Forestry Association Convention trip to Mr. Gilley's limit near Vancouver.

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CANADIAN FORESTRY CONVENTION.

VANCOUVER, B.C., 26TH AND 27TH SEPTEMBER, 1906.

The Canadian Forestry Convention held in Myers' Hall, Vancouver, on the 26th and 27th of September, was successful, both in the large number in attendance and in the enthusiasm and interest which it awakened. No province of greater forest wealth or more magnificent possibilities than British Columbia, no pleasanter or more beautiful place than the City of Vancouver could have been chosen for the holding of the Convention, and no welcome could have been warmer than that given to the delegates by the city and the Lumbermen's Association.

The arrangements made by the local committee were thorough, so that the work of the Convention was carried on smoothly.

The Convention owed much to the kindly interest and support of His Excellency the Governor-General and Lady Grey, and the co-operation of the Provincial authorities was also heartily given.

At the opening of the Convention, Mr. John Hendry, President of the British Columbia Lumber and Shingle Manufacturer's Association, welcomed the delegates, and then called Mr. E. Stewart, President of the Canadian Forestry Association, to the chair, who responded in a few words to the kindly welcome. The President then called upon His Excellency the Governor-General to open the Convention. He was received with cheers and said:

"It is, I consider, a very high privilege, to be allowed to open this forestry convention," he said after his introduction,

"which has assembled on the invitation of Mr. Hendry, representing the Lumbermen and Shingle Manufacturers of British Columbia. This convention has been called together for the purpose of considering what steps shall be taken to discover and to apply to the forests of British Columbia the best methods of forest management. At the beginning of this year, a similar convention was held at Ottawa, under the presidency of the Federal Prime Minister, Sir Wilfrid Laurier, who convened it. I attended all the meetings of the convention, which lasted for three days, and I can bear witness to the fact that from the beginning to the end of that interesting convention, the papers and discussions averaged a singularly high order of merit, and that the interest of those attending the convention never flagged. The reason for this continued and sustained interest was this: We were dealing with a subject which all of us recognised to be of vital importance to the well-being of Canada. (Applause). We realised that the forests of Canada are the reservoirs that feed the rivers, on the even and continuous flow of which the agricultural prosperity of Canada depends. We realised that the reckless and wanton deforestration of other lands had converted territories at one time prosperous and populous, into stretches of barren wilderness, and we also realised as we listened to the papers and discussions, that in her forests Canada possesses an asset of priceless value and that if we can only apply to their management those principles and methods which have been shown to give the best results in other countries, we may look forward to deriving from our forests a continuous and increasing revenue, without destroying our capital. (Applause). The world's demand for timber is steadily increasing, the thoughtless improvidence of other countries having depleted timber resources which were considered almost as inexhaustible as those of British Columbia itself. I cannot commend to you too strongly the importance of studying now, before it is too late, those methods and principles of forest management which the experience and research of other nations may indicate to be the best. At Ottawa we were very greatly assisted by Mr. Pinchot, the head of the Forestry Department of Washington. I had hoped that Mr. Pinchot, whose admirable primer on Forestry ought to be on the bookshelf of everyone who cares about trees, might have been present here to-day. President Roosevelt is a warm friend of Canada, and takes a great deal of pleasure in helping Canadians to promote the welfare of their own country. Mr. Pinchot has kindly sent as his representative, Mr. Price, whom we are fortunate to have among us to-day, and I am sure that I am only voicing your sentiments when I say that you are grateful to the Government of the United States for sending Mr. Price to assist us in the work of this convention." (Applause.)

HON. JAMES DUNSMUIR,

Lieutenant-Governor, who was the next speaker, said:

"Your Excellency, Mr. Chairman, ladies and gentlemen,—It is with the greatest pleasure that I welcome the delegates of the Canadian Forestry Association here to-day, who have assembled from all parts of the Dominion in this city of Vancouver to discuss a subject that is in this Province second to none in any other portion of the continent. (Applause.) Many of you are visiting this coast for the first time, and cannot fail to be impressed with the widespread development that is going on throughout the West in which the lumber industry plays a very prominent part. Graced by the presence of His Excellency, the Governor-General, and surrounded by every evidence of prosperity, you are met in a vigorous city that is springing up as if by magic. Surely there is no better place for the inauguration of your labors. (Applause.) I feel sure that in His Excellency the Governor-General, the Forestry Association will have a friend who knows, from his extensive travels throughout the Dominion, how enormous are the extent and values of our forests, and undoubtedly his influence will be most favorably directed. (Applause.) Allow me to congratulate the Association on the great work it has already accomplished in awakening the public interest in forestry, and let me assure you, gentlemen, that you have my sincere good wishes. I trust that your deliberations will bring forth results that will be beneficial, not only to British Columbia, but to Canada as a whole." (Applause.)

