

THE TRIP TO MR. J. R. BOOTH'S LIMIT  
MADAWASKA, ONTARIO



His Excellency and Lady Grey take a great interest in the proceedings



Mr. R. L. Borden and Mrs. Borden join the Foresters

551<sup>11</sup>

648.

# Canadian Forestry Journal.

---

---

VOL. II.

FEBRUARY, 1906.

No. 1

---

---

## CANADIAN FORESTRY CONVENTION.

---

The first Canadian Forestry Convention held under the auspices of the Canadian Forestry Association, was opened in the Railway Committee Room of the House of Commons, Ottawa, at 10 a.m., on Wednesday, January 10th, 1906.

There was a large attendance of representative men from all parts of the Dominion, as well as a number of leading foresters from the United States.

The meeting was called to order by the right Honourable Sir Wilfrid Laurier, G.C.M.G., Prime Minister, who invited His Excellency the Governor General to open the Convention.

HIS EXCELLENCY THE GOVERNOR GENERAL—Sir Wilfrid Laurier, Ladies and Gentlemen, it is my privilege to open this Forestry Convention which has met in response to the invitation of the Prime Minister to consider, and before it is too late, questions of the highest importance to the future well being of the Dominion. I do not propose to anticipate with more than a very few remarks of my own the addresses of the distinguished gentlemen who have been requested to place the results of their experience and their counsels at the disposal of those who form the opinion and make the laws of the Dominion. I will only say that although my experience of Canada has been comparatively short, it has yet been sufficient to impress me with the urgent desirability of focussing the best brains of the Dominion on the immediate consideration of what shall be done with regard to our forests in order to protect the soil on which the maintenance of our agricultural prosperity depends.

I have myself seen in India, in Asia Minor, in Greece and in Italy, extensive tracts of territory once inhabited by a strenuous, prosperous, numerous population, and now reduced to the misery of a barren desolation by the unregulated deforestation of their lands by a blind and selfish generation which had no regard for

posterity, and no eyes for anything but their own immediate requirements.

Gentlemen, there are no more melancholy reflections than those suggested by the sight of a country, once rich and equipped with all the majesty and panoply of power, which has become a waste and a stony desert through the reckless improvidence of its own people.

It is the object of this Convention to fix the attention of the people of the Dominion on the warning which these and other countries hold out to us as to the practices we should carefully avoid, if we are in earnest in our hope that our beloved Canada may fulfil the high destiny which will be fulfilled if this generation is gifted with sufficient foresight and self-control to husband the resources so abundantly lavished upon it by a bountiful Providence.

It is because I hope that this Convention may be the means of averting from every part of Canada the sad fate of those countries to which I have referred that I have gladly accepted the request that has been made to me to open this Convention. I sincerely hope that the results which will flow from the Convention he has called will realize the hopes of Sir Wilfrid Laurier. I am glad to see so many here and I note with peculiar satisfaction the presence of the eminent gentlemen from the United States who have come here in a spirit of fraternal sympathy and co-operation to give us the great help of their assistance. I now, with great pleasure, declare this Convention open.

SIR WILFRID LAURIER—In the name of the Canadian Forestry Association which has conceived and planned this Conference and in the name of the Canadian Parliament, which has authorized and approved it, it is my privilege and my pleasure to extend to you all a most hearty greeting. Welcome to one; welcome to all. Especially should I welcome, even after the words of His Excellency the Governor General, the representatives of the American Republic who are present with us on this occasion, and who bring to us the benefit of their knowledge and experience. Welcome also to the representatives of the Provincial Governments, without whose aid and co-operation our efforts could never have the full fruition which we anticipate from them. Welcome also to the representatives of the great railway companies which are placed in a position to give, perhaps more than any other class of the community, the benefit of their experience and knowledge to us. Welcome also to the representatives of the great lumbering class, who, perhaps, are more interested than any other class of the community in the maintenance, preservation and protection of the forests. Welcome to the University men whom we see afore us, welcome to the traders, welcome to the sportsmen,

welcome to all classes who are present and who are ready to contribute of their time and of their money to the great object we have in view and which is an object of primary national importance. The large attendance which I see before me, I am most gratified to say, exceeds all the expectations that we had and this attendance, large as it is, is a manifest evidence that the Canadian people at last,—at long last realize the great importance of all problems connected with forestry.

A great deal of harm has already been done, harm, which, I am afraid, in many respects cannot be recalled, but it is not yet too late and the harm which we know has taken place is and ought to be an incentive to us to do our best in the endeavor to check it, and to give more attention to forestry problems. Our ancestors, when they came to this continent, found it an unbroken forest from the shores of the Atlantic Ocean to the Mississippi Valley. It was the home of a race of hunters who derived their existence chiefly from the chase and for whom therefore the forest was a natural element. It was the object of our ancestors to turn this land into a fit habitat for a race of agriculturists, for the white man whose civilization is based primarily upon agriculture. They had to clear their homes from the forest with care and tenderness, they looked upon it as an enemy to be got rid of with the axe, with fire, and with every mode of destruction. History tells us and our own experience tells us that they went at it most mercilessly. The forest had no friends whatever, because, to clear off a few acres of land they would set fire to miles upon miles of the noblest trees that ever lifted their lofty heads towards the heavens. This, at one time or other went on in every part of the continent and even at this very day it is going on in some part of the continent. These pioneers of former days, as the pioneers of these modern days, did not realize, did not appreciate that in the economy of nature forests are just as indispensable to the civilization of man as tilled fields. They did not appreciate that even from the point of view of agriculture unless tilled fields are furnished by forests with moisture and rainfall they decrease in their productiveness accordingly, and that the efforts of the agriculturist will suffer in proportion. We have assembled here in order to devise ways and means, if possible, first of all to check this evil and to make every class in the community realize the great importance of maintaining, preserving and protecting our forests. What I would like to call the attention of this Convention to, in the first place, would be the necessity of establishing, if it has not been done, and it has not yet been done, a preserve, a large forest domain. We must know now the experience of those nations to which His Excellency, in his address, has just alluded, teaches us that there are certain portions, certain sections of the earth's surface, which, in the wise economy of nature, must always

be maintained as forests and that our water-sheds must be kept in forest. All the hills, mountains and plateaus which are the sources of flowing streams or rivers should never be allowed for any consideration whatever to remain anything else than forest. No consideration whatever should allow these portions of the earth's surface to be denuded of their trees. We know the consequence and therefore it is needless for me to dwell upon that feature; it is a mere truism.

But, what I want to call your attention to is that if these portions of the earth's surface in our own country are to be maintained as forests it is essential, in my humble judgment at all events, that they should form part of the national domain, that they should belong to the state. In Canada by the State I mean the provincial governments, where the management of the public lands is left to the provincial governments, and the national government where the ownership of public lands is left to the national government. If it so happens, and I am afraid it has happened, that some portions of these watersheds have been alienated from the public domain and have been transferred to private ownership it should be the policy of the National Government, and it should be the policy of the provincial governments, to repurchase these lands and bring them back to the public domain.

The state of New York has inaugurated such a policy. The state of New York years ago made the mistake—I was going to say committed the folly, and perhaps that word would not be too strong—of alienating part of the watershed of the Adirondack mountains. We know the fatal consequences that have arisen from that policy in the droughts which have, more than once, been the bane of that beautiful state. And now, I understand, the legislature of the state of New York has passed laws authorizing the administration, as fast as possible, to re-acquire these lands and make them a part of the public domain. If, in any part of Canada, a similar mistake has been made, a policy such as that adopted by the state of New York should be adopted here, and the national or provincial governments whose business it is should make it their object to bring back to the public ownership the lands that have been alienated, and make these forests a part of the national domain, as is done in Germany, France and some other countries (Applause). On this point, I am sure, we all agree.

The next consideration for which I would ask the deliberation of this Convention is the reproduction of the forests. Our system of treating the forests is to lease them to the lumbermen for the purpose of taking off the merchantable timber. I do not know whether this policy is advisable or not. I believe that, on the whole, it is advisable. But no effort is

made to replace the timber that is taken away from what we call the limit under that policy. In Germany and France, I understand, it is the accepted policy, a policy that has been followed for generations, that, when a tree is removed in any way to replace it by the planting of another tree (applause). I am not prepared to say that such drastic conditions should be imposed upon the lumbermen,—though I am not prepared to say, on the other hand, that a plan of this kind should not be taken under advice. At all events, I submit to this Convention that we ought to do something more than we are doing at the present time (hear, hear). It is not fair to the country—it is not fair to us who are living and still less is it fair to the generations to come after us—that we should allow the destruction of the forest to go on year by year by the cutting down of the trees and make no effort whatever to replace what is thus taken away. The trees are a crop like any other growth. True, they are a crop of slow growth, but that is the only difference between trees and any other crop. In this, as in every case, when a crop is taken off, steps should be taken to replace it at once with another. I said a moment ago that I was not prepared to say that when the lumberman, in the course of his work takes away, say, 300,000 trees in a year he should at once plant 300,000 trees. But I do ask this Convention to consider what should be done in that matter. One thing might be asked, whether of the lumbermen or of the State that, where trees are taken away, trees should be seeded, so that we may have a crop coming on all the time. It is a fact which we face with some degree of sadness, even to mourning, that Canada, in a few years, will be devoid, absolutely devoid, of the beautiful pine forests which at one time were its pride. We can calculate the number of years—and the number is not very great, when there will not be another tree of the original forest to be cut upon the limits of the Canadian lumbermen. But, trees have grown and trees ought to grow again. There is an impression which I have heard expressed on more than one occasion, that it is useless to look for another crop of pine trees—that when you have removed the crop we found here, the growth of many years, the new crop of trees will be spreading and of no merchantable value. But I am told that there is a way whereby a new crop of trees can be grown. The growth should be started as soon as the original trees have been removed from the soil. A few years ago I was discussing this subject with a lumberman of great authority, a man known to some of you, the late John Bertram, a man most eminent in his profession and of the highest capabilities in many directions. He told me that, on his limits on Georgian Bay, he had a young crop of pine when he had started a few years before. The explanation he gave me was this—and I am glad to give here the information he imparted to me so as to gain the opinions of those

who have experience in these matters—he told me that, when the crop of pine was cut off, the new crop to spring up would consist largely of poplar, and poplars grew faster than the pine or hardwood trees. And he said:—If you take care to plant pine seeds underneath these poplars, the young pines will grow up shaded by the faster-growing trees. The pines, in their efforts to reach the sunlight will grow tall and without limbs. After a time, when they overtop the poplars, their life is assured. If this be the case, it seems to me we have here a method of reproducing our trees and of having, for all time, a constant supply (applause). It is a natural thought that we shall not live to see this young generation of trees at their full growth; but, as has been stated a moment ago by His Excellency the Governor-General, we must not think alone for ourselves, we must think of the prosperity of Canada in the days when all of us shall be sleeping in our graves. This is the sentiment, I am sure, that actuates this entire assembly. (Loud applause.)

The next thing I would like the Convention to consider is the protection of the forest against its many enemies. For the forest, unfortunately has many enemies. Man is bad enough we all agree; but man is not so bad as the insects, and the insects are not so bad as fire. The fire is the great enemy of the forest. Nothing can be sadder for us to consider than that, during the summer months there are miles and miles of forest destroyed by fire. This goes on every year. Speaking of my own experience, it has been going on every since I can remember. It goes on, perhaps, not to so great an extent as in former years, but there is far too much of it yet. (Hear, hear.) I was talking, a few years ago, with one of the lumbermen of the city of Ottawa, and he made the statement to me that the enormous quantity of lumber taken to market out of the Ottawa valley does not represent more than ten per cent of the timber that has been destroyed by fire. If this is a true statement the fact is simply appalling. Last week, I met one of the lumber kings of the Ottawa valley, who asked me, "What are you going to do at this Forestry Convention?" I said, "We are going to compel the lumbermen to protect the forest against fire." He replied, "Why, the lumbermen are doing more in that direction now than all the rest of the community put together." I said, "I quite believe it. But that is not saying very much for the lumbermen—(applause and laughter)—because the rest of the community does absolutely nothing to protect the forest, and the lumbermen may well be doing more without doing enough." (Applause.)

What measures ought to be taken to protect the forests against the raging fires that every year consume such an appalling quantity of the best timber of the country. I know that some

effort has been made in this direction. I know that the lumbermen keep a patrol of the woods of the Ottawa valley. And that is a great improvement. But I submit, that this is not enough. I submit that something more ought to be done, if it be only to have more patrolmen. I believe that we should have the woods patrolled as they are in Germany and France, so that, as far as possible, every incipient fire should be prevented from spreading. Moreover we should impress every man in Canada—the lumbermen, the sportsmen, the man out of any class—with the belief that it is a crime, an absolute crime to throw a lighted match upon the ground—(applause)—, to scatter the ashes of a fire, or to leave a camp fire before it is absolutely extinguished (loud applause). All these things are crimes and I would go so far as to say that they should be made crimes under the law.

There is another mode of destruction to which I want to call the attention of the Convention and it is the destruction of the railway locomotive. The railway locomotive is a great blessing undoubtedly, and I am not here to say anything harsh of it, but if you take the train at Halifax to go to Vancouver, in every province of the Dominion, where there is timber, in Nova Scotia, in New Brunswick, in Quebec, in Ontario, in British Columbia, you will see miles and miles and miles of what was once beautiful forest and which is now nothing but parched and blackened timber, a monument to the destructive power of the railway locomotive. I know that the railway men have done a great deal to obviate this evil. They have used all possible ways of overcoming the difficulty inherent to the operation of the railway locomotive. They have put screens upon their stacks, they have devised different methods, but all these methods have been inadequate and I do not know that in that direction they can do more than they have done, but perhaps the railways ought to be compelled in the summer season, at all events, to have extra patrolmen on their tracks so as to prevent incipient fires, to follow sparks in their progress and to extinguish them before they have caused any damage. I think that is one question that ought to be carefully considered by this Convention and I believe that if it were to do nothing more than to prevent fires by railway locomotives this Convention would have done a great deal, but I think it will do more than that.

There is another subject to which I would also invite the attention of the Convention. That is tree planting. It is not sufficient that we should preserve our forests where we have forests. It is not sufficient that we should plant forests also to a great extent, but we should invite people generally to give more attention to tree planting at their homes and especially upon their farms. The Canadian Government, some eight years



ago, introduced into one of its departments a forestry branch. It has done a great deal of good in that respect and I hope that Mr. Stewart, who is the administrator of this branch, will give us some information as to the work which he has done. It has done a great deal already to my certain knowledge and to the knowledge of everyone who has been in the North-West. It was my privilege last September to visit the Province of Manitoba and the new provinces of Saskatchewan and Alberta. Fourteen years had elapsed since I had seen them before and of all things which struck me in this wonderful country the thing which perhaps gladdened my heart more than anything else, is the attention which is given to forestry. Fourteen years ago when I first visited the Province of Manitoba and the Territories of Alberta and Saskatchewan the farms were absolutely barren of trees; you could not see a tree around them. Now, I am glad to say that around most of the farms of Manitoba and many in Saskatchewan and Alberta you can see groves of trees. The City of Winnipeg in that respect is an example to the cities of the east. The City of Winnipeg has done marvels in the way of tree planting. The streets of Winnipeg to-day are a credit to that city and would be a credit to even an older city than it is. But, there is a great deal to be done in the east and in that respect perhaps my own province of Quebec is the greatest sinner. My own countryman, the French-Canadian, is the man with the axe. There is no better man in that respect than he. He goes into the forest and there is no man who can equal him in forest work, but, in the meantime, he has not been as careful as he should have been in preserving the trees in his midst. I should like to impress upon every Canadian farmer the necessity of covering with trees every rocky hill and the bank of every running stream. It is very easily done. He has only to scatter the seeds on the ground, fence it and nature will do the rest. These are some of the questions which I hope will be taken into consideration by yourselves. I do not intend to limit the number of questions which shall be taken into consideration but these are some to which, with others, I invite the serious attention of this Convention. I have much pleasure in calling upon Mr. R. L. Borden, the leader of the Opposition in the House of Commons.

