nearly so.

Period of burning should differ where length of season differs.

Should be subject to modification to suit great districts, by Order in Council.

The law enacted on this subject should clothe the Lieutenant-Governor with power to fix the periods in different localities or rather great fire districts by Order in Council.

It seems probable that before very long that a reservation of all commercial timber (or of the ordinary dues thereon) in the same manner as on pine will be necessary to preserve the public forests and revenue, though it is not of immediate importance.

Dr. Hough's encomium on the system now in force in the province of Quebec for the management of the public forests is so well grounded on facts, now that it has been so far completed by the wise legislation of last spring, that there is now little or no grounds left for suggesting any alteration or suggestion of addition beyond such as may appear advantageous in minor practical details, as the working of the system in future may indicate.

Ottawa, 16th January 1883.

Respectfully submitted,
(Signed) A. J. RUSSELL.

SIR,

Ottawa, January 20, 1883.

In addition to what I said of the highly important and beneficial character and tendency of the action of the Government and Legislature last spring in the matter, woods and forests, I might, in my report on the subject of the meeting of the Forestry Congress, have with great justice adduced the very high prices now obtained by private individuals in selling timber berths, and the rates they exact from each other as compensation for damages in cases of trespass, as unquestionably justifying the increased rate of dues on timber from Crown lands now in force. See sale of 145 square miles of limits on Black River for \$208,000₁₀₀, equal to \$2₁₀₀²⁴ an acre, in the above-mentioned report.

It is worthy of remark that though the increase of price of the timber caused by the increase of the rates of dues would not be wholly at the expense of the foreign consumer, it would be so in proportion to the quantity of the article he was necessarily obliged to take from Canada, owing to his not being able to get it on better terms, or rather on the same terms elsewhere, and the portion of the public revenue arising from the increase of duties paid by foreign consumers would be so much gain obtained, which was not a tax on the people of Canada.

This, to a certain extent, adds to the advantage of selling lands, subject for ever to the ordinary duties in force at the time being levied on timber of all kinds cut on them, going to market and reducing the price of all lands sold to settlers.

As the rates of ordinary dues were increased in future, the reserved revenue from such timber as came from sold lots would increase, and would, being dealt with along with other and greater quantities of timber, at the same time be incomparably easier to collect, and that at much less cost than in the form of the small instalments annually on purchased lots, which, when not exceeding \$4.00, do not cover the cost of office labour they occasion.

The reservation of duty on all timber from sold lands would be a source of revenue—of increasing revenue for ever to the province—especially to be valued as obviating the necessity of so much direct taxation, which otherwise would have to be imposed on our population to whom it would be objectionable. The revenue from other timber than pine may not exceed \$100,000 annually at present, and the time, though distant, will come when it will exceed that from pine greatly.

The system adopted by Governments in the late regulations with respect to pine, in authorising it to be cut by the purchaser of a lot by giving him a license, is good in maintaining the power of control and exacting returns under penalty for evasion, as in case of trespass; and the levying of the duty will prove an important source of revenue, besides terminating the temptation to purchase the best timbered lots with the view of obtaining a right to the timber for from a quarter to a tenth part of the dues on it that would otherwise be payable.

As we had a system formerly, when it was necessary, of confiscating limits falsely stated to be duly occupied, I once proposed to the then Commissioner applying the same system to lots of land, of transferring the title and lot to the informer proving the non-performance of conditions of actual settlement, &c., as we did in the case of non-occupied licenses; but in the case of the non-occupied lot, what he had paid to be returned to him after deducting expenses of proving the case.

As there is an unprincipled clamour made against the Department cancelling sales in such cases, perhaps it might be well to adopt the system of giving the lot to any one that needed it; the proof to be made good before a court of law if disputed, so as to relieve the Department from the responsibility. Pardon my imperfect writing.

Yours, &c.

E. E. Taché, Esq.,
Assistant Commissioner of Crown Lands,
Quebec.

(Signed) A. J. RUSSELL.

Précis by Dr. Lyons, M.P., of certain Reports, Acts of Parliament of the Dominion, and other Papers which accompanied the Canadian Forest Reports, in so far as they relate to Questions affecting Forests and Cognate Matters.

Law assented to 5th April 1869.

1. There shall continue to be, and be, a department for the management and sale of the public lands and forests, to be called "the Department of Crown Lands;" and the same shall be presided over by "the Commissioner of Crown Lands" for the time being.