PREMIER MCBRIDE

said it was indeed a great privilege to be invited to be present at the meeting of the Association and to take some part in the opening proceedings. He was interested because it was essentially a business concern. "Your conventions," he said, "are not given to those formalities which are experienced in the West from time to time in public gatherings of this kind. It is more than an ordinary privilege to take part in the opening proceedings, and as a Canadian resident of British Columbia, I am proud to be on the platform side by side with the representative of King Edward VII. The Association, so far as it has been successful in finding the eye of the representative of the King in Canada, is a most fortunate body indeed. I listened with a great deal of interest to the words of the President when he referred in flattering terms to the work of Lord Grey's predecessor, Lord Minto, and he had also listened to His Excellency's words at the meeting in Ottawa not so very long ago, pointing conclusively to the fact that this subject is engaging a great deal of attention in this Dominion of ours. In regard to the meeting place, I feel satisfied

that no quarter of the Dominion could have been taken in preference to Vancouver and in British Columbia.

"It is no vain boast of the Canadians who live in the West to say that the timber wealth of this Province is illimitable, and that there is no place in the known globe where the timber can compare in quantity or in quality with the huge forests of British Columbia. (Applause.) It has been to those who have charge of the business of the country a serious matter when they come to consider just how far reaching their responsibility with regard to the timber industry really is. His Excellency has sounded a note of warning. He has spoken of countries where wanton waste has resulted in deforestration, and he told us that we must be careful in this Province not to repeat the same experience. The warning is well-timed. I find in my intercourse with lumbermen that very great surprise is occasioned among those engaged in the industry in the East at the wasteful practice which prevails here of allowing a great deal of valuable timber to lie and rot in the woods, which, down in the interior and eastern parts of the continent, would be considered a marketable commodity. The first duty of British Columbians is the preservation of the forests, and the economical operation of the lumber industry. (Applause.)

"Up to date British Columbians have been trying to do the very best they can with the resources at command. It must be remembered however, that the superficial area of this Province is much greater than the area of the Province of Ontario, or that of Quebec, or of all the maritime provinces put together. When it is considered that a mere handful of taxpayers has the responsibility of attending to this immense area, I think it must be admitted that the Province has done remarkably well. But the Province is not satisfied with what it has done. (Applause.) The people were quite sensible of the situation which stares them in the face. They know that the tremendous forest fires which rage in the summer and fall mean the destruction of thousands of dollars' worth of valuable timber. We know that away beyond the zone in which Vancouver finds herself, away down in the interior of the Province, the same waste goes on, and we realize that the responsibility rests upon us to deal with the problem as soon as it is possible to do so." (Applause.)

After acknowledging the ready co-operation which the Provincial authorities receive in this direction from the Dominion authorities in the same field, Mr. McBride said it was a matter for great congratulation that such a spirit of co-operation was manifest in the Province between employers and employed in the lumber industry. To-day, he said, the mills of the Province were running, he believed, at their full capacity. They had orders that would keep them so employed for months to come,

and he considered that it was fortunate to find all parties concerned in the operation of these industries meeting on common ground, and standing side by side, and doing so well for themselves and for their country.

The President's Address was given by Mr. E. Stewart. It was an argument for the importance of the forests of British Columbia in particular and of Canada in general, and quoted from European authorities to show that they were feeling the shortage of the wood supply, and were looking to Canada as one of the principal sources to meet the shortage. This address is reproduced elsewhere in this issue.

Mr. Overton W. Price, Associate Forester for the United States, was introduced and gave a splendid outline of the work which is being done by the Forest Service of the United States. The principle on which the service is working was thus described:

"What the service has accomplished and its capacity for further accomplishment is due, in my judgment, more than to anything else, to working always under the principle that the forest is for use—to meeting forest problems not by paper work but by practical study on the ground; and to its trying to get forestry into effect not merely by propaganda, not by a policy of arbitrary interference but by co-operation. This is what has kept us out of the rut of ineffectual officialdom—and it has been said that the only difference between such rut and the grave is the length and the breadth."