MR. R. L. BORDEN.—I welcome the opportunity of being present at this Convention and of expressing my appreciation of the importance of our forest resources. To men familiar as you are with the subject all that I can say must seem trite and commonplace; but I venture a few remarks merely for the purpose of indicating my interest in this great question.

Canada is remarkable not only for the extent and variety of her resources but for the diversified nature of the country

and for its remarkable beauty. In the east we have Quebec and the Maritime Provinces with their magnificent coast lines, their forests, their agriculture and their mineral wealth. Thence there extends inland through Quebec and through the sister Province of Ontario the greatest inland waterway in the world connecting the ocean with the broad prairies of the west. Great rivers reach down from the forests of the north. On the western coast we have another great maritime province abounding in forest and mineral wealth.

Of all our wonderful natural resources none are more important than the forests. Their conservation is undoubtedly more vital to our future than is generally realized. "How foolish," says a great authority, "how foolish does man appear in destroying the mountain forests for thereby he deprives himself of wood, water and soil at the same time."

We are apt to regard our forests as limitless and our forest wealth as unbounded; but public attention has already been directed to certain dangers and to some of the more threatening elements of destruction and waste. Something has been done to check forest fires yet what devastation they have wrought. Practical men tell us that twenty times as much has been sacrificed to flame as to the lumberman's axe. An illustration mentioned at the last session of the Canadian Forestry Association may be given. A settler in the Province of Quebec in order to clear the ground for a five bushel crop of potatoes started a fire that destroyed three hundred million feet of pine which to-day would be worth \$3,500,000. Measures have been taken in many of the Provinces to prevent such destruction, but those who speak with knowledge declare that much yet remains to be done. Many of us although not actually concerned in forestry or in the lumbering industry have had occasion to tramp perhaps for half a day or more through forests ravaged by fire. There one can see the very abomination of desolation spoken of in Scripture. Then follows erosion of the soil consequent on the destruction of tree and plant life and this in turn works similar havoc. The waterways cease to be highways. Rivers cease to be channels of commerce and become raging instruments of destruction.

The importance of the subject has been most forcibly expressed by Dr. Fernow, director of the New York State College of Forestry, and an eminent authority on the economics of forestry. He says:—

"While we are debating over the best methods of disposing  
"of our wealth, we gradually lose our very capital without even  
"realizing the fact. Whether we have a high tariff or no tariff,  
"an income tax or head tax, direct or indirect taxation, bimetallism  
"or a single standard, are matters which concern, to be sure, the

“temporary convenience of the members of society, but this  
“prejudicial adjustment is easily remediable. But whether  
“fertile lands are turned into deserts, forests into waste places,  
“brooks into torrents, rivers changed from means of power and  
“intercourse into means of destruction and desolation—these  
“are questions which concern the material existence itself of  
“society, and since such change becomes often irreversible,  
“the damage irremediable, and at the same time the extent of  
“available resources becomes smaller in proportion to popu-  
“lation, their consideration is finally much more important  
“than those other questions of the day.”

Let us consider for a moment the extent of our forest resources in Canada, their value from a mere monetary standpoint and the importance of their conservation. Dr. Fernow estimates that our nominal forest area comprises eight hundred million acres, but that the actual available area does not exceed four hundred million acres. To understand what this implies and what it means to us in the future let us see what has been accomplished elsewhere. In some parts of Europe the forests are under state control, that is to say not only the ownership but the management of the forests is vested in the state authorities. I do not suggest that any such course should be adopted in Canada but we may learn from their experience what can be accomplished by wise measures and careful management. Saxony has under state control 430,000 acres of rough mountain land—an area not larger than an average county in Canada. From this she has taken two hundred million dollars in the past fifty years. During that time the cut has been doubled and is of infinitely better quality than it was fifty years ago. Then, only 17% of the cut was serviceable, now 79% is serviceable and the standing wood in the state forests has increased by no less than 16%. The gross revenue per acre has increased from \$1.75 to \$6.67 and the net revenue per acre from 95c. to \$4.37. Canada possesses a forest area one thousand times greater than that of Saxony. Make all reasonable allowances and then estimate what untold wealth this country possesses so long as the harvest of the forest continues.

What can we do in Canada to conserve our forests? The capitalist desires immediate profit, while the public interest requires that our forest area should be exploited not only with a view to the important consideration of profit but with due regard to continuity and to the preservation of these great natural resources. The forests if judiciously managed may bear a crop once in fifteen or even in ten years. If destroyed the crop cannot be renewed in less than a century. The object to be attained is continuity and conservation of the forests which are to be regarded as capital upon which individual en-

terprise shall not be allowed unduly to trench. We must of course have regard also to the necessity for a certain immediate profit to the capitalist who has invested his money and who has a right to carry on his operations as well as to the requirements of legitimate and bona fide settlement. How shall all these objects be obtained? The state can assist by aiding education in forestry as well as by direct control exercised through state regulation.

Along these lines the Canadian Forestry Association is working. Along these lines it is entitled to and should receive the assistance of our Parliament and Legislatures. I have very great pleasure in assuring you that not only do I take a deep interest in the subject but that I shall be prepared to support any reasonable measures within the limits of federal authority which may be devised for aiding in a work of such vital importance.

HON. FRANK OLIVER, Minister of the Interior—It is a privilege which I appreciate very much to take part in the deliberations of this Convention, the object of which is so important to our country. As the special agent or bailiff of this Dominion Government having the responsibility for the management of its estate, it is for me rather to speak of what has been done, what is being done and what is hoped to be done in regard to the territory in the great North-West which is at the present time under the direct management of the Dominion Government. There the question is the direct opposite from what it is in these eastern provinces. Here the great question is the preservation of the forests with some small part of attention to production. There, the great question is not preservation; it is creation of the forests, with a small part of attention to the preservation of such forests as there are. Everything that has been said here or elsewhere in regard to the necessity of woods to successful agriculture is borne out not only by the scientific knowledge that has been acquired regarding the North-West, but also by the experience of the people who have lived there. It is accepted as a fact that the forest brings rainfall. We know that the forest is an evidence of rainfall and that the forest brings rainfall. It is interchangeable. If you have the woods you have the rain and by getting the woods you get the rain. It was some time before I assumed the responsibility in this connection that the Government took up this question of forestry in the west and while the requirements are so vast as they are—I say vast in comparison even with the available resources of this great country—it cannot be expected that the conditions have yet been met or even measurably met. The area of the North-West is so great and the conditions of lack of forest have prevailed for so many years, for so many ages, it may be said,

and these conditions are so different from those prevailing in the rest of the Dominion that it would scarcely have been the part of wisdom to have undertaken the work of reforesting the prairies on theoretical knowledge or the experience of other countries. Although this is not a conservative Government its measures in this matter have been to some extent conservative. They have looked to action upon known lines and to experiments for something upon which to base their future action.

As regards the preservation of the sources of water supply it is the high or hilly country, which, in the West is generally forested; in fact, in that country forest and hill are so intimately associated that there a piece of woods is often called a bluff, or hill. In the United States the word "bluff" is used to mean a hill, but in the North-West the word "bluff" is used to mean a clump of timber, the idea that there must be a hill if there is timber being so well grounded in the public mind by the facts as they exist. So that, one of the first things that was done by the Government in this matter was to take measures to preserve from deforestation wholly partially forested areas in the North-West by creating timber reservations in these localities. This, however, is a much easier matter to deal with sitting here in this comfortable room in this capital city of the Dominion, than it is where you have to deal with a large number of very energetic enterprising people who require that timber for the preservation of life. It is therefore a question which cannot be dealt with offhand; it must be considered from varying and directly opposite points of view. The Government have necessarily been cautious in this matter but it has made very considerable advances and hopes to make more as circumstances permit. That is in regard to the preservation of forest areas which will preserve the water supply in the surrounding country.

Besides this there is, in the northern and north-western parts of the Territories a very great area of country which is principally forested and there I would like to say that what the Premier has said in regard to the destruction of forests by fires applies to a tremendous extent. I think he said that in the Ottawa Valley the total destruction of timber was 90% by fire to 10% by the lumbermen. I think that in this forested area I speak of in the North-West where the timber is especially valuable because of the requirements of the prairie country the proportion would be 99% by fire and one per cent by the lumbermen. Every year there is a destruction by fire of timber of stupendous value, not so much in money value as in the value that the timber is to the settlers in the adjacent country where there is no timber. A difficulty arises in dealing with this question. There is a vast area of timber which has no immediate money value and

when it becomes necessary for the Government to ask the Parliament of this great country—this Parliament which concentrates the intelligence of Canada—for liberal appropriations for the patrolling and protection of these forests the request is likely to be closely queried as to where the reputation of this Liberal Government for economy has evaporated to. There is in that country a vast area of timbered land and that timber has a value altogether beyond its commercial value. It is being lost year after year to a stupendous extent and if it is necessary to take active measures for the patrolling of these forests to secure their preservation against fire I hope the results of this convention will be of such a nature and will have such weight with Parliament that it will not be difficult to get the money required to secure the protection of these very necessary and valuable forests.

Then, there is the great question of the creation of forests or woods on the prairie. There are limitations in that direction which people in this part of the country can scarcely appreciate. Here you have to actually fight the timber to keep it from growing. I do not find fault so much—if I may be permitted to differ from the Premier—with the instinct of those people in this part of the country which prompted them if they saw a tree, to cut it down, because it was either the people or the tree. If the trees were here we would not be here. The trees had to be destroyed in order that the people might live. But, in the North-West it is different. There, it is difficult to grow trees. There you have the Chinook to contend with and in speaking of the growth of forests in the West I may say that it is not the cold of the winter in the west that prevents forest growth; it is the Chinook wind, the mild wind that changes the temperature during the winter and produces conditions of dryness in the early part of the summer which presents the greatest difficulty in the growth of forests in the west.

The Department is grappling with the question in a conservative, yet in a progressive way; in fact, it has adopted a truly liberal-conservative method of dealing with the question. We have established a forestry station under the superintendence of Mr. Stewart and under the management of Mr. Ross and I, having recently had occasion to visit that locality, have been credibly informed that the forestry station is doing good work, that the work is being very highly appreciated by the people of the country and that, as the result shows, very considerable progress is being made as the Premier has borne witness to in regard to the growth of trees. But, the greatest progress that is being made is not in the number of trees that has been grown but it is in the practical knowledge that has been acquired as to the growth of these trees and when the knowledge has become well-estab-

lished we hope to be able to extend our operations to a greater degree so as to produce wider and quicker results. That is the position in the West in regard to forestry. Here it is to some extent—to some extent may I say?—a question of argument, an academic question; there it is a question of the highest, the greatest and the deepest importance and everybody in the country understands it. Therefore, any result which may come from the deliberations of this Convention which will lead in any way towards increasing our knowledge of the means to preserve existing forests or create new, especially means which may be applied to the western country, will be more than welcomed by the Government, by the Department of the Interior, and by the Forestry Branch of that Department.

Mr. E. E. Joly de Lotbiniere, President of the Canadian Forestry Association gave a sketch of the history of the Association and its objects. Starting in 1900 the Association has now a membership of one thousand and has brought the forestry question to a prominent place in the estimation of the public.

MR. GIFFORD PINCHOT, chief of the Forest Service of the United States, was called upon and addressed the Convention as follows:—Before saying a word about the forestry on both sides of the line, I have the great honour and pleasure of bringing to His Excellency the Governor General and to you, Mr. Chairman, a personal message from the President of the United States (loud applause). I am to express to His Excellency the warmest personal regard of the President, and to you and to the members of this Convention his heartiest good wishes and good will and his confident and to me most welcome expectation of good to result to Canada from the work of this Convention. And I am to say to you that the President's own belief in the fundamental, vital and immediate importance of forestry grows stronger year by year (loud applause). For myself I may say that, so far as I know there has never been, at any time, or in any place, a warmer or more effective supporter of forestry than the President (applause). It is a very great satisfaction to me to know that he is threatened with a rival in Canada in your own person. (Laughter and applause.) I am the bearer also of a message from Hon. James Wilson, Secretary of Agriculture for the United States, and my honored chief, who has asked me to express to you his appreciation of the wisdom which called this Convention, and to express his good wishes for the permanent success of this work, and to tell you of the pleasure he has had in sending a representative to be present at your deliberations. (Applause.)

You have called this Convention in recognition of the vital importance of forestry to Canada. Forestry is more closely, and I think it fair to say, more tremendously involved in the

prosperity and well-being of the American continent north of the Mexican border than in that of any other area on the face of the earth. (Applause.)

Timber and water in the east, water and timber in the west, are the great products of this great beneficent cloak of forest which has been spread over so much of our land on both sides of the line. We are apt to consider it as simply a truism, when we say that forestry is important. Well, so it may be, but it is one of those truisms that must be made widely known. But, unless we can specify what forestry will do for us in Canada and in the United States, we may very well consider that we have failed in the presentation of our case. I like to think of the forest as giving us not merely protection for our water supply, not merely the guarantee of the productiveness of our soils, not merely the assurance of continuity of desirable local climatic conditions, but also as doing what it actually does—supplying us from day to day with material which is, perhaps, on the whole, the most important material for the building up of our civilization. We call this an age of steel, and so it is; but it is not the less an age of wood (applause). And one of the things with which we are face to face all over this North American Continent is the coming scarcity, in no long time, of this chief ingredient in construction, the pinch of the lack of which is going to be felt widely and keenly when it comes. And we must remember that when this want does come, it will not be a question merely of reopening the source of supply as we re-opened the mines when we were threatened with a coal famine a few years ago;—(applause)—It will be a question of feeling that want for years, fifty years being the shortest possible time within which the material can be grown. This is a matter in which foresight is the primal duty. Signs are not lacking all over this continent that the approaching timber famine is not very far away. I am informed that the prices of pine in Ontario have doubled within the past ten years; and similar facts might be cited from the pine and other timber producing areas of the continent.