The Lieutenant-Governor in Council may from time to time withdraw or withhold from sale and set apart the same to be held as "timber land" such portion or portions of the public lands as after the exploration and inspecting thereof by officers or agents specially charged with the performance of such service may be found to be valuable for its timber, but generally unfit for the purposes of colonisation, whether the same shall comprise whole townships, parts of townships, or tracts of unsurveyed land.

By clause 12 claims to Crown lands are barred, unless same has actually located or admitted a proof sufficient, in the opinion of the Commissioner of Crown Lands, furnished in support thereof before the passing on the 14th June 1853 of the Act 16th of Victoria, c. 159. The Lieutenant-Governor in Council may appropriate any public lands as free grants to actual settlers upon any public roads opened through the said lands in any new settlements, under such regulations as shall be made from time to time by Order in Council; but no such free grant shall exceed 100 acres. The term "public lands" shall be held to apply to lands heretofore designated or known as Crown lands and clergy lands, which designations for the purposes of administration shall still continue.

Department of Crown Lands, Quebec,
August 25, 1869.

1. The duties of agents shall comprise the sale and locating of all public lands offered for sale, the granting of licenses to cut timber thereon, or upon such lands as have been set apart for that purpose, the collection of arrears due, the settlement of conflicting claims, the inspecting of lands, the protection of the public lands within their respective agencies from trespassers and depredators; and such other duties not inconsistent with this Act, as the Commissioner of Crown Lands may from time to time think proper to assign them; and such duties shall be performed under the direction and in conformity with the instructions of the Commissioner. See 9th section, Act 32 Vict. c. 11. of Legislature of the Province of Quebec. Agents are directed to inspect and classify lands under the following heads:—

1st. Lots suitable for agricultural purposes, dividing them into three classes, good, average, inferior.

2nd. Lots valuable for the timber, but generally unfit for cultivation.

3rd. Lots not suitable for agriculture, and the timber only fit for minor purposes, as fuel for sugaries.

4th. Lots entirely unfit for agricultural purposes, and the timber of little or no value.

Woods and Forests.—The Act of Parliament under which the woods and forests of the Crown are organised is cap. 23, Consolidated Statutes of Canada.

The general timber regulations of 13th June 1866 are based on said Act and have the force of law. These regulations, since their promulgation, have been modified by

Orders in Council of 17th July 1868, 2nd October 1868, 18th June 1869, and 9th April 1869.

Licenses to cut timber are granted in the form sanctioned by Order in Council of 9th August 1869.

46 VICT. CHAP. 9. (Assembly Bill, No. 150.)—An Act to further amend chapter 23 of Consolidated Statutes of Canada, respecting the sale and management of timber on public lands, and the Acts amending the same.

Her Majesty, by and with the advice and consent of the Legislature of Quebec, enacts as follows :

1. The Act of this Province 39 Viet. c. 11, is amended, by adding at the end thereof the following sections, which shall be taken and construed as forming part of the said Act.

“ 5. The Lieutenant-Governor in Council may, as soon as the necessary information can be obtained, after the coming into force of this Act, set apart as ‘ forest land ’ all the ungranted lands of the Crown now held under licenses to cut timber,” except such parts of such licensed lands on which no merchantable pine or spruce timber grows and which are fit for settlement ; and also such other portions of the ungranted lands of the Crown as the Lieutenant-Governor in Council, on the recommendation of the Commissioner of Crown Lands, may think fit so to set apart ; and as soon as the Order or Orders in Council setting apart such forest land shall be published in the “ Quebec Official Gazette,” and from and after the date of such publication, no land included in the territory so set apart shall be sold or appropriated for settlement purposes, until after the expiration of at least 10 years, and not then until after it is established to the satisfaction of the Lieutenant-Governor in Council that the whole or any portion of such territory may with advantage be opened for settlement. The Order or Orders in Council withdrawing such territory shall likewise be published in the “ Quebec Official Gazette.” The land so set apart shall be known and designated as a “ forest reserve.”

“ 6. In the renewals of licenses effected after the publication of an Order in Council creating a forest reserve, it shall be the duty of the Commissioner of Crown Lands to exclude any land theretofore under license in the locality and which is not included in the reserve.”