A telegram from Hon. Walter Scott, Premier of Saskatchewan was read, in which he expressed the interest of his Government in the Convention and his regret at being unable to attend. A communication was also read from Mr. G. Spring-Rice, who had been appointed to represent the Province, but had been detained.

Hon. F. J. Sweeney, Surveyor General of New Brunswick, speaking for that Province, stated that:

In New Brunswick the principal revenue came from Crown timber lands and that frugal care had to be taken of them. For that reason all through the legislation ran the thread of protection of the forests. The principal enemy was fire. He was of the opinion that education in this matter should start in the schools and that more attention should be given to conservation of forests, for this Canada of ours would be a small place indeed without its timber resources. In New Brunswick game wardens are made fire wardens also to some extent, and road superintendents and all employees of the Provincial Government are instructed to look out for and check forest fires. Scalers also give a patrol system which is effective. He said that forest fires followed the advent of the railway, and when the G.T.R

was constructed across New Brunswick legislation was passed that each survey party should take extra precautions. He trusted that this convention would be of great assistance in the preservation of our natural inheritance.

HIS HONOUR G. H. V. BULYEA, LIEUTENANT-GOVERNOR OF ALBERTA

said the addresses had been profitable to him and he hoped to get more information as to how to preserve the timber resources. In his province, lying east of the mountains, there was a considerable extent of forest, north of the Saskatchewan River, but at present the two Prairie Provinces had to get their lumber from British Columbia. The question of preservation was of vital importance to the people here, for if the price of lumber went higher it meant much to them. He thanked the President for his invitation, and said he came for information. He confessed he had practically no knowledge of the lumber interests, but he appreciated the fact that every protection should be given to the forests.

Hon. W. H. Cushing also represented the Province of Alberta.

A Resolution Committee was appointed as follows:

RESOLUTION COMMITTEE.

John Hendry, Chairman; F. W. Jones, R. H. Alexander, Hon. F. J. Sweeney, William Pearce, Aubrey White, H. M. Price, J. Hillyard Mitchell, James Leamy, Hon. R. F. Green, R. H. Campbell, Hon. W. H. Cushing, E. H. Heaps, W. H. Rowley, D. C. Cameron, G. D. McKay, G. O. Buchanan.

SUB-COMMITTEE, B.C.

F. W. Jones, Chairman; E. H. Heaps, R. H. Alexander, D. C. Cameron, Hon. R. F. Green, G. D. McKay, G. O. Buchanan, Jas. Leamy.

AFTERNOON SESSION.

This Session was devoted mainly to the Province of British Columbia. The first paper, entitled "Timber Conditions of British Columbia—with relation to Extent, Revenue and Legislation," was by Hon. R. F. Green, Commissioner of Lands and works, and gave an able statement of the position of British Columbia in regard to forest wealth and the administration of the timber.

Mr. R. H. Alexander of Vancouver, gave a paper on "Lumbering Conditions on the Coast of British Columbia."

Mr. F. W. Jones, President of the Mountain Lumbermen's Association of British Columbia, read a paper on "The Lumbering Industry in the Mountains." After sketching the development of the lumber industry in the mountains, in which the Mountain Association had an important part, and predicting a bright future for it, Mr. Jones went on to say:

"We are all in sympathy with the objects of the Canadian Forestry Association; that we are all members of that Association, that a great many of our members are here to-day, and that all the rest would be here if they could possibly have got away.

"In the mountains, reforestration is not a live issue at present, but our interest is to establish some better system of preserving and managing what the Almighty has given us and stopping the enormous destruction of standing timber by fire. We want better laws for dealing with fires; some attempt at a 'Fire Ranging System,' in the interior of B. C. by the Provincial Government; more definite regulations covering the difference between agricultural and timber lands; a campaign of education under the auspices of the Forestry Association, as to the importance of preserving standing timber (even small growing trees which will not be fit to log for some years), putting down fires, and keeping squatters out of timbered areas and places where young timber is coming on; and an amendment of the Provincial regulations providing for such tenure and terms on timber licences, that the lumbermen will be able to pay some attention to Forestry principles, in carrying on their operations.

"Next to fire, the greatest enemy to the proper management of the Forest resources of this Province, is the manner in which they are administered, particularly in the way of the title given to timber licences, and the rentals charged.

"The present regulations would seem to have been invented for the purpose of forcing the clearing of each limit as rapidly as possible, in order that it may be abandoned at the earliest date.