Now, let us pass briefly in review some of the ways in which the forest contributes to the national well-being. You all know these things, nevertheless it will do no harm for us to keep them in mind, as I think we should do throughout this Convention. Though it is true that, in the eastern part of Canada and the United States in the past, the farmer was obliged to clear away the forest before it was possible for him to build his house or support his family, it is also true that that time has almost wholly past. We have now reached the point where the forest, instead of being the enemy of the farmer in the east, is his most potent friend. And, so far as the west is concerned we have reached the point where

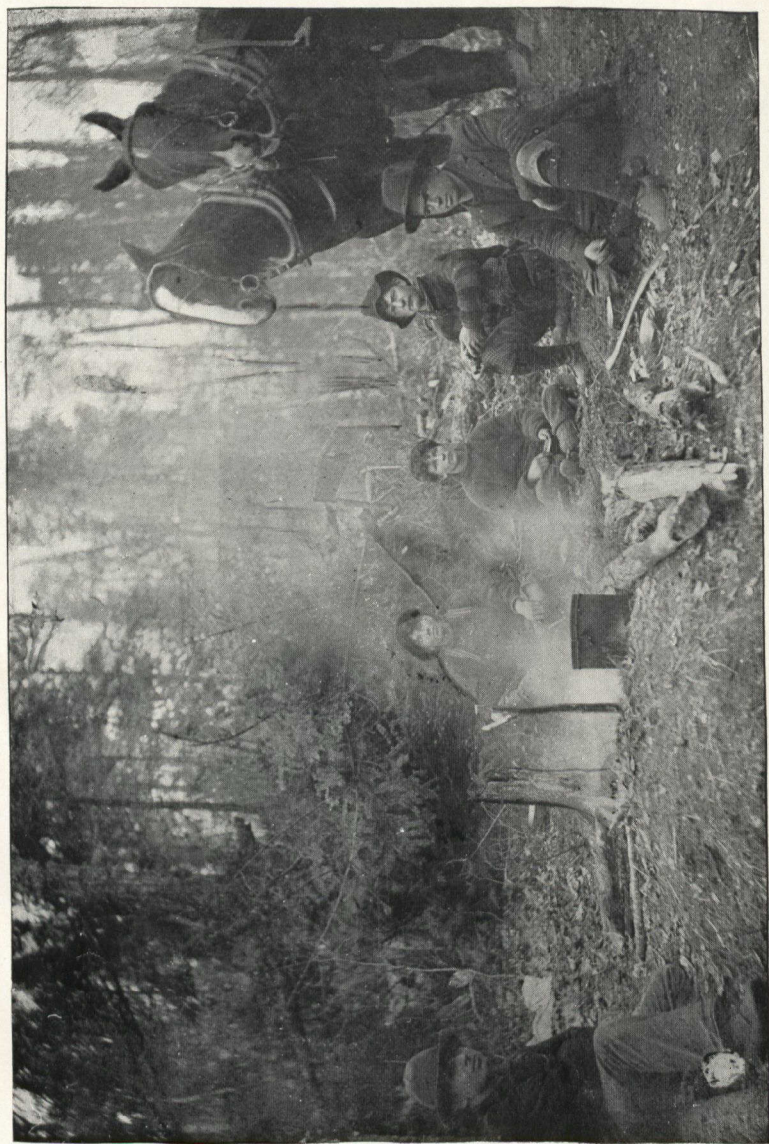


the farmer, without the forest nearby either on his own farm or within distance of reasonable railroad transportation, absolutely cannot prosecute his industry. (Applause.) We have reached the point where agriculture depends directly and immediately on the preservation of our forests. Just across the line, in Michigan, we have a most terrible example of the expense and loss and lack of productiveness the destruction of the forest on non-agricultural lands brings to pass. We may assume, then, that the fundamental industry of your great country and my great country is absolutely impossible in the absence of forest preservation. Now, the same thing is literally true of mining. We may say that when wood is gone as fuel we will burn coal. But it is obvious, on a moment's consideration, that we cannot get the coal in the absence of the forest, because mining is impossible without vast supplies of timber. Even steel, on which this age is said to be based, could not be won from the ground unless the forest gave the means to do it. Nor can steel replace the wood—in this sense, that the larger the amount of iron and steel used in construction the more iron and steel replace wood in steamboats, railroad cars and buildings, so much the larger is the total quantity of wood used in construction of that kind. The total consumption of wood keeps pace with the increase in the use of substitutes. We cannot build railroads, nor maintain them, without the forest. We figure that, if a tree were growing at the end of every railroad tie in every railroad in the United States, we should be able barely to keep these ties sound in the track, making no allowance for any increase in mileage, which increase is going on so rapidly. The annual consumption of ties on steam and electric railroads in the United States closely approaches 150,000,000 per annum, an enormous sum, the contribution of the forest to transportation and without which transportation would be impossible. The average citizen, the merchant, or call him by whatever name his profession requires depends in his daily life at every point on the timber supply. And I repeat it, for it stands to me in a vital place in the consideration of this whole matter, that wood is just as necessary to us in this day as a material base for our civilization as any other material; and if we are to preserve our prosperity, if we are to grow—and growth is the one thing that every citizen of Canada and of the United States looks forward to for his country—we must preserve our forests. That stands in the first place (applause).

Now, we on our side of the line have taken up this question, too late it is true—far too late, But we have been enabled by the greater number of our population for the time being to go ahead somewhat more rapidly than you have been able to do. Until a recent time you have been occupied with the actual subduing of the country, the vast heritage, that lies before you.



Lumbering Road on J. R. Booth's Limit, Madawaska, Ontario



A Shantyman's Lunch in the Bush

I think I might with your permission, say just a word concerning the fundamental principles upon which the forest service of the United States is doing its work.

The first of these is that all permanence in forestry in any country with political institutions such as those of the English-speaking race must be based upon education (loud applause). We are making it our most fundamental effort in the direction of having every man, woman and child in the United States understand that forestry means something to every home (renewed applause) that this is not an academic question, but a matter that appeals directly to every man living in North America at this time. This is the basis (applause). We are going into the schools. We are going to see to it—and this may be called a prophecy merely—that every school child, every boy and girl who passes from the primary into a high school shall know what forestry means; that in every university something shall be taught of forestry as a branch of general culture, not as a profession, but simply as one of the things that every educated man ought to know about (hear, hear). Then, we are trying to establish object lessons in forestry by cooperation with private owners, because, with us the great body of our forests are in the hands of private owners. We hope, by these object lessons to show to every man who cares to see that forestry is a practical thing, that it is not a theory, not merely something to talk about, but something that may be carried out in the forest with a profit. And in this we have been so successful that the great organization of lumbermen in the United States, the Lumber Manufacturers' Association has emphasized its belief in actual forestry recently by appointing a committee to raise an endowment of \$150,000 for a chair of lumbering in the Yale Forest School (loud applause). They do it, of course, because they believe that they themselves will need foresters and because they feel that they must have men who know something about lumbering.

Now, as to the use of the public lands for forests. We base our whole policy on a principle stated by the President that we must put every bit of land to its best use, no matter what that may be—put it to the use that will make it contribute most to the general welfare. And we add to that that every acre of land which will contribute more to the public welfare by being maintained in forest, so far as we have that acre as a part of the public lands now, shall remain in public ownership. (Applause.) That means that we set aside, as rapidly as we can, and as our first duty, forest reserves wherever there are to be timbered lands in the United States.

We have already some 100,000,000 acres of these reserved, an area, unfortunately not one quarter large enough. But we took up this work after the greater part of the best timbered

lands in certain regions in the United States had passed under private ownership. You have been wise enough to keep the title in the State, and your opportunity of making forest preserves are better than ours have been hitherto. I might cite the instance of the State of New York, which you Mr. Chairman, have mentioned in order to point this moral. A former Governor of New York, Mr. Seymour, who was in office at the time when the forest lands of the Adirondacks had small value, looked far ahead and suggested that these lands should be reserved for State forests. He was laughed at, and nothing was done about it; the State parted with its title for a mere pittance. Since that time the legislative descendants of the men who refused to listen to Governor Seymour have paid—I do not know the exact sum, but it is not less than \$3,000,000 or \$4,000,000 to buy back the lands that might have been kept in full public ownership without any expense whatever (loud applause). And we in the United States will have to spend millions upon millions—we may begin with this session of Congress; I hope so—merely to buy back the land that we ought to have kept when we had the chance and the keeping of which would have involved no public expense. We are setting aside forest reserves and treating them as forest reserves as separate from the rest of the public lands. In carrying out this policy these forest reserves have been taken from the management of the General Land Office, which look after the public lands generally, but which is mainly a department to dispose of public lands, and put in the charge of the department of agriculture, to be used for purposes of production. We are using every possible resource of this forest reserve, timber, water, grass, mines and every other. Nothing in the forest reserve is exempted from use, but nothing is open to use that will keep the reserve from being permanent with the exception of the mines. We are going to see to it that those forest reserves continue not only through the years but through the centuries to make their contribution to the wealth of the country. And that is a perfectly feasible and practical thing to do.

Then, we are cooperating in the closest and most cordial way possible with the men who use the forest reserves. Forestry is a matter that, as a permanent policy can only rest on good will. One man can set more fires, if he chooses his time rightly, than ten times the number of men in this room can put out. We see clearly that we can protect our forests, protect our reserves, only if we have the good will of the people who live in the neighbourhood; and we are doing our best to secure that good will by treating the people fairly, and by making them pay the market price for whatever we give them. That does not seem, perhaps, to be the best way to secure the good will of these users; but we find that the men who use the reserves be-

gin to have much more respect for the officers who administer them and for the reserves themselves, if we are successful in doing with the reserve what any private owner would do with his own land. (Applause.) We see no reason why all the people as a body, should receive less from their reserves for the privileges which they give in them than would be the case if the whole of it went to a single man. And we are proving successful in securing market prices, and, I think, to a very considerable degree, conciliating the people in the neighbourhood. While, a few years ago, there was almost universal opposition to the forest reserves in the West, to-day organized opposition has disappeared and I believe that the policy which once would have been unanimously disapproved would now be almost unanimously supported if it could be put to the vote of the people in the region where our forest reserves lie.

One thing more: We are making a vigorous attempt to have the reserves handled from the point of view of technical forestry. We regard forestry as a profession, as much as engineering, law or medicine, and we are doing our best to see to it that the men who carry on the work of these forestry preserves shall be men trained to the service, either in the Government service or in the forestry schools—professionally trained men with a technical outfit which will entitle them to recognition, on the same plane, for instance, as a highly trained engineer. Resting on the foundation of this body of trained men, whose profession is forestry and who propose to do that and nothing else all their lives, we are trying to build up a special force that shall have an *esprit de corps*, a force continuing year after year, a force that can be sifted and sifted as the years go on, until we shall have the very best collection of individuals that there is anywhere in the Government service. For, it is one happy thing about forestry that you can get a better man to work for less money in the woods than at any other piece of work I know anything about. (Applause and laughter.)

Now, I have run over this matter very briefly and rapidly, and I have just one word to say in conclusion. Forestry with us is a business proposition. We do not in our hearts love the trees any less because we do not talk about our love for them. But you will never get the owners of a forest land to keep them in forest for merely sentimental reasons; that has been tried and it does not work. But the thing you can do, and the thing we are doing on a large scale in the United States is this:—If you can show these owners that it is worth while to practise forestry, that forest lands can be cut over, and if the methods suggested by a true system of forestry are followed the lands will be worth more than before you convince them that forestry is worth something.

And finally the end and aim of all this work is a very definite

one. I have said a hundred times that I have no interest in a forest that is not of use for something. If our forests are simply to stand there and all we get out of them is the knowledge that we have them, then, so far as I am concerned they disappear—I care nothing about them whatever. But the great aim and object of this whole movement as the President has stated over and over again is the making and the maintenance of prosperous homes. Our forest reserves are part of the great equipment of our country for the good of its citizens; and, just so far as we use these forests to promote family life, to make prosperity for the people—in fact to make and maintain prosperous homes—just so far shall we think ourselves successful. (Loud applause.)

---

#### AFTERNOON SESSION.

WEDNESDAY, 10TH JANUARY.

At this session the first paper on "Dominion Forestry" was read by Mr. E. Stewart, Dominion Superintendent of Forestry. It is reproduced elsewhere.

Dr. Robert Bell, Acting Director of the Geological Survey, followed with a paper on "Forest Fires." The northern forest area, as defined by Dr. Bell covers a tract nearly 4,000 miles in length, by from 500 to 800 miles in width. There have been great forest fires in this region and the areas so denuded have been marked out by the Geological Survey. Looking over this country from a high hill, it presents a patchwork of different colors, according to the age of the different parts of the forest. There is the light green of the poplar and birch contrasted with the dark green of the coniferous forest. Most of the fires in the north are caused by lightning, but human agency is responsible for its share. The white men are careless and have taught the Indians to be the same. These fires sometimes cover tens of millions of acres, and the forests burned are of the value of hundreds, if not thousands of millions of dollars. Surely it is most important for the Government to take any reasonable means to prevent this destruction and loss. What we need to do is to give the forest a chance to grow. Dr. Bell exhibited a map showing the forest areas referred to, on which were indicated the burned-over and the still forested tracts.

C. H. Keefer, C.E., representing the Society of Civil Engineers, read a paper on "The Effect of the Conservation of the Forests of Canada on the Water Powers." After reciting the various factors that entered into the question, Mr. Keefer stated in conclusion, that the effect of the conservation of the forests on the water powers is most beneficial, and its importance cannot be overestimated. While the influence of forest covers on rainfall

is problematical, there can be no doubt of its direct influence in the regulation of flow and prevention of extreme floods, including loss, damage and waste of water power. The water powers of our country are second to none, their importance in view of the developments that have been made in the transmission of electric power is far reaching and this, with the great saving in cost of electric power over power generated by steam, should, with our enormous natural resources, place Canada in time in the front rank as a manufacturing and exporting country.

Mr. Thos. Southworth, formerly Director of Forestry for Ontario, submitted a paper on "Forest Reserves and their Management." After sketching the history of the forest reserves, which in Ontario are set apart on legislative authority, Mr. Southworth estimated the area that should be kept permanently in timber at forty million acres, which at a return of 150 feet, or 75c. to the acre, would mean a revenue of \$30,000,000 per year. To achieve this result, something more than harvesting the most valuable sorts of trees in the most economical way is required. That system is converting Algonquin Park from a mixed pine and hardwood forest to a hardwood one. Working plans must be laid down covering a hundred years or more, plans that will provide for harvesting the present crop of various sorts of trees in such a manner as to secure the after growth of the right kind of trees and to regulate the cutting so as to secure evenness of supplies and of revenue.

Mr. M. J. Butler, Deputy Minister of Railways and Canals quoted from the Railway Gazette the instructions to drivers of railway locomotives, requiring care in keeping equipment in repair so that the escape of sparks may be prevented. The leading railways are using engines with extension fronts and screens with a quarter-inch mesh, and compound engines, with a softer exhaust, are being introduced.

Mr. E. G. Joly de Lotbiniere, suggested as an additional precaution, that it would be well to have a patrol along the line of railway.

Mr. Aubrey White, Deputy Commissioner of Lands and Mines for Ontario, outlined the system on which the forest protection service of Ontario is organized, and urged the necessity of protecting the forest we now possess. In connection with the building of railroads, the Canada Atlantic and the Temiscaming railways were instanced as examples of what could be done in the construction of such roads without destroying the forest by fire. Mr. White made a strong declaration in favor of reserving for timber production lands that are unfit for settlement.

Dr. B. E. Fernow pointed to the government as the great sinner in connection with the administration of the forests, and



urged a reconsideration of its policy in the granting of timber lands. Emphasizing the public interest in the forest, Dr. Fernow gave as an illustration the fact that in Germany the forests under government management, being nearly one-third, are in the best condition. The governments that are now spending money in protecting limits and improving limits, in building roads and railroads and preparing the property for effective management, are the governments that will earliest reap the benefit.

Mr. Jas. Leamy, Dominion Crown Timber Agent at New Westminster, described the fire protection organization carried on on Dominion Lands in British Columbia.

Dr. C. A. Schenck, of Biltmore, N.C., laid down as the three planks of a Canadian forestry policy; first, that the Dominion and the provinces should retain in the hands of the Government, in fee simple, all exclusively forest land; second, the protection of the forests from fire, and third, that the forest must be made a paying investment, whether the individual or the Government is the owner of the forest.

---

## EVENING SESSION

WEDNESDAY, 10TH JANUARY.