2. Whenever any such lands cease to form part of a “ forest reserve,” and for the purpose of securing to settlers, who may thereafter occupy the same, the timber they may require to facilitate the performance of their settlement duties, section 2 of the said chapter 23 of the Consolidated Statutes of Canada, is amended, by adding after the words “ in all,” in the sixth line thereof, the following words: red and white pine, spruce, “ tamarac, birch, oak, walnut, cedar, butternut, and basswood.”

3. After the coming into force of this Act any license issued for the cutting of any timber under the authority of the said chapter 23 of the Consolidated Statutes of Canada and its amendments shall contain a special description of the trees, timber, and lumber which it is permitted to cut thereunder, and they shall be of the kind mentioned in the preceding section and none others.

4. This Act shall come into force on the day of its sanction.

Copy of a Report of a Committee of the Honourable the Executive Council, dated the 23rd August 1883, approved by the Lieutenant-Governor on the 10th September 1883.

(No. 30.)

On land matters.

On the opportunity of setting aside, as forest reserves, certain portions of the territory comprised in the upper and lower Ottawa agencies, conformable to the enactments of the Act 46 Vict. chap. 9.

The Honourable the Commissioner of Crown Lands, in a report dated the 23rd of August instant (1883), sets forth : That from the documents of record in his department, respecting the inspections which have been recently made in the upper and lower Ottawa agencies, by competent bush rangers and others, it is advisable that the enactments of the Act 46 Vict. chap. 9, be now applied to the territory comprised in the

upper and lower Ottawa agencies, to be recognised in future as a forest reserve, and to be described as hereunder :

Such forest reserve to comprise the surveyed and unsurveyed vacant land, *i.e.*, bounded to the north by the height of land dividing the waters of Ottawa river and its tributaries, from those flowing into Hudson's Bay, to the west by the boundary line dividing the province of Quebec from that of Ontario, and by the easterly shore line of Lake Temiscamingue and of the Ottawa River including the islands therein situated belonging to this province, to a point opposite the River Mattawin; to the south and south-west by the Ottawa River, as far as the intersection of the line dividing the townships of Esher and Sheen; thence by the northerly line of the 7th range of the townships of Sheen and Chichester, by the northerly line of the townships of Waltham, Mansfield, Litchfield, Thorne, Onslow, Masham, Wakefield, Gore of Templeton, Buckingham, Lochaber, Repon, and that of the seigniorie of Petite Nation; to the east by the line dividing the counties of Ottawa and Argenteuil, as far as the northernmost angle of the township of De Salaberry, by the southerly line of Grandison, by the westerly and northerly lines of the township of Wolfe, and by the prolongation of the last named line, to the westernmost angle of the township of Doncaster, by the north-westerly limits of the townships of Doncaster, Chertsey, Cathcart, Joliette and Brandon; north-easterly by the line dividing the counties of Maskinongé and Berthier, to the height of land dividing the waters of the l'Assomption and Maskinongé Rivers, from those of the Saint Maurice; and lastly, by the height of land dividing the waters of the Saint Maurice from those of the Ottawa, prolonged to a point where it will intersect the northerly boundary of this province; save and except all lots situate in the following townships, which hereafter may be found (from inspections made by competent and authorised persons), fit for settlement and destitute of merchantable timber, *i.e.*, in the townships of Guigues, &c. [Here follow about 60 defined localities.]

Certified,
(Signed) Jos. A. DEFOY,
Clerk Executive Council.

45 VICT. CHAP. 13.—An Act to encourage the planting of forest trees. [Assented to 27th May 1882.]

Whereas it is expedient to encourage the planting of forest trees; therefore, Her Majesty, by and with the advice and consent of the Legislature of Quebec, enacts as follows :

1. Whosoever, being the proprietor of, or in possession as proprietor or as usufructuary of any land, shall plant any part of such land, not less than one acre in extent, with forest trees, shall be entitled to receive, in respect of every acre of land so planted, a land order, in the form of the schedule hereunto annexed, which shall authorise him to purchase, to such an amount not exceeding twelve dollars, any of the public lands which may be open for sale within the Crown land agency in which the trees shall have been planted, or should there be no such agency then in the nearest agency, subject to the laws and regulations for the time being in force regulating the sale and disposal of public lands.

Proprietors, &c. planting their land to certain extent with trees entitled to land order.

Form of such order and privileges thereunder.