"Practically all the timber land in the interior, outside of the Dominion Belt and lands given to railways, is held under special licence. Each special licence consists of not more than 640 acres and for this an annual rental of $1.15 is charged, in addition to the dues of 50 cents per thousand, when the timber is cut.

"In neither case is there any provision whatever for renewal after the expiration of the 16 or 21 years period, as the case may be.

"Now the natural result of the very high rental, the uncertainty of tenure, and the possibility of a sharp increase in the rental of the 21 year licences at any time the Government needed

money, is that the timber must be cut as quickly as possible. No operator can afford to hold it to give the thrifty young timber a chance to come to maturity, and, therefore, the timber marketable at the present time is cut off, the limit is thrown up, and sooner or later the fire gets the timber that has been left standing, which under conservative management, would have been more valuable to the holder and to the Government, than that which has been logged.

In the first place there should be a regulation that these licences will be renewable from year to year so long as merchantable timber remains thereon, coupled if necessary, with a regulation requiring holders of more than a limited number of licences to manufacture a certain proportion.

"Then there should be some kind of a graduated scale of rentals. I do not suggest an immediate reduction of the rental, because the Government of the Province must have money—they want it for fire ranging, if for nothing else—but suppose for the first five years, a rental of $125 per square mile were collected, for the next five years, if the holder had erected a mill, and was manufacturing a reasonable amount of lumber, and was holding these licences to give a permanence to his operations, let the rental be fixed at $50 per annum; for the third five years, reduce the rental to $25, and continue that rate thereafter, so long as timber remains and a sawmill is operated. By this scale each mile of timber would produce $1,000 for the Government in rentals during the first fifteen years, and a revenue of $25 per annum after that period.

"Lumbermen in the interior, who now contribute much the larger half of the special licence fees of the Province, under some such plan as here outlined, would add to their holdings, the Government would get a greater revenue for the next few years, more timber would be taken up, and once taken up, there would be the owners in addition to the fire rangers we hope to have appointed to assist in protecting it against fire; a greater permanence would be given to lumbering operations, and better than all else, from a forestry point of view, the millmen or loggers would be able to so plan and carry out their cutting as to conserve the forest resources of the country—young growing timber would become a valuable asset to the country instead of being neglected and allowed to be destroyed.

"This suggestion is recommended to the attention of this Convention, and if, after discussion, the principle of it is approved, as I hope it will be, no doubt the Government will strongly recommend it to the attention of the Provincial Government.

"Personally, I look for many good results to the forestry interests of this Province from this Convention. The discussions

which are taking place, and the publicity which will no doubt be given them by the press, will help along the cause. And if we can at last get the Government of the Province to awaken to the importance of our forest resources (except when collecting fees and taxes) we may all feel as though we had made two blades of grass, where only one grew before."

Mr. Jones then dealt at considerable length with the Fire question and submitted a draft resolution on the subject.

Mr. Aubrey White, Deputy Minister of Lands and Forests for Ontario, stated that:

"In the appointment of fire rangers in Ontario they had been careful to eliminate the chances of political profit. They wanted the men who understood the conditions best, and for this reason he proposed to leave the appointment of the fire wardens to the lumbermen, the Government to pay half and the lumbermen to pay their half. After starting in this manner with 10 fire wardens the number had grown to between 700 and 800 scattered throughout the province, and this year they would spend $90,000 in fire protection and the lumbermen would spend between $70,000 and $80,000. There was some danger of fires starting in Ontario, and when the railway was built to Parry Sound they made an arrangement with Mr. Booth to appoint fire wardens, and it worked so well that they did not have a single fire.

"They had now put upon their statute books a law that when a railway company was constructing a line of railway through a timbered country, they could appoint as many guardians as they pleased, the Government paying half and the railway company paying half, and the cost of extinction of fires was met in the same way.

"There was of course, a trouble between settlers and lumbermen as to the location of land, so that when a man applied for land they sent an inspector and on his report they gave or withheld the grant. He agreed with President Roosevelt that for the settler who wanted to make a home on the land he had the greatest respect, but for those who wished to denude it of its timber and then leave it they would make it as hard as possible, and this was a policy he would recommend to the people of British Columbia."