At the Evening Session, Hon. Sydney Fisher, Minister of Agriculture, gave an address on "The Forest and the Water Supply," speaking particularly of the so-called semi-arid district in Southern Alberta, which depends largely on irrigation for its fertility. Stretching away eastward from the lower hills of the Rocky Mountains south of the C. P. R. we have a slowly descending plain descending eastwards and northwards with a very considerable fall all the way from the mountains to about Regina. Over that area generally water is scarce, so scarce that in many parts of it, without irrigation, successful cultivation is supposed to be impossible. I do not like to say myself positively that successful cultivation is impossible anywhere, because in the development of our Northwest especially, and in the development that has taken place in many ways all over Canada we are constantly, from year to year—I might almost say from month to month—discovering new possibilities in the development of our country which our fathers, and even people who have settled as recently as ten years ago, thought to be quite impossible. Therefore, I guard myself very carefully when I suggest that over a portion of that area, at all events, there is doubt about the successful cultivation of ordinary field crops. We must then look for some assistance to the ordinary climatic conditions for the cultivation of field crops, because that is the area of our country to which the whole world—not only Canada, but the British Empire and I might say the whole world—is looking for its future wheat supply. And it behooves us, therefore, to see what we can

do to make the production of wheat and other field crops there assured year in and year out without reference to what may be a particular season's climate. We are fortunate in many ways in looking forward to this. Just to the west of the area I have described, we have the eastern slopes of the Rocky Mountains. The eastern slopes of the Rocky Mountains are clothed at the present time almost entirely with a forest growth, a forest growth, which, perhaps some lumbermen might not consider of the greatest value, a forest growth which does not compare with the growth of the forests in British Columbia and does not compare with the growth of the forest in the old days in this Ottawa valley, but still a very considerable forest growth, a forest growth, which, at any rate, is quite sufficient to conserve and keep permanently conserved all the water supply which flows down through the streams on the eastern slopes of the Rocky Mountains most of which water eventually finds its way into the Saskatchewan River. Up to the present time, I do not think that any material inroads have been made into that forest growth, but I venture to predict, unless the greatest care is exercised to preserve it in the near future, the moisture of our plains will be considerably sacrificed and the mighty rivers which to-day come out of those hills and course through that prairie region will be turned, in the spring-time into floods and in the summer-time into dry water-courses. These great rivers and streams have cut deep courses through the fertile prairie, and as a general rule, the water-course itself is considerably sunk below the general prairie level. The farther and farther you go from the hills, the deeper and deeper becomes the valley in which the river runs. Fortunately, the general descent of the whole plain is so great that it is not a very difficult task to take the water out from the upper reaches of these rivers and by carrying it along on the upper levels over the prairie and keeping it within bounds we are able to distribute it over large areas of that country through irrigation, securing and ensuring the future development and cropping of the country. I believe that this is one of the most important pieces of work which the Government and people of this country must look to and see in the future.

A paper on "Forestry and Irrigation," prepared by Mr. J. S. Dennis, Commissioner of Irrigation for the Canadian Pacific Railway Company, was read by Mr. Pearce. Mr. Dennis pointed out the great value of the irrigation works in Southern Alberta, amounting to \$3,500,000, and the necessity for preserving the forests on the watersheds of the eastern slope of the Rocky Mountains in order to preserve the water supply.

"Water Powers" was the subject of a paper by Cecil B. Smith, C E., Chairman of the Temiskaming Railway Commission, which is reproduced farther on.

Mr. E. G. Joly de Lotbiniere, read a paper prepared by Mr. J. R. Anderson, Deputy Minister of Agriculture for British Columbia, giving a description of the different species of trees found in that province and the uses to which they are put.

Views of a number of scenes showing tree growth and different stages of forest destruction were shown.

---

### MORNING SESSION

THURSDAY, 11TH JANUARY.

The first paper read was, "Forestry on the Experimental Farms" by Dr. Saunders, the Director of Experimental Farms. It was stated that the total number of trees distributed among the settlers in the Canadian North-west since 1889 was about two millions, and the quantity of tree seeds about ten and one-half tons. As each pound of this tree seed with reasonable care might be expected to produce five hundred to eight hundred seedlings, it was not surprising that the results of this work were everywhere apparent. As to tree planting at the experimental farms, the fact was noted that while the pine planted in 1889 was now 25 feet high and measured  $9\frac{1}{2}$  inches in diameter of trunk  $4\frac{1}{2}$  feet from the ground, a white spruce planted in 1890 was now 32 feet high and measured  $5\frac{3}{4}$  inches in diameter of trunk  $4\frac{1}{2}$  feet from ground. The results of tree planting in British Columbia were given, showing that some hardwood trees of the east could there be raised and with more rapid growth than was the case here.

This was followed by a paper on "Farm Forestry in the Eastern Provinces," by Revd. A. E. Burke, of Alberton, P.E.I., which is given elsewhere.

"Tree Planting in the West" formed the subject of a paper by Mr. Norman M. Ross, Assistant Superintendent of Forestry of Canada. He said that by next spring 7,347,000 seedlings and cuttings would have been sent out, and they knew from actual inspection that 85 per cent. of these trees were growing.

E. J. Zavitz, Lecturer on Forestry at the Ontario Agricultural College, discussed the "Agricultural College Problem." The recklessness with which the pioneers of Ontario destroyed the forest was referred to, and surprise was expressed at the lack of knowledge in these days as to the value of certain trees. Last summer Mr. Zavitz found a farmer turning the last remnant of his woodlot into cordwood, and among other valuable trees were some black cherry trees from 15 to 18 inches in diameter. The valuable woods native to Ontario were disappearing and were being imported by manufacturers. We were now only using the poorer quality where once only the first grades would have been looked at. In 1884 a Toronto firm offered \$18 to \$20 per thou-

sand for white oak loaded on car at the point of shipment. Today white oak was selling at \$30 per thousand on the stump. Mr. Zavitz urged that settlers should be debarred from entering lands which were only fit for forestry. The policy and method of cultivating trees in wet lands of old Ontario would be a splendid object-lesson.

Hon. A. A. C. LaRiviere, representing the Government of the Province of Manitoba, expressed the great interest of that province in forestry, and stated that the government was now establishing an agricultural college on a large scale, which would afford means of education in tree culture and forestry.

Mr. J. D. Allan, President of the Toronto Board of Trade, stated that the report that would be carried back to the Board by the delegates it had sent was that the forest is one of the most important assets we have in this country, and that it must receive greater attention at our hands than it has in the past. Mr. Allan gave an interesting sketch of what he had seen of forest administration in Russia and Scotland.

Hon. Mr. Tessier, Minister of Agriculture, conveyed greetings from the Province of Quebec, and President G. C. Creelman, of the Ontario Agricultural College, and Mr. A. P. Stevenson, of Virden, Man., also took part in the discussion.

---

## AFTERNOON SESSION

THURSDAY, 11TH JANUARY.

Hon. W. C. Edwards, President of the Quebec Limit Holders' Association, called attention to the great importance of the forests for their beauty, for their influence on the water supply and on agriculture. Speaking of the statement sometimes made that the forests of Canada are inexhaustible, or on the other hand, that they have all been destroyed, he took the medium position, and thought that a great deal could be done to preserve the forests. The chief agents of destruction have been forest fires, railways and illegitimate settlement. The all-important matter is to keep fire out of the forests, next to have proper government regulations, and next there must be careful cutting on the part of the lumbermen. In so far as the cutting of timber is concerned, my system would be that every mill owner should build his mill in proportion to the growth of his limits and cut annually the growth. If that is done, and fires kept out, the limits of Canada will never disappear.

As to the question of growth and the possibility of restoring the forest, my observation is that the growth varies very much in various districts, that in some places growth is very slow and in

some places very rapid. I think that perhaps this northern portion of the Ottawa region, and the portion from the Gatineau westward, is the most rapid growing pine district we have in this portion of Canada. In that region, it is my belief, that if the pine is carefully cut it will never be exhausted. I think that to deal intelligently with this subject and to be able to make the very best suggestions as to how the forest may be perpetuated one would need to know what is being done in other countries. I am well acquainted with some Norwegian lumbermen who tell me that their forests will never be exhausted. There they never replant; they just depend on natural reforestation, which, I think, is all that is necessary here. I do not think that replanting is necessary, although I think that in many instances, and in many localities, it might be desirable.

If I might be permitted to offer a suggestion in that regard this would be my plan for a forestry school. I would set aside, say a thousand square miles, or 500 square miles, and on that I would establish a school of forestry. I would invite young men to come to that school to learn both theoretical and practical forestry right on the limits. I would then have an estimate made to ascertain as nearly as possible what, in a few years, has been the growth of timber on these limits. I would have these young men go round each year and mark the trees that can be cut. I would make them cut the timber, haul it and saw it. I would make every one of these young men into a first class forester and a first class lumberman, and these young men in time would become the lumbermen of Canada. That, in my opinion, would be the greatest step in advance in so far as the cutting of the forest in an intelligent way is concerned that could be desired.

I believe the day will come when the Province of Quebec, portions of Ontario and other portions of the country that I am not so familiar with, will be the manufacturing centres of the North American continent. How are we going to preserve these conditions? Denude the forests and you will not have these conditions; maintain the forests and you will have them. If a premium is offered to the people of the Province of Quebec to maintain their forests, unbroken, and to maintain the water supply which they have—the greatest inheritance that any people could have, in so far as power and manufacturing is concerned—that province, although its finances may perhaps be a little at fault to-day, will some day be the manufacturing centre of the continent.

Mr. J. B. Miller, President of the Ontario Lumbermen's Association, presented a paper on "Forestry from the Lumberman's Standpoint." He spoke of the difficulties in the way of the lumbermen, owing to the withdrawal of lands for settlement that was not permanent, and also to the work of the operators

in hemlock bark. For the older districts he suggested the establishment of a rule that there must be at least sixty per cent of arable land on all lots applied for, and then only where there are other lands in the same locality which are fit for settlement. The offering of small berths, and for limited periods, and the granting of pulp and pine concessions over the same areas had hastened the destruction of the timber. Mr. Miller's whole argument was for the permanent holding of forest lands and re-planting where necessary.

Mr. William Little, of Westmount, Que., took up the question of the lumber industry and its relation to the forest. In the last six years prices had risen 10 per cent in the eastern part of Canada. There was a great loss in the way lumber industry was carried on. So far, vast areas of timber had been sold by governments to people for a mere trifle of their value. He knew of a man who boasted that he bought a timber limit for \$20,000 from which he cut \$200,000 worth of timber and sold it for \$750,000. The selling of timber limits at a sacrifice was a common mistake of all the governments. Instead of Canada making money by lumbering, it made money by not lumbering. It was deplorable to look upon the immense losses caused by the sacrifice in timber sales. Mr. Little dealt in scathing terms with the lumbermen who went into the woods and chopped down valuable trees which were too small to make lumber.

"Forest and Lumbering in Nova Scotia," was the subject of a paper by F. C. Whitman, President of the Western Nova Scotia Lumbermen's Association. He said that in the past, forestry in Nova Scotia has not been given much thought. The government of the province was too lenient in disposing of the timber lands and should have kept control instead of making absolute grants. The cutting of the best timber and fire have depleted lands that to-day should be valuable; and they might be made so by reforestation. At present, there are signs of a greater interest being taken by the Government of Nova Scotia and by lumber firms in forestry. The timber owners feel more assured under the present Act of "Protection of woods against fires" of their holdings being protected, and more inclined to conserve their cuttings and let the smaller growth reach maturity. The future gives promise of attention being paid to forest values, more conservative cutting, and with natural reproduction and protection there is every reason to believe that forest wealth will continue to be one of the most important assets of the Province of Nova Scotia. There is still to be solved the best method of reforesting in Nova Scotia, the kind of trees to plant and who will undertake the work. It would appear to be a proposition that the Government should take up, and as they own 1,500,000 acres there is ample area on which to begin such a work, and there is no doubt the

Government could again acquire title to a large number of old grants and cleared holdings of private parties at a nominal sum per acre. A practical forester by going carefully over the situation could no doubt give valuable information and probably formulate a scheme that would work out successfully and be beneficial to the lumbermen and to the Province of Nova Scotia.

Mr. C. M. Beecher, representing the Lumbermen's Association of British Columbia, stated that on the coast the question of reforestation or tree planting was not of economic interest for the moment as the timber area is large and covered with a good stand. When lands have been logged or burnt over and nature has been allowed to work there has been a natural resowing, and the same trees are growing up in the forest again, namely: Douglas fir, spruce, cedar and hemlock. If it is a mere question of trees, our forests are inexhaustible, but if it is a question of merchantable timber, I regret to say that as far as our information goes now, the timber resources of British Columbia are limited. The lumber manufacturers are forced to take from their limits a small percentage of the trees and are able to ship only selected lumber. The burning question with the lumber mills of British Columbia to-day is the question of market and extending the outlet for the product of the manufacturers. Mr. Beecher spoke of the advantage that would be derived from a preferential trade arrangement within the British Empire, and asked that in government contracts specifications should call for Canadian timber.

Speaking of fire protection, he praised the work done by the Dominion Government in the Railway belt, and read a letter from Mr. O. C. Buchanan, President of the Associated Boards of Trade of Eastern British Columbia, strongly favoring action on the part of the Provincial Government to prevent forest fires.

Mr. H. M. Price, President of the Province of Quebec Pulpwood Association, in a paper on "The Pulpwood Industry" stated that a smaller diameter of wood had been cut than it was in the true interests of the pulp and paper mills to accept, or the owner of private lands to cut. Some twelve years ago the diameter shipped was six inches and up, while now four inches and up is accepted. Mr. Price believed that the cutting of trees for pulpwood under seven inches in diameter at the stump, and the shipment of wood under five inches in diameter should be discontinued.

Mr. J. F. Ellis, of Toronto, and Mr. Ferdinand van Bruyssel discussed the subject at the conclusion.

## THURSDAY EVENING

11TH JANUARY.

A Banquet was held at the Russell House, which was presided over by the Premier of the Dominion. After the toast to His Majesty the King, followed that to His Excellency the Governor General, which was pleasantly responded to.

"The Forest Interests of Canada" were replied to by Hon. W. C. Edwards and Hon. F. J. Sweeney, Surveyor General of New Brunswick.

"The Allied Interests" brought responses from Mr. B. E. Walker, General Manager of the Bank of Commerce and Mr. J. D. Allan, President of the Toronto Board of Trade.

The toast of "Our Guests" was proposed by Sir Wilfrid Laurier in a felicitous speech and was responded to by Mr Gifford Pinchot, Dr. B. E. Fernow and Dr. C. A. Schenck.

"The Press" was responded to by Mr. J. F. Mackay, Business Manager of the Toronto Globe.

Over two hundred were in attendance and the banquet was a great success.

## FRIDAY MORNING

12TH JANUARY.

Mr. Joseph Hobson, Chief Engineer of the Grand Trunk Railway and Mr. L. O. Armstrong, Colonization Agent of the Canadian Pacific Railway gave interesting papers showing the railway requirements for timber. The Grand Trunk requires 95,000,000 feet annually, and the Canadian Pacific 244,000,000 feet. These papers contained a great deal of interesting material which space forbids us to reproduce at present.

"The Pulp Industry of Canada" found an exponent in Mr. E. B. Biggar, Editor of the Pulp and Paper Magazine. The first part of the paper briefly reviewed the history of pulp and paper manufacturing, which had its inception at St. Andrew's in Quebec, in 1803. The first paper mill in Upper Canada was erected at Ancaster in 1820. In 1888 there were 34 pulp mills with a total capacity of 154 tons every twenty-four hours. Last year the number had grown to fifty-six mills, with a capacity of 2,470 tons. There were in 1888, 40 paper mills with a capacity of 173 tons per twenty-four hours. Last year the number of mills was 38, and the daily capacity 854 tons. It would, therefore, be seen that the capacity of the Canadian pulp mills had more than doubled, and the capacity of the paper mills increased still more the last six years. There are now in course of construc-



tion six pulp mills with a capacity of 630 tons, and eight paper mills with a total daily capacity of 375 tons. These mills manufacture all grades of wood pulp, and most varieties of paper. They not only supply the bulk of the home market on certain lines, but of recent years have developed an export trade.

Canada has the greatest area in the world of forest suitable for the manufacture of pulp, her spruce lands alone being estimated at 450,000,000 acres.