No order shall be issued until it be satisfactorily shown that the land has been devoted to purposes of planting for at least three years, that the trees are in a vigorous and healthy state, and that the land is securely fenced against both sheep and cattle.

Conditions of issue of order.

Provided always, that if root crops are cultivated among the forest trees planted on any land, such land shall not by reason only of such crops being cultivated be deemed to be not devoted only to purposes of planting according to this Act.

Cultivation of root crops among trees not to prevent land orders being issued.

2. Every such land order is transferable, and shall be exercised within two years from the date thereof, and if not exercised within such period shall be absolutely null and void, and no renewal thereof shall be granted.

Land order is transferable.

3. No land once planted shall entitle the planter to more than one order in respect of the same.

Void after certain lapse of time.

4. The Lieutenant-Governor in Council may from time to time make regulations respecting :

Only one order to be given for one piece of land planted.

1. The number and description of trees to be planted in each acre ;

2. The number of years during which the trees so planted shall be preserved, and not cut down ;

Lieutenant-Governor in Council may make certain regulations.

3. The other terms and conditions to be fulfilled by persons claiming a land order.

May appoint
arbor day.

Regulations
may be
changed, &c.

Land order
may be used
to purchase
lands and how.

Return of land
order when
fully exercised.

Extent of land
to be acquired
under Act.

Certain plant-
ing be a com-
pliance with
Act.

Act in force by
proclamation.

And the Lieutenant-Governor in Council may appoint by proclamation a day to be observed as "arbor day" for the planting of forest trees.

5. Such regulations may be altered or repealed without, however, affecting any right acquired under such regulations.

6. The Commissioner shall, whenever such land order has been offered him in payment of the purchase money of public lands, mention the same upon the back of such land order, and shall give to the holder of such land order a receipt or certificate, which shall have the same effect as if the purchase money of such land had been paid in cash according to law and the regulations respecting the sale of public lands.

7. When the land order has been fully exercised it shall be given up to the Commissioner of Crown Lands.

8. No land can be acquired under this Act unless it is of fifty acres in extent, and does not exceed two hundred acres; but if any person is entitled to a land order for less than fifty acres he may pay the balance in money, under the same terms and conditions as other public lands are acquired.

9. The planting of seeds, nuts, or cuttings shall be considered a compliance with the provisions of this Act.

10. The present Act shall come into force by proclamation of the Lieutenant-Governor in Council in such parts of the province as shall be fixed in such proclamation or by any other proclamation to be thereafter issued.

SCHEDULE.

In the exercise of the powers in me vested by the Act 15 Vict. chap. 13. I hereby authorise _____, of _____, in the district of _____, to purchase to the amount of _____ dollars any of the public lands in the Crown Lands Agency of _____, open for sale or selection, without payment in cash therefor, subject, however, to the provisions in the said Act contained.

Dated the _____ day of _____, 18 _____.

(Signature),

Commissioner of Crown Lands.

The increasing care and attention bestowed by the public authorities of the Dominion on the protection of the still existing "timber lands" is fully shown by the enactments just cited, which have been given in full, as they will probably furnish useful examples for enactments in the mother country, when we come to deal practically with the question of home-grown timber. Special attention is invited to the provisions for instituting an "arbor day," on the model of that now existing for some years in the United States, and which has been productive of so much success in practical arboriculture, so many as 26 millions of trees having been planted in the State of Nebraska alone.

The following sections extracted from recent Acts further point in the same direction.

An Act to amend the Acts respecting the sale and management of public lands, received assent on the 27th May 1882, contains the following sections:—

17A. The pine timber upon public lands shall in future be reserved in all sales, grants, location tickets, leases or permits of occupation, and letters patent.

Notwithstanding such reserve, the locatees, being holders or not of letters patent, or their assigns, may, however, cut and use such pine trees as may be necessary for the purpose of building on the said lands; and, by paying the same price as the holders of licenses to cut timber, they may dispose at pleasure of those which they may cut down in the clearing of the land necessary to obtain letters patent.

17B. After the issue of the letters patent it shall be lawful for the Commissioner of Crown Lands to issue to the grantees of such lands or their assigns a license to cut and use for purposes of commerce pine trees measuring not less than 12 inches in diameter at the stump, and forming part of the said reserve, upon condition that they pay to the said Commissioner the usual dues imposed by the regulations upon holders of licenses to cut timber, and that they comply with such other conditions that the Lieutenant-Governor in Council may be pleased to impose upon them.