Mr. W. H. Rowley, Manager of the E. B. Eddy Coy., of Hull, P.Q., spoke strongly in favor of educating the children in schools to properly value a tree. The question of the preservation of the forest wealth for the people of Canada, was, he considered, a matter that this convention should take up, and in connection therewith moved the following resolution:—

"Since an Omnipotent Providence has placed within the confines of the Dominion of Canada, the most of the best green trees on earth, and has thus given to Canadians an heritage above ground, that is easier of access and is worth all the mines and minerals stored in the bowels of our earth, and all the fishes with which our lakes and seas are swarming, therefore

Be it Resolved, That the Federal Government be again urged to prohibit the exportation from Canada, of saw logs, blocks and pulp wood, in order that the full benefit of the conversion and manufacture of this raw material may accrue to the advantage of the Canadian Saw Millers and Pulp and Paper Makers, rather than that our saw logs, blocks, and pulp wood be longer allowed to be exported to the disadvantage of the Canadians, but to the advantage and great profit of our commercial competitors to the south of us."

After discussions by Hon. R. F. Green, Aubrey White, Mr. McKinnon, Duncan Ross, M.P., R. H. Alexander, H. M. Price and D. W. Higgins, the motion was put to a vote and declared lost.

Evening Session.

In the evening a banquet was held which was largely in the nature of a reception to His Excellency the Governor General, and was presided over by Mr. John Hendry.

The toast of "The Forest Interests" was responded to by Hon. Wm. Templeman, E. Stewart and Overton W. Price. Hon. Wm. Templeman said that it was a unique occasion since 21 years ago the spot on which they now were was covered with a dense forest growth. Here to-night were present captains of industry, people representative of the great commercial life of Canada. He referred to the time when Ontario was covered with virgin forests, most of which have now disappeared. Some would say that British Columbia was the greatest producer of lumber. This Province had perhaps the largest area of timber of any province, yet the time had come when the rapid depletion should be stopped, and the forests made a permanent source of revenue. He made reference to the great extent of forest wealth which might be converted into pulp. This one feature had impressed him and the great necessity of conserving the forests. This, however, was only a small instance. As a result of the recent convention of the Forestry Association at Ottawa, legislation was passed creating a forest reserve in the two new provinces of the Middle West. This was one great step toward the conserving of the timber resources. He expressed his strong sympathy with the objects of the association.

In a splendid and witty speech His Excellency replied to the toast of his health, dealing with matters of general interest. He spoke particularly of the questions of market and labour which are of pressing importance in British Columbia at the present time.

"The Allied Interests" were proposed by His Honour, Lieutenant Governor Dunsmuir, and responded to by Mr. Flummerfelt, Mr. F. W. Cockshutt, President of the Canadian Manufacturers' Association, Mr. W. K. George and Mr. R. P. McLennan, President of the Vancouver Board of Trade.

Mr. Campbell Sweeney proposed "The Press" which was responded to by Hon. F. L. Carter-Cotton and Mr. L. D. Taylor.

THURSDAY, 27TH SEPTEMBER.—MORNING SESSION.

The first paper, presented by Dr. Judson F. Clark, Forester for the Province of Ontario, was entitled, "Forest Revenues and Forest Conservation" and was an argument for a change of policy in disposing of timber. He said:

"Present lumbering methods are devastating the Canadian forest. Why is this? Lumbering is the business of removing the mature timber, and this should improve the forest. It has done so elsewhere for centuries. Not in Europe and Asia alone, but in many places in North America. Why does it not do so on the Canadian timber limits? There are, indeed, isolated examples of improvement by lumbering even here which show the possibilities, but the exceptions to the rule but emphasize the failure of the present policy as a whole.

"It is my belief that the fatal weakness of the present system of disposing of Provincial timber is to be found in the fact that the provisions of the agreements entered into by the provinces as sellers and the lumbermen as purchasers place a minimum on destructive lumbering. In other words, the terms of sale which have found general acceptance make it to be in the financial interest of the operators to despoil rather than to conserve the forests.

After discussing the methods in practice at present, Dr. Clark outlined the policy he would suggest as follows:—

"Preparatory. A first step in the preparation for a sale of timber should be to make an estimate of the quantities of the different kinds to be sold for publication with the advertisement of the sale. An estimate of the value would also be made, this latter for the use of the Forest Department in determining their reserve bid.

Advertisement. The advertisement in the case of large sales should be published at least a year in advance of the auction, that ample opportunity may be given for completing business arrangements looking to purchase, and for the exploration of the tract by prospective purchasers.