Mr. J. F. Mackay, Business Manager of the *Toronto Globe*, in a paper on "The Newspaper Publisher's Interest in Forestry," made a strong presentation of the interest of the newspapers in the forests from which their raw material was drawn.

"The Forest and the Mine," by Frederick Keffer, Manager of the British Columbia Copper Company, Greenwood, B.C., and "The Wood Supply of the Manufacturer," by J. Kerr Osborne, Vice-President of the Massey-Harris Company, gave a presentation of the needs of these two industries.

Dr. J. T. Rothrock, Forest Commissioner for the State of Pennsylvania, said that in his lifetime he had seen one-sixth of the area of the State of Pennsylvania pass from a productive to a non-productive condition. It was not necessary to go to the old land, nor to any part of the old world, to find the desert which has been made by the removal of the forests. I can take you to the hill-sides of Pennsylvania and show you exactly that condition—and that in a State not two centuries old. Dr. Rothrock told of the assistance given by the ladies to the forestry movement in Pennsylvania, and urged that in Canada their aid should also be secured.

Mr. Jas. Beveridge, Manager of the Mirimachi Pulp & Paper Company, stated that the annual cut for his business was 14,000,000 feet, and that if the government would hand over to him 23,000 acres of land, he would cultivate all the trees he wanted for his factory, pay out \$175,000 a year in wages and put down plant worth \$750,000.

---

## AFTERNOON SESSION

FRIDAY, 12TH JANUARY.

Monsignor J. U. K. Laflamme, of Laval University, read an excellent paper on "Forestry Education." He stated that the Province of Quebec had sent two young men to the Yale Forest School and they would be given an opportunity to complete their forestry education in Europe. This would be the nucleus for a Forest School. It was urged that every effort should be made by the distribution of bulletins in English and French, through the

newspapers, and through the schools, to educate the people to the importance of the question.

Details were given of the good results obtained at Oka, through the efforts of M. l'Abbe J. D. Lefebvre, Cure of Oka, in the planting of sand hills with pine, spruce and other trees, with the outcome that the sand dunes are fixed and are bearing a valuable forest.

Dr. Judson F. Clark followed with a paper which will be found in full farther on.

Mr. B. E. Walker, General Manager of the Bank of Commerce, called attention to the educational value of the Convention, and in connection with the question of forestry education stated that as a member of the Ontario University Commission his personal opinion was in favor of providing for a chair of forestry in the Provincial University.

The discussion was continued by Dr. Jas. Fletcher, Professor Penhallow, of McGill University, Professor Montgomery, of Trinity University and Revd. Thos. H. Boyd.

The following resolutions were submitted by the Committee on Resolutions and passed:—

1. RESOLVED, that the time is now ripe for a general forest policy for Canada, and that the federal government be asked to inaugurate the same.

2. RESOLVED, that this Convention would urge the importance of the exploration of the public domain in advance of settlement with the object of determining the character of the lands so that settlement may be directed to those districts suitable for agriculture and which give promise of the possibility of the establishment of permanent and prosperous homes for the settlers, and that the lands unsuited for agriculture should be withdrawn from settlement and permanently reserved for the production of timber;

That this Convention approves of the policy of Forest Reserves adopted by the Dominion and Provincial authorities and favors the extension of such reserves, as may be found practicable from time to time, so as to eventually embrace all lands suited only for the production of timber;

That in the administration of such reserves this Convention would approve of the policy of having the cutting done under the supervision of properly qualified officers, and that in such operations due provision should be made to ensure the reproduction of the forest.

3. RESOLVED, that in view of the great saving of timber throughout the Dominion which has been accomplished by the fire ranging staffs organized under Dominion and Provincial authorities, this Convention desires to place on record its ap-

proval of the establishment of a fire ranging system for the protection of the forests, and to urge that this system be extended to all forested districts as far as possible, and that, in view of the great interests to be protected, the service under such a system should be made as complete and effective as possible. In this connection this Convention desires to call public attention to the small expenditure made for the protection of the timber resources of the country in proportion to their value when compared with rates of insurance paid on other public property.

4. RESOLVED, that in view of the many important respects in which the water supply affects the industries of the country, in particular agriculture, irrigation and manufacturing, and the increasing value of the water powers, owing to the adoption of electricity for industrial purposes, this Convention would urge that special means should be taken for the preservation of the forests on watersheds so as to conserve throughout the year the equable and constant flow of the streams dependent thereon;

That in view of the large expenditure made on irrigation works in Southern Alberta and the intimate relation of the flow of the irrigation streams to the forests of the eastern watersheds of the Rocky Mountains, this Convention would specially urge upon the Government of the Dominion the necessity for the protection of the forests on this watershed;

5. WHEREAS in the older settled districts of Canada conditions are now such that great benefits would be derived by the country as a whole from some systematic movement to re-forest large tracts of land which at present are lying waste in the agricultural districts: and

WHEREAS farmers, as a rule, have no expert knowledge as to the cultivation of trees and find it almost impossible to obtain nursery stock of forest trees at reasonable prices and of good quality for planting purposes: and

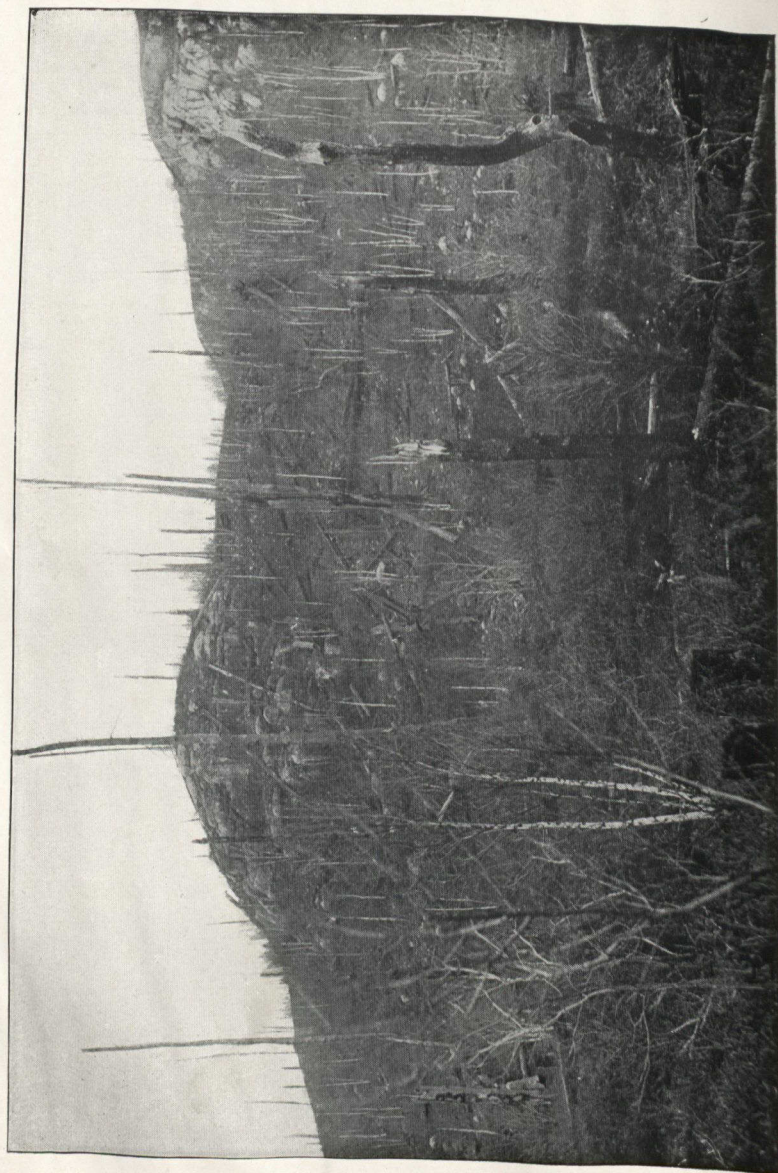
WHEREAS the farmers of the country are, if properly informed, the right class of people to undertake tree planting in the agricultural districts: and

WHEREAS the scheme at present in operation in the West, carried on under the Dominion Government, which provides for the free distribution of forest tree seedlings and instruction as to their cultivation, has given satisfactory results:

THEREFORE RESOLVED, that this Convention would urge the governments, both federal and provincial, to take steps to encourage, as far as possible, both by instruction and by giving facilities for obtaining nursery stock suitable for afforestation, a more general interest in tree planting, especially on such lands as are at present unfit for ordinary agricultural purposes, and we would further urge the Dominion Government to make,



Loading Logs at Madawaska, Ontario



A Burnt Over Tract near Madawaska, Ontario.

if possible, further efforts in this direction in the prairie regions where the results from tree planting are bound to be of inestimable value to the whole country.

6. RESOLVED, that especially in view of the proposed construction of a new transcontinental railway and the projection of other lines passing largely through coniferous forests, the attention of the Governments of the Dominion and the provinces, and also of the railway companies, be called to the serious danger of loss of valuable timber consequent upon the construction and operation of lines so located, if all possible precautions to prevent the starting of fires are not taken; and that it be urged that the question be given full and careful consideration.

That to the end sought, the railway companies constructing such roads should be required to furnish an efficient equipment and control to prevent fires.

That at such seasons as may be necessary it be required that an effective patrol be established along the afforested line of railway, whether under construction or in actual operation.

And further, that the officers both of the governments and the railways, be required to use all possible diligence to prevent the starting or spread of fires through defective equipment or through the carelessness of the operations or negligence of the employees under their control.

7. WHEREAS, it has been the common method in lumbering over a large portion of the timber area of Canada to fell trees by the use of the axe:

And whereas, it has been found that trees sawn close to the ground can be felled more cheaply than those cut down with the axe, resulting in a gain of from six to ten per cent in the scale of the logs and diminishing the risk of fire caused by chips in felling:

And whereas, the felling of logs after the season of snow has resulted in a large loss to the forests of Canada:

Therefore resolved that this Convention recommend to those who are in control of the public lands of Canada the advisability of making such regulations as will carry out the principles of this resolution.

8. RESOLVED, that this Convention is of opinion that the retention of rough areas under wood and the replanting of areas unsuited for agriculture would be encouraged if some action in the direction of relieving the same from taxation could be put into effect by the local governments and the municipalities.

9. RESOLVED, that the Government be, and is hereby requested to place forest tree seeds imported for afforestation purposes on the free list.

The following resolution was read by Mr. J. Fraser Gregory, of St. John:—

We, representatives of Boards of Trade throughout the length and breadth of the Dominion, delegates to the Canadian Forestry Convention in session assembled:

Resolve, that we heartily approve the interest taken by our National Government and the Premier, Sir Wilfrid Laurier, in calling this Convention and the assurance we have that the preservation of the forest shall receive the great attention it requires and demands.

That we will report to our various Boards the valuable lessons we have learned, and have them each and all impress on their Provincial Governments the advisability of following the example set by the Federal Government in taking steps to protect, conserve and perpetuate their forests.

---

On Saturday, through the kindness of the Grand Trunk Railway and Mr. J. R. Booth, a visit was paid to Mr. Booth's timber limit at Madawaska, where a pleasant time was spent and a shanty dinner was thoroughly enjoyed by all.

---

The Annual Meeting of the Canadian Forestry Association will be held at Ottawa, on Thursday, the 8th March, 1906, in the offices of the Forestry Branch of the Department of the Interior. Only the election of officers and other necessary business will be dealt with, owing to its following so closely the Forestry Convention.

---

An important announcement made at the Forestry Convention by the General Manager of the Bank of Commerce, Mr. B. E. Walker, was to the effect that all the managers on the staff of the Bank would be made members of the Canadian Forestry Association. This promise has been promptly fulfilled.

---

The Canadian Forestry Convention has the honor of recently welcoming to its ranks His Grace Monsignor Bruchesi, Archbishop of Montreal, and His Grace Monsignor Begin, Archbishop of Quebec.

---

Owing to the pressure of other business, it has been necessary for Mr. R. H. Campbell to retire from the editorship of the Forestry Journal. The next issue will, therefore, be under other editorial management.

## FORESTRY ON DOMINION LANDS.

---

E. STEWART, DOMINION SUPERINTENDENT OF FORESTRY.

---

If I know anything of the object of the convener of this great convention in calling you together it was to obtain the views of the people from all parts of the Dominion in order that good practical results might follow your deliberations. If we only meet and indulge in a pleasant academical discussion, without expressing some opinions of what should be done in a practical way, not only to preserve, but to propagate our great forests, this meeting will fall far short of its opportunities. The fact is, the matters inviting our attention in this connection are far more than academical; they are live issues that demand of the people of the country immediate action, and in the few minutes at my disposal I will ask your attention, first, to the extent of the forests under Dominion control; second, to what we are doing at present regarding them; third, what in my opinion should be done; and fourth, make but a very brief reference to afforestation on the plains.

When our north-western possessions are mentioned, the picture generally suggested is that of vast prairies stretching for hundreds of miles on every hand unrelieved by a single tree. Now while this is true of a very large extent of country it represents only a small part of the total land area owned and controlled by the Federal Government.

According to the census returns for 1901, the total *land* area under the control of the Dominion Government is 2,656,200 square miles. Of this, the bare prairie probably occupies 160,000,000 acres, or 250,000 square miles. The barren lands of the far north I have elsewhere estimated at four times that of the prairie, or 640,000,000 acres, or 1,000,000 square miles. These two would make 1,250,000 square miles of treeless land, and subtracting this from the total land area under federal control will give us 1,406,200 square miles, which is more or less wooded. The total land area owned by the provinces aggregates only 963,618 square miles, so that the Dominion timbered lands, according to this estimate, exceed the total land area, both timbered and cleared up of all the old provinces by 442,582 square miles.

But it may be truly said that on a very large proportion of this the forest growth is of little value for commercial purposes.



Let us make due allowance for this and estimate that only one-fifth of this land contains timber fit for such purposes. One-fifth of 1,406,200 gives 281,240 square miles.

We have now taken from the total land area under Dominion control the barren lands of the far north, and the prairie land, and then taken only one-fifth of the remainder in our estimate to represent the area of land containing merchantable timber; and we have still left 281,240 square miles. Suppose that the latter area contains only 2,000 feet, board measure, to the acre, or 1,230,000 feet to the square mile over ten inches at the stump, and we have left after all these reductions 359,987,200,000 feet of mature timber, which at the low rate of royalty to the Government of \$1.00 per thousand would be \$359,987,200, which sum represents but a small part of its value to the community and does not include the smaller growing timber which should be regarded as the agriculturist does his growing crop. It is true that much of this timber is not at present available, but it is a portion of the nation's inheritance and the Government as trustees of the state, are in duty bound to conserve it whether it is used by those now living or reserved for future generations.

This vast area represents Canada's woodlot. Let us save it while we may! The greater part of the timber is growing on land unsuited for agriculture, either from its high altitude or high latitude. We have in that great region, which is well described as our subarctic forest belt, a vast tract of such land. The spruce tree abounds everywhere, and as it is the most desirable of all varieties for pulp, it is even now being looked after for that purpose. This region too is the home of a great variety of the most valuable of the fur bearing animals whose existence is dependent on the preservation of the forest. Within it are many great lakes and rivers which, owing to the cool temperature of the water, contain fish of the finest quality.

We have also in those wilds, owing to the rough character of the country, rapids and waterfalls innumerable, which will furnish sufficient power for all purposes at little expense. Of its mineral wealth it is too early to speak, but the example of the Yukon teaches us that the explorer need not confine himself to the lower latitudes, and as timber is one of the great requisites for mining, the forest is necessary to its success.