Further power is granted to the Lieutenant-Governor in Council for making regulations, not inconsistent with the preceding sections 17A and 17B, for all that concerns the preservation or working of the pine so reserved, for determining the cases in which such reserve such not exist, the conditions upon which licenses to cut reserved

pine may be issued, and generally for better assuring the execution of the present Act.

Perhaps, however, the most important step yet taken by the Government of the Dominion is that for the delimitation of forest parks in the Act of last year, assented to on 19th April 1884. The Homestead Entry Acts have been found, both in Canada and the United States, to interfere materially with forest operations on a large scale. By clause 4 of the Act of 19th April 1884, the 39th clause of the said Act is repealed, and the following clause substituted for it:—

39. The privilege of pre-emption in connexion with a homestead entry shall be discontinued from and after the first day of January A.D. 1887.

Clause 5 enacts:—

The Governor in Council may from time to time, for the preservation of forest trees on the crests and slopes of the Rocky Mountains, and for the proper maintenance throughout the year of the volume of water in the rivers and streams which have their sources in such mountains and traverse the north-western territories, reserve from sale, lease, or license such portions of land in the north-west territories on, adjacent to, or in the vicinity of the Rocky Mountains as to him appears expedient so to reserve, and may define the limits or boundaries of such reserves; and may set aside and appropriate such lands for a forest park or forest parks as he deems expedient, and may appoint officers for the preservation of such reserves and forest parks.

2. Statements showing such reserves and appropriations with the necessary maps, shall be laid before Parliament within 15 days after the commencement of the session held after such reserves or appropriations have been made.

3. Whoever wilfully cuts down, breaks, barks, roots up, removes or destroys, or causes to be cut down, broken, barked, rooted up, removed or destroyed, any tree, sapling, shrub, underwood, or timber growing in and upon any such reserve or forest park, shall for every such offence incur a penalty not exceeding 100 dollars, and not less than 10 dollars, to be recovered with costs of prosecution in a summary manner before a stipendiary magistrate, commissioner of police, or any two Justices of the Peace, under the provisions of the Act passed in the 32nd and 33rd years of the reign of Her present Majesty, chapter 31, and intituled "An Act respecting the duties of Justices of the Peace out of Sessions in relation to Summary Convictions and Orders," and in default of immediate payment of the said penalties, and of the costs of prosecution, the offender may be imprisoned for any period of time not exceeding three months. This Act to be read as one with "The Dominion Lands Act, 1883."

Forest Fires.

Wherever forests exist danger from fire, the result of accident, neglect, malice, or natural causes, constitutes a problem of the greatest magnitude. Many square miles of forest in India, Europe, and the Continent of America have been lost owing to this cause. Stringent regulations have been put in operation in all countries, but perhaps it is not too much to say that we are still without perfectly assured means of wholly preventing such calamitous occurrences, in which the sacrifice of human life is not infrequently an additional element to be deplored.

I therefore do not apologise for submitting in full the text of what appears to be a well considered measure for some years in operation in the province of Quebec.

46 VICT. CHAP. 10.—An Act to provide means for the more effectual prevention of forest fires.

Her Majesty, by and with the advice and consent of the Legislature of Quebec, enacts, as follows:

1. The Lieutenant-Governor in Council may, by proclamation, declare any portion or part of the province of Quebec which is included in any forest region to be a "fire district." Such proclamation shall be published in the Quebec Official Gazette, and, from and after the date of such publication, the territory therein mentioned shall become and be known as a "fire district," within the meaning and for the purpose of this Act. Such territory shall cease to be a "fire district," upon the publication of a proclamation of the Lieutenant-Governor in Council revoking the one creating it.

2. It shall not be lawful for any person to set or cause to be set or started any fire in or near the woods, within any such fire district, between the first day of April and the

first day of November in any year, except for the purpose of clearing land, in which case no fire shall be set except between the first of July and the first of September only.

3. Any person who shall set or cause to be set afire contrary to the provisions of the foregoing section, shall, in addition to his liability for all damage, become liable upon conviction to the payment of the penalty mentioned in the Act of this province, 34 Vict. cap. 19, which shall be recoverable in the manner therein laid down of a penalty not exceeding 50 dollars, and in default of the payment of the said fine, with or without delay, to an imprisonment in the common gaol of the district in which the conviction takes place, for a period of not more than three months, unless the said fine and cost, together with the costs of imprisonment and conveyance of the delinquent be not sooner paid.