The advertisement should state the location and area of the tracts offered, the approximate stand of the different kinds of timber, and the time and place of auction. Intending purchasers should be invited to apply for information regarding the rules and regulations governing the cutting and removal of the timber, the manner of payment and other details.

Cutting Regulations. The cutting regulations should be prepared with special reference to the individual tracts offered for sale, and would be governed by local conditions.

In general they would include:

The designation of the timber to be cut, and, conversely, specifically prohibit the cutting of timber not offered for sale—for example, immature timber under a set diameter limit.

Provision for care in the felling and in the removal of the timber.

Provision for the prevention of waste by limiting the height of stump, by prescribing the use of the saw where practicable, and by providing for the utilisation of inferior materials.

Provision regarding the disposal of the debris—such as lopping tops, burning brush, etc.

The time limit for the final removal of all timber sold.

Specifications as to measurement of timber logged.

Adequate penalties for violation of cutting regulations, as for example payment at double the regular purchase price for any merchantable timber left in the woods by the loggers.

Time and manner of payment.

Provision for a bond to insure the faithful performance of the contract by the purchaser.

Method of Sale.—By public auction, bids being asked on the amount to be paid per thousand feet when the timber is cut.

Ground Rent.—To prevent speculative purchase by others than bona fide operators a fairly high ground rent per mile might with advantage be provided for. The payment on account of ground rent for any particular year might be made to apply on the stumpage dues account for the same year. This would throw the whole weight of the ground rent taxation on the purchaser who failed to operate, and would at the same time provide automatically for release from taxation, immediately that he actively undertook to carry out his obligations.

Unit of Area.—The square mile forms a desirable sale unit. This would give lumbermen of limited capital and jobbers an opportunity to do business on the public forest lands, and if the

number of miles which any one concern may purchase be unlimited no injustice will be done the largest operators."

"Forest Reserves" was the title of a paper by Roland D. Craig, Inspector of Dominion Forest Reserves, who said:

"For several years the Dominion Government has withheld portions of its timber land from settlement, but it was not until the passing of the Forest Reserves Act last Session, that they were definitely and permanently set aside for forest purposes. These Dominion forest and game reserves are situated in Manitoba, Saskatchewan, Alberta and in the Railway Belt in British Columbia, and cover in all about five and a half million acres.

The objects in setting aside these reserves are to protect and improve the forests for the purpose of maintaining a permanent supply of timber, to maintain conditions favorable to a continuous water supply, to protect the animals, fish and birds within the reserves, and to ameliorate the climate.

The lands so reserved are withdrawn from sale, settlement, occupancy or other trespass, which may interfere with the objects of the reserves.

It is not, however, the purpose to prevent the use of timber which is produced, but its exploitation shall be under the direction of the Superintendent of Forestry, and conducted in such a way that the perpetuation of the forest shall be assured.

The reservation of the land for forest purposes, does not in any way interfere with the development of mines within their boundaries, but on the contrary, the supply of timber being produced in the vicinity will greatly facilitate mining operations.

The value of maintaining forests at the headquarters of streams used for irrigation and water power is most important, and this is the chief object of those reserves which have already been set aside in British Columbia.

It is absolutely necessary, if the country in the interior of British Columbia and on the east slope of the Rocky Mountains, is to develop along agricultural lines, that a forest cover may be maintained on the watersheds to protect and regulate the streams which will bring wealth and prosperity to an otherwise unproductive waste. If the forests are removed it will cost millions of dollars to build dams and reservoirs to control the spring freshets and conserve the water for the use of the crops, and in the end they will not be so effective as a good forest cover.

Not least among the objects of these reserves is the preservation of game in the forests and the fish in the waters within the reserves. By maintaining the forests about the headwaters of the streams, the spawning beds of the salmon and other fish will be protected. It is lamentable to see the rapidity with which

our magnificent game-animals, such as the moose, elk, and caribou are being destroyed, and we hope to be able to afford them such protection in these forests and game reserves that they shall not have a similar fate to that of the buffalo."

Mr. R. S. Cook of Prince Albert, speaking as one charged with the care of the vast timber interests of Saskatchewan, had a word to say. In his province they had immense tracts of timber north of the Saskatchewan River, and when travelling over these he was struck by the enormous waste from fires. They cut about 50,000,000 feet at one mill in Prince Albert annually, but this amount was a trifle compared to that wasted by fire. He thought it would be a good thing if the services of the Northwest Mounted Police were enlisted in fighting fire, because the Indians stood in awe of a Mounted Policeman. In the northern part of Saskatchewan he had seen more timber destroyed by fire in a year than would supply the whole southern part of the province and Alberta with the lumber they needed.