But here too, important as the forest is for the purposes I have named, it is even more so for its influences in various ways. Time will not permit me to notice at any length, perhaps, the most important of all reasons for immediate attention to our forestry problem, and that is the necessity that the country at the sources of our water supply should be kept in forest. Denude for instance, the eastern slope of the Rocky Mountains of its forest growth, and as sure as result follows cause, you will destroy

the great rivers that have their sources there. You will create a raging torrent for a few weeks in the spring, and after that a water famine. You will destroy the North and South Saskatchewan, the Athabasca, and the Peace Rivers, and you will make a desert of our new Western Provinces. Your irrigation canals in Alberta will be raging torrents for a short time, and devoid of water when it is required. You will simply bring about a condition of affairs which anyone can see to-day in Southern Europe, in Northern Africa, and in Asia Minor, where large areas of country once fertile are now, owing to the denudation of the timber on the mountain side, practically a desert.

But let us look nearer home. The future of this City of Ottawa, as an industrial centre, depends on the valuable water powers of the Ottawa and Gatineau so near at hand, but unless precautions are early taken to preserve the forests at the head waters of these streams, we will have raging floods for a short time in the spring, followed by great scarcity of water, later on which will render the power so unstable as to be practically worthless.

Again, to say nothing of the evil effects on the fertile lands further south that would follow the destruction of the forests lying north of the provinces which at present form a barrier against the northern air currents, the severe winter of those high northern latitudes would be made almost intolerable by the Arctic winds that would then blow uninterruptedly over the denuded land. The fact is that voices come to us from all quarters calling us to protect our timber areas.

#### WHAT ARE WE DOING?

I shall in a few words try to answer this question, so far as the Dominion lands are concerned, but it must be admitted that our efforts are small indeed compared with what should be done, but nevertheless sufficient to show remarkable results. Fires are the great enemy of our natural forest, and these usually accompany the early opening up of the country. The building of railways, the use of fire in clearing the land by settlers, and the camp fires of travellers are among the agencies that have caused great destruction of timber in the past. Lightning has also contributed, but in a much smaller degree. The latter is uncontrollable, but the destruction from the other causes may be greatly lessened by due precautions and the enforcement of regulations. Not only during the construction of railways through the timber are great precautions necessary, but after the roads are in operation the sparks from the engines are liable to start disastrous fires. This latter is a question that I will not pursue further, but it is worthy of further attention at this meeting.

In 1901 a system of forest patrol and guardianship on Dominion lands was started which has been somewhat extended since. I cannot give details of the system; suffice to say that rangers are assigned certain territory where it is deemed their work is most required. Each of these men is under the supervision of someone in the district, usually the head forest ranger, crown timber agent, or someone known to the Department. It is the duty of this supervising officer to instruct the ranger when to start work and when to quit and to certify to his time of service before his account is paid. In case of a dangerous fire starting, which requires more men to control it, the ranger has authority to engage such men for that particular purpose.

During the past season we had about forty regular rangers employed, principally in the Railway Belt in British Columbia, along the foothills of the Rocky Mountains, along the North Saskatchewan River and country north of that river, along the Athabasca, and in the wooded districts of Manitoba and Saskatchewan.

As to the result of such a service, the railway belt in British Columbia furnishes the best example. Prior to the adoption of the fire service five years ago, there was annual destruction of large quantities of merchantable timber, while during the past five years practically none has been lost, notwithstanding that they have had a succession of very dry summers, and outside of this railway belt hundreds of millions of feet of magnificent timber have been destroyed.

No better investment of public funds can be conceived of than in this protective service. What town or city would be guilty of such folly as to refuse to afford some system of protection against fire for its buildings, and why should the nation fail to take similar precautions to protect its own forest property? The buildings in a town or city can be replaced in a year while a century or more would be required for the restoration of a forest.

Within the past year the Forestry Branch has started making a careful examination of the forest reserves, and it is the intention to continue this work till we have a complete knowledge of the timber on them, the quantity, varieties and quality, rate of growth, etc., with a view of removing the dead and down timber and harvesting the full grown crop and fostering a permanent reproduction. It is also hoped to be able to employ expert men in the examination of other timber areas, in order to obtain information as to what areas it is desirable to further set aside as reserves.

One difficulty in our work is to know what we have. We know practically nothing of our timber and other natural resources extending over a large proportion of our possessions.

In the early history of Canada the pioneer was very much in evidence, but when the people settled down to sedentary occupations the spirit of adventure seemed to die out so that to-day we know no more, perhaps less, of our unoccupied wilderness than did the voyageur of two hundred years ago.

Exploration in advance of settlement is a necessity. With the knowledge that this would furnish us we would be able to assign such districts to agriculture as would be best suited for that purpose and to leave in forest land not adapted for agriculture, but suited for the growth of timber.

Canada is practically the only country in the northern hemisphere to which the eyes of the world are turned for a timber supply in the time of great scarcity which is fast overtaking us. Let us at once take means to preserve what we have for this contingency. Let us remember not only our present supply, but that we are dealing with that kingdom of nature where the life forces are at work and where reproduction and growth may indefinitely prolong the supply if nature is not prejudicially interfered with.

The attention that has hitherto been given to the forest in this country has been in cutting it down, either for the value of the timber or to get rid of it, in order that the land might be more profitably employed for agriculture; but the day has now arrived when we should cease to regard our productive forests as mines from which only a fixed amount of wealth can be obtained and then abandoned. We should recognize the fact of continuous growth and reproduction of the same varieties, crop succeeding crop for indefinite periods of time. To be sure, it takes about one hundred years for the growth of a mature timber crop, but it requires no labour on our part and it asks only that we allow nature, without interruption, to do its part and generally too on land useless for other purposes.

Owing to the long period required for the production of a mature timber crop the individual cannot be expected to take the same interest in it that he does in agricultural crops that mature in one year, and for this reason forestry belongs more to the state whose life is not measured by years, but by centuries. There is another reason why forestry in this country belongs more exclusively to the state than in perhaps any other country in the world, and it is owing to the fact that most of the land on which our valuable timber grows is still held by the Crown; and considering that the nation is the owner it is most appropriate that this meeting is called in order that the Government may have the views of those competent to give advice on a matter that they are called to administer.

Most of the countries of Europe make the administration of their forests one of their most important departments of

government. India, through the efforts of Sir Dietrich Brandis now possesses a forestry service which is not only producing excellent financial results, but is also working on lines that are greatly benefiting the country in conserving its water supply that was rapidly becoming exhausted. The United States within the past few years has awakened to the necessity of action and is now wisely expending large sums in the service, and there is no reason why Canada with the timber wealth it possesses, and with the advantages of Government ownership to which I have referred, should not take a leading place among the nations of the world in its forestry management, and this convention which might be called a forest parliament can do very much by resolution or otherwise to further this desirable end.

In this connection there is just one more point that I would like to submit for your consideration. It is one that I have had in mind for some time and which I am fully persuaded could be adopted without difficulty and would be greatly in the public interest. It is this, that in all future patents of timbered land a proviso should be inserted that at least 10% of the area conveyed should be left in timber; that the timber growing thereon should be the property of the patentee, but only to be cut under the authority and supervision of the Government. I believe such a reservation was made in some of the seignorial conveyances in Lower Canada, and the old Upper Canada Land Company if I am not mistaken, made a similar provision in some of their deeds.

I have little time left to say anything on tree planting on the plains which the Forestry Branch of the Department of the Interior has started there in cooperation with the settlers, and it is unnecessary that I should do so as Mr. Ross, the Assistant Superintendent, will present a paper dealing with that branch of our work. It is sufficient to say that when we have sent out in the spring the nursery stock now ready for shipment we will have distributed in all about 7,000,000 trees free of charge to settlers living on the bare prairie. The system we have adopted is meeting with gratifying success, and it is confidently predicted it will prove of incalculable benefit to the great plains region.

---

A number of the illustrations in the last annual report of the Canadian Forestry Association were, by oversight, not credited to the Forest Service of the United States, through whose courtesy they were obtained by Dr. Judson F. Clark.

## A CANADIAN FOREST POLICY.

---

DR. JUDSON F. CLARK, FORESTER FOR THE  
PROVINCE OF ONTARIO.

---

When an individual of a nation is urged to undertake any new enterprise the advocate must be prepared to show that it is not only practicable and desirable, but that it is a business proposition, or in other words, that it will pay. That there are sentimental considerations urging better care of the forests is undeniable. That they should have weight is equally indisputable. But forestry is absolutely independent of such, its appeal to-day is as a business proposition to business men, and more especially as a business proposition to statesmen, for the whole history of forests and forestry from the time of ancient Babylon to the present has been a demonstration of the fact that the State is the best, if not the only good forester.

Personally, I think it is beyond doubt that the development of a rational, and therefore practical and business-like, forest policy by the Canadian Provinces and the Federal Government will have a greater influence on the prosperity and happiness of our country half a century hence than the solution of any other problem which is within the power of our generation to solve.

There are at least three reasons of paramount importance why Canadian forests should be managed with a view to the production of wood crops in perpetuity. These reasons have already been repeatedly discussed at the different sessions of the Convention. Permit me to repeat them briefly by way of emphasis and as a foundation on which to base some recommendations for a national forest policy.

### *For the Permanence of Lumbering Industries.*

1. The necessity of a *permanent* supply of logs for the maintenance of our great and growing lumbering and other wood-working industries.

The products of these industries are absolutely essential for the future of our production, our transportation, and our manufactures. Aside, indeed, from the character of its people there is nothing which contributes so greatly to the prosperity and happiness of a people than an abundant supply of wood at reasonable prices. Wood forms the very corner-stone of modern

industrial life, and as years go by modern civilized man demands and uses more and more wood, all substitution by iron, steel, cement, etc., to the contrary notwithstanding.

There are some who are better acquainted with the forests than the markets, and others who are acquainted with neither forest nor markets, who still believe and speak of Canada's "inexhaustible" forests. Take any man through a 400,000 acre lot of fine forest so thoroughly that he will have seen all the trees, and it is most likely that he will be ready to believe in inexhaustible forests. Tell him that all the trees that he has seen would hardly supply the needs of the railways of North America for cross-ties for a single year, and his "inexhaustible" will appear as futile as it is. We have great but diminishing forests and great and ever growing needs for forest products.

*For the Conservation of Stream Flow.*

2. Second only in importance to the function of the forest as a producer of wood is its function as a regulator of the flow of streams.

Canada's wealth in her water-powers is very large. Some one has estimated that two-fifths of the water powers of the world are found on Canadian soil. Whether this be correct or not there is no doubt but that the water-powers of Canada vastly excel those of any other nation: What this will mean for her industrial future it is impossible to forecast, perhaps impossible to exaggerate. Add to this the value of the streams for irrigation, domestic use, and navigation, and who would dare guess how many figures would be required to express the value of Canada's streams a century or even half a century hence if maintained in their present efficiency?

If the forest lands of Canada be placed under a rational forest management, the present efficiency, by which I mean of course the regularity of her stream flow, may not be maintained only, but much increased. Present methods of lumbering with their accompaniment of fire on the lumbered lands are annually and to a large extent permanently, subtracting from the value of this great national asset.

*For Public Revenue.*

3. A third reason for conducting lumbering operations on non-agricultural lands with a view to improving and perpetuating the forests is found in the fact that it is only by maintaining such lands under forest crops that they may be made to permanently contribute to the wealth of the Provinces or the Nation. Compared acre for acre with arable lands, these rough lands have a low producing capacity. The vastness of the area involved, however, places the non-agricultural lands of Canada in the front rank of her natural resources.

Not only is it a great national duty born of necessity—the necessities of the future—that Canada care for her forests, but it will inevitably prove a highly remunerative business proposition.

*Forest Situation in North America.*

North America to-day cuts three-fifths and consumes more than one-half of the total lumber production of the whole world. This prodigious consumption is very rapidly increasing both on account of an increase in the per capita consumption and the consuming population. There can be no manner of doubt but that the present annual cut together with that destroyed by fire vastly exceeds the net annual production by growth. In other words a wood famine in North America is already in sight. I was asked the other day when it was due to strike. I replied that as near as I could interpret the signs of the times, the year 1900 would be about right, and that the pressure of prices was likely to become increasingly burdensome from decade to decade until the famine would be unanimously admitted. I understand that many purchasers of lumber are already admitting it.

*Canada's Advantageous Position.*

Canada will, if she be wise, be more interested in this wood famine as a seller than as a purchaser, and herein lies the possibilities of a great and ever growing revenue from her public forest lands.

The Canadian forests, which form beyond question the world's greatest remaining reserve of coniferous timber, form a band across the continent from the Atlantic to the Pacific bordering the richest farming and manufacturing area in the whole world. The population of the consuming area tributary to our forests has increased four-fold during the last half century, but its wood consumption has increased ten-fold. This marvellous increase in the use of forest products has already established stumpage prices which put national wood culture on a satisfactory financial basis from the standpoint of revenue alone. It should not be forgotten that the rise in prices which makes forestry a business proposition has come about in the face of an exploitation of the forests on both private and public lands such as was never seen elsewhere in the history of lumbering and cannot be again repeated in North America nor on any other continent.

The territory tributary to our Canadian forests which increased its wood consumption ten-fold during the past half century is to a very large extent merely on the threshold of its industrial development. Nothing is more certain than that



the present demand for the products of our forests will be indefinitely maintained—nothing more probable than that it will be greatly increased.

In view, then, of the desirability of caring for the forests as a sound business proposition from the standpoint of direct financial returns and its necessity from the standpoint of wood production and water conservation, I submit that no time could be more opportune than the present for the inauguration of a national forest policy having for its object the conservation of the forests by wise use.

#### *Forest Protection.*

In this forest policy first place must of course be given to forest protection and more particularly to the prevention of forest fires, for without reasonable safety in this regard there can be no forest management. Considerable progress has already been made by several Provinces in this matter, but everywhere much remains to be done. Further progress is needed along three lines, namely:

Improved fire laws.

More efficient administration of the fire laws, and the

Disposal of debris incident to lumbering operations.

Nova Scotia has at present the best fire law though it is in some respects surpassed by that of New Brunswick, and Ontario has the most efficient administration.

#### *Practicability of Disposing of Debris.*

In the report of the Ontario Bureau of Forestry for 1904 I have discussed in detail the practicability of burning the debris incident to lumbering operations in pineries. I shall only repeat here that it has been demonstrated that a good clean job of brush burning may be done on pine lands at a cost varying according to local circumstances of from 12 to 25 cents per M. feet, board measure, of the timber cut. Whether a similar burning of the brush on spruce lands be also practicable has not yet been demonstrated by any fair test on a commercial scale. I submit, however, that the making of such a test is one of the most urgent duties of the Provinces selling pulpwood stumpage. It will pay any Province vastly better to take ten or fifteen cents less per cord for its pulpwood and secure the safety and advantage to reproduction which goes with the burning of the debris than to secure the utmost present cash return and leave the areas cut over for pulpwood in the deplorable and menacing condition which is to-day characteristic of Canadian pulpwood slashings.

It need scarcely be added that the state rather than the

lumberman should in all cases bear the expense of such safety measures, for it is in the interest of the future citizens of the state that they are undertaken.

#### *Woodland Taxation.*

Forest taxation is, next to fire protection, the most important consideration in planning forest management on privately owned lands. Governments have in their control of the method and amount of taxation a powerful lever to foster or destroy the practice of forestry by private owners. Under normal conditions no woodland owner can be exempted from a fair and equitable share in the burden of government. Where, however, the tendency to deforest reaches the point where the general interests of a community are endangered, the partial or complete exemption from taxation of such woodlands as are devoted exclusively to forest purposes and come up to a reasonable standard of production may be resorted to as a remedial measure; or the taxation may be shifted from an annual tax on the land to a stumpage tax on the annual cut, thus converting the tax itself into a measure of restraint as regards deforestation.