4. It shall be lawful for the Commissioner of Crown Lands to employ, between the first day of April and the first day of November, for the purpose of enforcing the provisions of this Act such a number of men as he may deem necessary for that end; and in each fire district so established he shall name an officer who shall be known and designated as "Fire Superintendent."

5. The Commissioner of Crown Lands may permit any person holding a license in any territory included in any such fire district, to place at the disposal of the Fire Superintendent, any number he may see fit of his employes for the purpose of aiding in the enforcement of this Act, which employes shall be under the sole and exclusive control and direction of the said Fire Superintendent, and bound to execute his orders. The salaries and expenses of such employes shall be borne by the licensee.

6. All locomotive engines used on any railway which passes through any lands comprised in any such fire district or any part of it, shall, by the company using the same, be provided with and have in use all the most improved and efficient means used to prevent the escape of fire from the furnace or ash-pan of such engines, and the smoke stack of each locomotive so used shall be provided with a bonnet or screen of iron or steel wire netting, the size of the wire used in making the netting to be not less than number nineteen of the Birmingham wire gauge, or three sixty-fourth parts of an inch in diameter, and shall contain in each square inch at least eleven wires each way at right angles to each other, that is in all twenty-two wires to the square inch.

7. It shall be the duty of every engine driver in charge of a locomotive engine passing over any such railway to see that all such appliances as are above mentioned are properly used and applied, so as to prevent the unnecessary escape of fire from any such engine, as far as it is reasonably possible to do so.

8. Any railway company running, or permitting any locomotive engine to be run in violation of the provisions of the preceding sections of this Act, shall be liable to a penalty of one hundred dollars for each offence, to be recovered with costs in any court of competent jurisdiction.

9. All railway companies whose lines pass through any lands comprised in any such fire district or any part thereof, shall be bound under a penalty of one hundred dollars, recoverable in the manner provided in the preceding section, and subject in addition to the liability for all damages caused by fires originating from sparks issuing from their locomotives, to clear off from the sides of their respective roadways all combustible materials, by carefully burning the same or otherwise. And it shall not be necessary in any such action for penalty or damages to prove the name or number of the locomotive, or the name of the engineer or fireman in charge of the same.

10. For the purposes of this Act, all Fire Superintendents, agents for the sale of Crown Lands, employes of the department of Crown Lands, sworn land surveyors, and wood rangers employed by the department of Crown Lands, shall be *ex officio* justices of the peace; and any justice of the peace, before whom has been proved any contravention of the provisions of this Act, may impose the penalty above set forth.

11. This Act shall come into force on the day of its sanction.

ROBT. D. LYONS.

House of Commons, London, April 6, 1885.

While these pages are passing through the press Dr. Lyons has been favoured with the very interesting and important report on "The Geographical Distribution of the Forest Trees of Canada, by Robert Bell, M.D., F.G.S.C.E., Assistant Director of the Geological Survey of Canada, 1882." On the accompanying map the general Northern limits of the principal forest trees of Canada east of the Rocky Mountains are represented. The

lines have been laid down chiefly from observations made by the writer during the last 25 years, extending from Newfoundland to the Rocky Mountains, and from the Northern United States to the eastern and western shores of Hudson's Bay. Nearly all the reports of the Geological Survey from 1859 to 1879 are stated to contain more or less information on the distribution of timber trees.

The forest trees east of the Rocky Mountains may be divided into four groups, as regards their geographical distribution within the Dominion :—(1.) A northern group, including the white and black spruces, larch, Banksian pine, balsam fir, aspen, balsam poplar, Canoe birch, willows and alder. These cover the vast territory down to the line of the white pine. (2.) A central group of about 40 species, occupying the belt of country from the white pine line to that of the button-wood. (3.) A southern group, embracing the button-wood, black walnut, the hickories, chestnut, tulip tree, prickly ash, sour gum, sassafras and flowering dog-wood, which are found only in a small area in the southern part of Ontario. (4.) A western group, consisting of the ash-leaved maple, bur-oak, cotton wood, and green ash, which are scattered sparingly over the prairie and wooded regions west of Red River and Lake Winnipeg.

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