Hon. F. J. Sweeney, Surveyor-General for the Province of New Brunswick, said that they provided for reforestration on Government reserves in his province by allowing the lumbermen to cut no trees less than ten inches in diameter three feet above the ground. They provided against fires by appointing fire rangers and assigning to them districts which they were supposed to visit at certain periods. In addition to this they also prohibited hunters from going into the woods during the close seasons which corresponded with the warm weather. They had also framed laws in connection with the public domain to prevent settlers or squatters going on land that was useful for timber but unfit for purposes of settlement. When a settler made application for land, they had it examined by an inspector, who reported upon it before it was allotted.

Mr. Lindmark (Revelstoke) called attention to the necessity of doing something for the prevention of fires. A great danger lay in the cuttings left on the ground. In his camp they had taken to gathering the cuttings together in the fall and after placing a guard round them had burnt them. This served two purposes. First, it lessened the danger of fire, and secondly, it cleared the ground for the growth of young plants. The convention should prove a stimulus to the adoption of better methods of forestry. As an instance of one improvement it had brought about, he mentioned that last year they had asked that all log-scalers should be made Deputy Fire Wardens. The Government had adopted the suggestion and he gave instances to show that it had been of great service in checking fires. He also hoped in time that they would have a School of Forestry in B.C., as they had in his native country, Sweden, where it had been of

inestimable service in training the young to appreciate and preserve their forest wealth.

Mr. White (Pembroke) said he questioned whether the suggestion that the debris should be burned would be of any value in the East. Burning in the fall would simply destroy the moss and lichen, which might check the fires and would still leave the trees to burn.

Mr. Overton Price said that

In the United States

fire protection was still in the experimental stage. They would be willing to give up everything else to be assured of absolute protection from fire. In the Eastern States they had tried the practice of gathering together the tops of trees and burning them, but it proved quite costly and on the Pacific Coast where the forests were large would be quite impracticable. He did not know that even in the Middle West and on the Atlantic Coast the burning of tops was a success, because they were still liable to fire, the only difference being that they would have a flash fire from burning the trees and there would be less heat than if the underwood had been left. It was a question to him whether the money would not be more wisely expended in appointing more firemen.

Mr. Craig: "How about forest sales in the United States?"

Mr. Price said timber lands were advertised and sold by tender for five years. To make sure that the young trees would be preserved and only the mature timber taken away they marked the trees that were allowed to be cut.

Hon. Mr. Sweeney: "That is only a sort of pruning of the forest."

Mr. Price: "No hardly that. I am afraid we allow too much of the timber to be taken off as it is.

Mr. White (Pembroke): "Old style lumbering, I suppose." (Laughter).

Mr. Knechtel, Forester of the State of New York, being called upon supported Dr. Clark's advice about the preservation of forests. He instanced the Black Forest in Germany. At first it was being destroyed by careless lumbering but for the past 200 years reforestration and lumbering had been carried on there together successfully. What the Germans had been doing could be done here.

Mr. Peter Lund (Cranbrook) agreed with Mr. Lindmark that the forest preservation methods adopted in Sweden could not be surpassed, and it would be well for the Association to obtain some of their literature. For a number of years he had

been engaged in railway construction, and consequently in forest destruction, but he had joined the Association about a year ago, and though trees to-day looked more beautiful to him than formerly, he felt the need of better local organization. They could have meetings here and there, and get literature and have discussions on the methods of forestry. Every man, woman and child in British Columbia should be taught the necessity of preserving the forests.

Mr. Overton Price, in answer to a query, explained the methods of giving publicity to forestry information in the United States. They had formerly issued large bulletins, but these were not read, and now instead they issued short circulars which were distributed among 20,000 lumbermen in the United States. In addition to this they had a press bureau which employed a number of newspaper men, who went and obtained information and then put it into palatable shape and they got as much as possible into newspapers and magazines.

Mr. H. B. Gilmour spoke of the necessity of lumbermen starting on their limits at the right place, Whenever a fire started on the bottom of a mountain it always climbed to the top, and if lumbermen would always locate their camps in the highest places there would be much less danger from fire than now.