#### *Classification of Public Lands.*

An important feature of a Canadian forest policy must be the exploration and classification of the public lands. Such lands as contain a satisfactory proportion of good plow lands and are reasonably accessible to markets should be opened for settlement as the land is required for agricultural development. Townships or larger areas in which the non-agricultural lands predominate should under no circumstances be opened for settlement but should be constituted Provincial or Federal Forest Reserves and be devoted to timber production in perpetuity.

Just what proportion of plow land contained should entitle a township or district to be classed as suitable for agricultural settlement is open to debate. In deciding this point it should be kept clearly in mind that a mistake in choosing too high a standard for the agricultural lands may be subsequently remedied at any time without embarrassment or loss, while the mistake of opening up for settlement lands unsuited for agriculture is certain to be a great and lasting injury to both settler and Province, and is well nigh irremediable, as witness many townships in Muskoka, Haliburton, and elsewhere.

#### *Municipal Forest Reserves.*

A second class of forest reserves which the Provinces would do well to foster is what may be termed Municipal Forest Reserves.

There are many townships having within their boundaries considerable areas of waste lands which after trial have been abandoned as unsuitable for growing field crops. The hope of restoring such lands to useful production is by reforestation, and there are many good reasons that may be urged for the undertaking of the enterprise by the local municipality.

It would be good policy for the Provinces to assist such municipalities as are willing to establish municipal forest reserves by advancing the money for the purchase of the lands, and by organizing an efficient forest service for their management. In the course of time, varying from 15 years in the more southern parts to 30 or 35 years in northern districts, the townships would be in receipt of a steady and very considerable income from their municipal forests for the easement of local taxation. There are many municipalities in Europe having no higher prices for forest products than obtain in Western Ontario to-day whose income from such municipal forests pays the entire expense of maintaining schools, roads, and other local improvements, and in not a few cases there is a surplus which is annually divided as a cash bonus among the citizens.

Such a system of municipal forest reserves could with the utmost advantage be extended to the newer districts where townships are being opened for settlement. All that would be necessary would in this case be to select and reserve from location at the time of the survey a suitable area in the part of the township least adapted for agriculture. Such reserves being already stocked with merchantable timber would be capable of yielding a revenue to the municipality from the first.

#### *Practical Forest Management.*

The central feature of a forest policy and that which gives real worth to all the rest is of course the introduction of a system of practical forest management, having for its aim the perpetuation and improvement of the forest by judicious lumbering.

Canadian forest management will naturally differ widely from European forest management, for our forests, our transportation, our markets, and our people all differ widely. It will also differ somewhat from the forestry of our neighbours to the south, for there are characteristic Canadian conditions to be met—not the least of which is the radical difference in forest ownership and the relations existing between the lumbermen and the State. Canadian foresters may of course learn much from the foresters of Europe and will doubtless learn much more from those of the United States where many of the conditions are very similar, but in the end they must work out their own salvation by the development of a system of Canadian forest management designed especially to meet Canadian forest conditions.

*Stock-Taking of Timber Resources.*

As a first step in this direction it will be the duty of the Provinces to undertake a systematic stock-taking of their timber resources, for without a knowledge as to what they have in the way of standing timber, any attempt at forest management must be blind and ineffective. This stock-taking will naturally include the kind, quantity, quality, state of maturity, rate of growth, and location of the standing timber; the character of the soil and its adaptability for growing particular kinds of timber; and a more or less complete topographic survey having special reference to the drainage, character of the surface and such other features as would be of importance in planning logging operations.

Knowing, then *what* there is and *where* it is and how it may be gotten out, the next step will be to limit logging operations as much as may be practicable to districts where the stands are mature or overmature. The mature timber must be sold under such conditions as will conserve alike the interests of the lumberman and those of the Province. The price paid for the logs must be made with the clear understanding that they are to be removed under such rules and regulations as will insure the reproduction and future safety of the forest. These rules and regulations must naturally be prepared and published in advance of the sale, that the purchaser may know definitely at the time of the sale the conditions under which he is to conduct the logging operations.

*The Lumberman and Forestry.*

Lumbermen are more interested in the perpetuation of the forests than any other class of citizens, and in any square deal will be found willing to do their share to that end. It is high time, however, that the Canadian Provinces ceased to sell the public timber under a system which makes it in the present financial interest of the logger to despoil the forest. Were the stumpage sold in a proper and business-like way there would be no need to implore the lumberman to think of the nation's posterity rather than his own, a plea which must always be futile, besides it is perfectly practicable to conserve and harmonize the interests of the lumberman and the public, present and future.

*Trained Foresters Necessary.*

Systematic care of forests implies of course a trained forest service.

There was a time when the doctor's office, the court-room, and the deck of a ship were the only places of training for the physician, the lawyer, and the naval officer, just as to-day the lumber camp is the only place of training for those who at pre-

sent direct the cutting of the Canadian forests. But the world has made progress in educational matters in the last fifty years, and to-day we have, established and maintained by the State, military and naval academies, schools of law and medicine, of mining, engineering, agriculture, and other professional and technical schools too numerous to mention.

With her vast interest in forests and forest products there can, I think, be little doubt but that the time has fully come for the establishment of a Canadian School of Forestry for the training of her coming forest service.

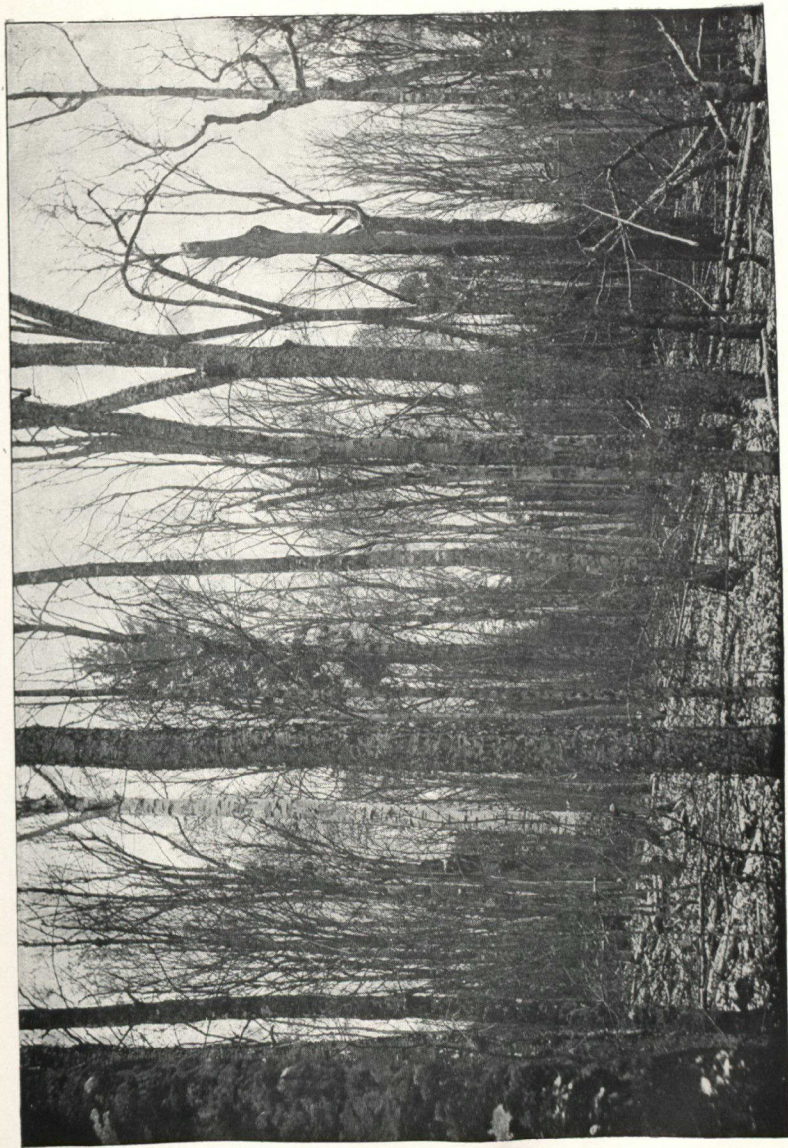
#### *A Practical Forestry Training.*

Time does not permit me to discuss in any detail the character of the instruction which should be given at such a school. In very brief, I would say that a broad elementary training in the so-called natural sciences and mathematics is a most necessary preparation for the forester's professional training. That the professional training must be as *practical* as possible goes of course without saying. To this end all theoretical instruction must be supplemented by practical investigation and application in the woods. I would go farther and recommend that on the completion of their school work—theoretical and practical—all students who have not previously had a practical training in the lumbering business be required to associate themselves with a lumber firm for a year for the purpose of studying and practically assisting in the various operations from the felling of the tree to the grading of the lumber for the market. This training will prove of value to students not alone in the matter of information gained, but will serve the useful purpose of bringing the foresters and the lumbermen in touch personally and professionally.

#### *Assistance for Private Owners.*

The educational side of a national forest policy would be incomplete without provision for the dissemination of a knowledge of improved methods of woodland management for the benefit of the private owners, who control in the aggregate many million acres of woodlands, which scattered as they are throughout the agricultural sections, are acre for acre the most valuable of Canadian forest lands. The Ontario Department of Agriculture and the Dominion Forestry Branch have already made an excellent beginning in this great educational work.

Such in brief is a glimpse of Canada's responsibility, opportunity, and duty. As we accept our responsibilities and as we do our duty according to our opportunity will we be judged by future generations as having been worthy or unworthy custodians of an almost unbounded natural resource.



Forest on a Hardwood Ridge from which the large Yellow Birch has been cut. Madawaska, Ontario

## THE RELATION BETWEEN WATER-POWERS AND FORESTS.

---

CECIL B. SMITH, C.E., CHAIRMAN, TEMISCAMING RAILWAY  
COMMISSION.

---

CANADA is well supplied with coal, both in its extreme Eastern and Western Provinces, but over an area extending for three thousand miles from New Brunswick to the foothills of the Rockies, and from the United States boundary as far Northward as we have knowledge of a definite nature, there are no coal measures of importance that have yet been discovered; and whilst this deficiency is not an absolutely vital one, owing to the abundance of coal in the neighbouring United States, yet it is of great economic importance, and has been a large factor in retarding manufacturing in this country.

Now that wood for fuel has become scarce and expensive in many localities, there is a double drain on the pockets of our people, and a continually increasing stream of money is flowing across our Southern border to purchase coal for heating and power purposes.

Until quite recently this had not appeared very important because wood, being plentiful, was largely and often wastefully used for fuel and power, and because manufacturing was not carried on extensively, and therefore the power problem did not loom large in the public view. However, the last ten years have worked many changes, and we are now face to face with a condition and not a theory.

Street and suburban railways are operated by electricity; Cities and towns demand electric lighting; manufactures are increasing by leaps and bounds, and more and more coal continues to pour over our frontier to meet our ever growing demand for power.

The natural query is How and To what extent can this unfortunate economic condition be improved upon, and what is the proper channel through which the desired end can best be accomplished?

The direct use of water-power for pumping and grinding is embedded in history, and doubtless such uses will continue to form an important factor in daily life for generations to come; but, excepting in special cases, these uses will be and are, con-

fined to water-powers of small dimensions, and the service must be given in the immediate neighbourhood of the water-power.

Quite recently, however, the transmission of electricity for considerable distances has been fully demonstrated to be feasible and economically important, and at once it became evident that water-powers had assumed an increased market value by reason of the facility with which the power of water could be devoted to the generation of electrical energy, which energy could then be carried without serious loss or prohibitive expense, and in greater or less quantities to power markets and centres of population.

With the preceding statements postulated the natural question arises to what extent are we blessed with water-powers over this coalless area, and how convenient are they to centres of population? Also, what has been accomplished to the present, and what is the future outlook?

If we study a map of Canada we find the area before referred to, to consist, broadly speaking, of two drainage areas: one tributary to the Hudson Sea and the other to the St. Lawrence Valley, the population of the country being chiefly centred in the latter area. Doubtless the Saskatchewan and Winnipeg Rivers will soon become important from a power point of view; the former because of its relation to wheat grinding, the latter because of its nearness to Winnipeg; but looking at the St. Lawrence water-shed, one is at once impressed by the great number of large rivers, flowing Southward from the Height of Land, which all have excellent water-powers, and which, flowing as they do from a wilderness, full of swamps and lakes, are admirably uniform in their run-off, and liable to remain undisturbed for some time to come. The development of these powers is at present chiefly along the lines of milling and grinding, and only where situated near centres of population, such as Ottawa or Montreal, are they devoted to the generating of electricity.

Coming, however, to the rivers of that portion of Ontario South of the Ottawa River, and of Quebec South of the St. Lawrence River, a different and much less satisfactory condition prevails; and although in earlier generations, these rivers may have been quite steady in their flow, this is, with two or three exceptions, not now the case, owing to the great amount of cleared land and consequent rapid run-off of the flood waters, as soon as the spring thaws have taken place.

Before coming to the main subject of this paper, which is the relation between forestry and water-powers, it may be interesting to dwell for a moment on the financial magnitude of the question under discussion. At the present time there has been developed in Canada about 350,000 H.P. of water-power, which probably, including transmission lines, represents an investment



of \$25,000,000 to \$30,000,000, and considered only on a ten-hour basis, means a saving of at least five tons of coal per horse-power-year, or 1,750,000 tons of coal per year as compared with about 4,500,000 tons annually imported. Now the near future will easily see this amount doubled or trebled if intelligent and comprehensive plans are adopted for development and distribution, and not only can a large amount of money be kept in our country, but industries and public utilities will be benefited by being supplied with electricity at reasonable rates.

Speaking generally, water-powers are valuable in proportion to the amount of water available at the periods of low water, which usually occur in August and September, and in February and early March, and it is a matter of common observation that each river is a distinct study in itself, as the variables are not only numerous, but largely beyond the control of man.

The chief features affecting the uniformity and total amount of flow are: (a) Drainage Area. (b) Shape of Area, whether compact or narrow and long. (c) Slope of country. (d) Kind of soil. (e) Rainfall. (f) Evaporation. (g) Condition of soil, whether cultivated, pasture or woodland. (h) Storage, natural or artificial. (i) Control of run-off from storage.

It will be noted that all but the last three items are natural conditions, and therefore beyond the control of man.

However, the large water-power developments which have been attempted to the present have been chiefly made on large rivers, and the pinch of low water has not been so serious as will be the case in the future when increased values will induce the development of smaller rivers to their fullest extent.

The practical problems of the control of river flow in the thickly settled parts of Ontario and Quebec Provinces group themselves naturally into three districts, which will be treated separately.

(A) SOUTHWESTERN ONTARIO. In this district we have the Nottawasaga, Saugeen, Maitland, Ausable, Thames, Grand, Credit and Humber Rivers, all possessing originally valuable water-powers, but without any natural storage for the water, except in the soil, so that as this whole area has been practically denuded of forests and given over to agriculture, the water-powers have been nearly all ruined, and as the creation of artificial storage would be very expensive, and the country is too valuable as farm land to permit of it ever reverting to forest, little can be hoped for in the way of improvement, and the district will necessarily have to rely on Niagara as its chief source of electrical power.

(B) CENTRAL OLD ONTARIO. We find here an entirely different natural condition, and owing to this an exceptional

opportunity presents itself for intelligent and comprehensive action which will, if carried out, be of great benefit to future generations.

The French, Maganatewan, Muskoka, Severn, Trent, Moira, Rideau, Mississippi, Madawaska, Bonnechere, Petawahweh and Mattawan Rivers, with their sources in lakes and swamps, all rise from a common plateau, largely unfit for cultivation, still chiefly in forest, and much of it still in the hands of the crown. They all possess excellent water-powers, many even now near to industrial centres, and up to the present time developed only to a very limited extent. Much of this central plateau is still in virgin forest, but much more has been cut or burnt over, and much partly cleared, on which thousands of families are eking out a meagre and precarious existence on land which would be much better occupied if devoted to the growth of another forest of pine and other trees indigenous to the region.

Those who have studied re-forestation will be agreed that to re-forest on *cleared* land means *close* planting as otherwise the trees form their limbs near the ground and become less valuable as timber. But to re-forest a large area of cleared land in this manner would be beyond the means even of a Government, and therefore the idea suggests itself that the proper course to pursue would be to hold this central plateau as it is at present, (and possibly even to re-forest some partly cleared or cut over districts), to limit the cutting of timber to ripe trees only, under crown supervision; to replant from nurseries, and guard from fires, and in connection therewith to gradually create a system of storages for water near the sources of the various rivers mentioned; lakes already exist in abundance: all that is needed is the construction of inexpensive dams to supplement those that have already been built by the Dominion Government on the Trent Canal, and elsewhere by lumbermen, and to place the control of the flow of water from these various reservoirs in the hands of proper parties, interested in making the most of the water-powers dependant on these lakes for the uniformity of their supply of water.

The question involved in this district thus presents two phases: one, the improvement of water-powers possessing wonderful natural storage, and amounting when developed to 200,000 or 300,000 horse-power, representing at least 1,500,000 tons of coal per year, and on the other hand the upbuilding of an extensive forest district naturally adapted to the growth of pine, but largely unfit for cultivation.

(C) SOUTHERN QUEBEC. The Yamaska, St. Francis and Chaudiere with other smaller rivers, have their sources in the foothills of the Notre Dame or White Mountains, and possess valuable lake storage, and while this district is largely arable and fairly well cleared, there are considerable areas which it would pay

to hold for all time as forest reserves in order to equalize the flow in the rivers above mentioned, and at the same time prepare valuable forests against the time when timber will be in still greater demand than it is at present.

Doubtless similar problems which exist in New Brunswick demand similar treatment, but unfortunately the sources of the St. John River are international in character, which complicates the problem, and the remaining rivers of the Province are not supplied with extensive natural storage, and must depend on soil storage only. Holding the uplands of this Province in forest seems essential to a preservation of its streams.

The relationship between stream flow and forests is an intimate one and in a country possessing valuable water-powers such as exist in almost every Province of our Dominion, this must be continually borne in mind.

The problem is too vast to consider in any other way than as one of preserving our present forests, rather than in creating new ones, and if the far-reaching effect of such preservation is thought of in connection with the preservation and improvement of our water-powers, an added incentive will be given to the natural desire to perpetuate for future generations our present valuable woodlands.

Fortunately the two interests are in harmony, and in preserving our forests, we can aid in developing to its fullest extent an equally valuable asset in our water-powers, which fortunately are to be found in every corner of the land.

## FARM FORESTRY IN THE EASTERN PROVINCES.

REV. A. E. BURKE, ALBERTON, P.E.I.

There can be no phase of forestry, which fortunately is beginning to receive somewhat of the great attention which it deserves from the central authority, as essential to the general prosperity of the country as well as productive of direct influence on the conservation of its great water sources, the health of its people and the beauty and charm of life amongst us—nothing so eminently practical in its effect on the greatest number of our population as farm forestry. The farmer in the more fortunate wood-growing divisions of Canada has only within a comparatively short time awakened to the value of trees not only as a source of fuel supply—and fuel will always be a heavy charge against farm revenue—and the lumber which is always a requisite about the place, but as a temperer of the adverse winds, a protector of the fruit plantation, the pasturing cattle, the dwellers on the steading themselves; and as a source of beauty and comfort beyond anything else we can name.

Having to contend with the great forest at settlement, it is not wonderful that it was considered by the average pioneer an enemy; and, therefore, to be removed at the earliest possible moment. Even where wood and wood products were little sought, the torch and axe were in requisition until all the acres of the holding were for the most part bare and treeless. This did not so much matter where the misguided operator was somewhat isolated, but when all the land became occupied and a general policy of destruction was adopted, the effect was signally adverse to the productiveness of the lands and the comfort of the land holders. In the large provinces, even areas which would constitute states in smaller and less favoured countries were thus stripped; in the smaller provinces the dire result of such a short-sighted policy became more and more of an affliction. The new additions to the older provinces formed a magnificent reserve and afforded all the timber supply necessary for local requirements; the older sections began to find out the error of complete denudation; the public mind became awakened and informed to sane principles; and early an attempt to retrieve lost ground was discernible. That disposition to help themselves on the part of the people has actuated the Government of Ontario in the generous and organized system of re-

afforestation, educational and practical, which it is now pursuing. Quebec still has its great forests, but the settled portions are, in many cases, bare of trees. It has no such systematic policy as to forestry as its great sister province; but the farmer there, too, is alive at last to the advantages of the wood-lot, and will henceforward compel an enlightened policy not only with regard to the maintenance of the proper proportion of field and forest of his own locality, but also, since it affects him and the people generally, a conservative administration of the great forests of the Province.

In Maritime Canada there is still much to be done. The three Atlantic Provinces, smaller than the others as they are, and, therefore, divided and weakened in the effort which the times so imperatively demand in the way of forestry, can scarcely be said to have given this question the consideration it deserves.

Apart from Prince Edward Island, agriculture has not been the exclusive occupation of their people. Nova Scotia is a large mineral Province, and the development of these riches has occupied her attention almost entirely. Out of thirteen millions of acres scarcely one million is given up exclusively to agriculture, and except in the alluvial stretches which form her rich fodder fields, the land has not been in any locality so completely denuded as to threaten the failure or to adversely affect the growing capacity of her cultivated fields. An economic timber policy is greatly to be desired, however, and this will very beneficially affect not only the cultivated areas of to-day, but those which to-morrow may in the needs of greater production, be subjected to the plough.

New Brunswick is a well wooded Province of seventeen million of acres, only a very small portion of which is given over to agriculture. The growing of timber for the money that is in it has been always a commercial pursuit of the people although no systematic forestry has ever been inaugurated. A great portion of the lands still remain under the Crown. Some ten millions of acres are granted lands, it is true, but even those are practically half under forest of some kind. Certainly less than five millions of acres are devoted to crop production; and, so far as we know, no organized system of farm forestry has yet been demanded or evolved. Of the seven and a half millions under the Crown, possibly six and a quarter are under timber license and the remainder burnt or barren areas. In the farming sections the errors of other places are apparent. The wood has been cleared away and in many cases whole portions of country bared of trees to the great disadvantage of successful agriculture. New Brunswick, while not under present circumstances vindicating to itself, the title of an agricultural province is nevertheless susceptible of successful field culture much more generally than

has at all been attempted, and quite as much, if not more so, than countries which are freely accorded an agricultural name. Professor Johnston, F.R.S.E., who examined the Province carefully, reports that its soil is capable of producing food for five or six millions of people; capable of growing all the common crops on which man and beast depend; and possessing a climate suitable for the growing of crops in quantity and quality not inferior to the average soil of England. It is, therefore, greatly to be desired that, as agriculture must play a great part in the development of this Province when the population of the country becomes intensified, as we know it will in the not too distant future, a sane system of forest preservation be early resorted to, so that the fruitfulness of the future crop-producing areas may not be radically impaired.

The third and most generally fertile Province of Maritime Canada, termed by its admirers "the Garden of the Gulf" and "the Million-acre Farm," has already suffered, and is suffering very considerably every year, from the deprivation of its forest. The lands for the most part have passed from the Crown—only about fourteen thousand out of the one million two hundred and eighty thousand acres, are still in its possession, and these lands have been stripped of everything worth taking away long ago. The farmers themselves are, in the great majority of cases, obliged to purchase coal for fuel from the mines of the neighbouring Province of Nova Scotia, and building material from the New Brunswick mills. The farms thus bared are not at all being cultivated to their utmost extent; the Island is susceptible of maintaining under right conditions a system of the most intensive agriculture, and one which would sustain in comfort a population five times greater than its present one. The portions cultivated—and they are much greater than those of the other Maritime Provinces, comparatively greater than any other portion of Canada comparatively fruitful as they are, would be doubly so if the requisite forest influences were in full play. There are numerous places completely denuded which nature only intended for tree production and the safe-guarding of the splendid water sources with which the Province was originally endowed. One thought given to the insular nature of the country, its situation in the midst of a great wind-swept Gulf and its smallness, will convince anyone that the losses incurred to its husbandry, where unprotected from the blizzards of winter and the drying-out winds of summer, as well as the erosion which spring freshets and fall rains occasion, must be very serious indeed.

Little more than one hundred years have sufficed to transform this Province from a complete forest to its present bare and exposed condition. Then its flora was of the most engaging



Rollways of Pine Logs, showing the condition of the forest after lumbering

to be met with in the Western Hemisphere comprising a large range of coniferous and deciduous trees among them those mentioned by the intrepid explorer, Jacques Cartier, when on July 1st, 1534, he first trod Canadian soil in the Island Province. His Relations contain an admiring mention of our beautiful forest trees and in it he enumerates with great exactness the fir, the black, red and white spruce, the stately hemlock, the white and red pine, the larch and the cedar and the maple in four varieties; the white, black, yellow and canoe birch; the wide-spreading beech; the elm; the ash in variety; the oak, the aspen, the cherry and many other inferior species. The axe, the torch, man's cupidity and the utter disregard of the governing power have almost swept away this precious heritage.

Within recent years we have come to recognize our sorry plight; we have aroused the public conscience; we have attempted to quicken the provincial authorities to some action which may save us from further loss, and start us out on the way of retrieval. A Commission was appointed to examine into the case a few years ago, and whilst their report may have little technical value it has by sounding the alarm at least manifested never have realized, to wit, that forest growth is essential in most situations, at all events, as a protection to the farm from the chilling winds which sweep over the Gulf and adversely affect all life upon the Island in winter, resulting often in many of the dread diseases which come from exposure to such temperature, and increasing to an extent unknown in the old days, when the country was tree clad, the scourge of consumption, the Great White Plague, now a general menace.

Forest protection is necessary to the farm lands so that water can penetrate the soil and be available for crop production. If the whole farm area is deprived of the advantages which the forest floor affords for the conservation of the water precipitated, the exposed soil hardened by the tramping of cattle and the pattering of raindrops, must shed it superficially if it is anywise compact. As a consequence these waters are not only lost to crop production but, gathering into rivulets, carry great quantities of the rich soil with them as well as furrowing the fields with gullies and runs. This carries away valuable plant food, covers the lowlands with silt, damages the roads, and swelling the water courses causes them to break their bounds and dissipate the water, which by subterranean channels should feed them later. In Canada to-day it is estimated that not less than two hundred miles of fertile soil are washed into rivers and brooks annually, and those who examine the public accounts will be surprised at the immense sums of money expended each season in digging out those lost farms from the harbours and



rivers of the Dominion. Many thousands of dollars worth of crops and other property are destroyed by overflows and floods and many more by the droughts which one Province or another suffers yearly—all or nearly all of which would be avoided if the water supply of the country were properly regulated; and the conservation and management of the forest is the only agency available to this end.

The tempering effect of the forest on the farm need only be mentioned. By modifying the velocity and temperature of strong winds a great reduction is brought about in the protected fields. We plant wind-breaks about our orchards and out-buildings to secure shelter and thus temper the hot winds of summer and the cold blasts of winter. An extension of this system to the fields would greatly increase the yield in crops. The increased moisture which forest protection affords because of the decreased evaporative power of the winds, the velocity of which has been reduced by passing through forest, is very considerable. It is estimated that a foot in height of forest growth will protect one rod in distance, and a succession of tree plantations would very materially increase this protective power. The forest tempers the farm, too, by preventing deep freezing of the soil and shortening the cold of winter.

Whether or not the forest may increase the water fall over the adjacent area is still a question open to discussion, but no one doubts that by transpiration, the moisture near forests is greatly increased and vegetation thus beneficially affected. But even if no increase is admitted in the rainfall because of forest influences the availability of whatever does fall is greatly increased by a forest growth properly located. In forests the water percolates through the soil most thoroughly and the snow fall is caught by them and melted so gradually as to be subject to little waste. Larger amounts of water are, therefore, held by the forest soil and sink deeper into it than into that of the open fields. The sun and wind, the great moisture-dissipating agents, not having full play in the forest, the conservation of moisture is much easier than elsewhere. The water supply available in the soil is thus increased 50% scientists tell us. Increased percolation and decreased evaporation afford large quantities of moisture to feed the springs and sub-soil waters and these are finally made available to the growing crops in times of extreme drought.

The forest as well as watering, tempering and protecting the farm supplies it with much useful and valuable material. Those who have to purchase coal at big prices know how it eats into the year's revenues. Once established the wood-lot properly handled will reproduce itself and supply in reasonable proportions not only the fuel but much of the timber and lumber

required in the up-keep and extension of farm construction. The poorest portion of the farm, that unfit for tillage, may thus be made to bring in the best returns. On a well regulated farm of one hundred acres 25% should be left in forest. In harvesting, the openings should not be made so large at any time in this wood-lot as not to be easily re-seeded from the adjacent trees.

The forest will not only benefit the farm and add to its value in all the ways we have been describing, but it will so beautify it as to make life doubly pleasureable to those upon it and also to the community in which it is placed. "A thing of beauty is a joy forever"—and what so beautiful as a thrifty tree in the open, a line of trees by the roadside, a clump of trees in some waste corner, a well kept grove or wind-break sheltering the farm buildings, or a wood-lot lifting its head high to the sky in conscious pride of its worth on the rear line of the holding? The value of that farm, if by any necessity it has to be put on the market, is greatly enhanced by such adornment and the extra cost of it has been little or nothing to the farmer when everything is computed. Nay, it has paid him a hundred fold, bettering and blessing his life.

"Nature is man's best teacher. She unfolds  
Her treasures to his search, unseals his eye,  
Illumes his mind, and purifies his heart,  
An influence breathes from all the sights and sounds  
Of her existence."

—*Street.*

The question comes naturally to every lip. "How are we to restore in sections impaired the proportion of forest to field, how maintain it where it exists at present? How are we to bring about in Eastern Canada a sane system of farm forestry?" To our mind a general forestry policy should be quickly and effectually evolved by the central authority, not only with regard to the new countries under its control where the mistakes of older Canada must not be repeated, but also in the older portions where the national life has been adversely affected by the dangers with which the sacrifice of the forest have menaced it in its economic, agronomic, climatic, hygienic and aesthetic relations. As with agriculture even where the provinces have supreme control, a paternal policy productive of the best results has been long adopted federally by which educational and practical assistance has been bestowed, so in the forestic endeavour the presence of the instructor and the bestowal of stock wherewith to re-plant may become necessary. The farmer can thus be taught the value of his wood-lot at comparatively little expense to the country, and the result in prosperity and national

happiness will far outreach the returns, great as they have been, in any other line of agricultural effort. A fully equipped Federal Department looking to the maintenance and necessary extension of forestry in every portion of Canada is the necessity of the hour. Let us hope then, that in the general impetus which this Council must give to this great national interest, farm forestry in Eastern Canada will not be overlooked.

## YALE UNIVERSITY FOREST SCHOOL

NEW HAVEN, CONNECTICUT, U. S. A.

A TWO YEARS GRADUATE COURSE is offered, leading to the degree of Master of Forestry. Graduates of Collegiate Institutions of high standing are admitted upon presentation of their College diplomas.

THE SUMMER SCHOOL OF FORESTRY is conducted at Milford, Pike County, Penn. The session in 1906 will open July 5th and continue seven weeks.

FOR FURTHER INFORMATION ADDRESS

**HENRY S. GRAVES, DIRECTOR**  
NEW HAVEN, CONN.