Mr. W. H. Higgins said he had been much interested in the proceedings and he hoped that the Government would rise to the occasion and help them to preserve what was given them. Regarding the burning of tops and cutting, he found that the growth of young timber for about three years made a hotter fire than what had been cleared away. In regard to making the camps in the highest place as suggested by Mr. Gilmour, it sounded very well in theory, but in practice he would not like to try it. He had himself been a sufferer from fire and knew what it was, and in this respect he related his own experience. He trusted that the deliberations of the convention would result in profit to them all,

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

WHEREAS the destruction of large areas of the Forest wealth of Canada by fire is still of yearly recurrence be it

RESOLVED, That it is incumbent on the Governments of the Provinces of the Dominion to legislate at the earliest opportunity still more stringently against the use of fire in timbered portions of the various Provinces during the summer months and further and of equal importance, to provide means for efficiently carrying out the provisions of the Statutes that may be passed.

RESOLVED, That the attention of the proper authorities be directed to the necessity of a strict and rigorous enforcement of the law relating to the prevention and control of prairie fires, as such fires, in addition to being particularly destructive in relation to the production of forage, have proved exceedingly disastrous in their effect on the growing timber as well as preventing the extension of those timber areas which, though small, are valuable both for shelter, beauty and future forest supply.

RESOLVED, That this meeting of the Canadian Forestry Association desires to re-affirm the resolution passed at the Canadian Forestry Convention held at Ottawa in January last regarding the reservation of the forests required for the protection of streams furnishing a supply of water for irrigation and for the prevention of destruction by floods, and specially desires that speedy action should be taken in the direction indicated by the resolution referred to and that this matter be brought to the attention of the proper authorities at as early a date as possible.

RESOLVED, That in order that our Forest resources may be so handled as to become as nearly as possible a permanent source of timber supply it is important that regulations governing the leases should provide for a tenure under such conditions as will encourage the adoption of the best Forestry methods in all lumbering operations.

RESOLVED, That this meeting of the Canadian Forestry Association desires to bring to the attention of the proper authorities the desirability of taking steps to promote Forestry through the schools and educational institutions.

RESOLVED, That the Association strongly endorse and recommend to the Provincial Government the request of the British Columbia delegates for action on the following points:—

That a thorough system of fire ranging be established. That under the supervision of one or more chief wardens, the timbered areas of the Province be divided into districts, in each of which two or more salaried rangers be employed during the six summer months, with authority to make arrests for violation of the laws relating to fires, to take immediate action and enforce help to put out such fires as may occur, also to issue or refuse permits to set out fires during the dry season, and to supervise such fires where necessary, on account of the possibility of danger.

That the following suggestions made by the Associated Boards of Trade in Convention at Cranbrook on the 1st of February, be endorsed and again recommended to the authorities.

1st. That the Provincial Government secure for the place of Chief Fire Warden, a man of zeal and enthusiasm, who being

retained in the service for a term of years, would evolve a system of protection suited to the special circumstances of the country.

2nd. That the provision be made, whereby land owners and holders of timber leases, and licences, pay a part of the expenses incurred in the prevention and suppression of fires.

3rd. That the interests so contributing, be given a voice in the selection of local wardens.

4th. That arrangements be made with the railways whereby trains with tank cars and proper outfit, and gangs of men, shall at a short notice be available for fighting fires, along or near railway lines.

5th. That men called out by fire wardens be paid as soon as discharged.

6th. That the origin of all bush fires be strictly investigated, and offenders rigorously prosecuted.

That the Bush Fires Act be amended so as to make it an offence to set out fires for any except domestic purposes, from the 1st of April to the 30th September, without a permit from the Fire Ranger, which permit, if issued, shall require the permittee to have on hand the necessary help and appliances to control the fire.

Also to make it an offence under said act for anyone to permit a fire to leave his property, or start a fire at any time and permit it to run at large.

That the system adopted in Ontario requiring fire patrol along railways during summer months be recommended for the Province of British Columbia.

That the sections of the Bush Fires Act applying to locomotives be made applicable also to engines used in logging operations.

That section six of the Bush Fires Act be amended to make it applicable all the year round.

RESOLVED, That an appeal be made to the Federal and Provincial Governments and the larger interests which will be beneficially affected by the extension of the Forestry interests for liberal financial assistance towards carrying out to the fullest possible extent the aims and objects of this Association.

WHEREAS the clearing of small areas by settlers in the midst of timbered sections of the different Provinces, fire being the means usually adopted, is a fruitful cause of the yearly destruction of great quantities of timber be it

RESOLVED, That in the opinion of this Convention no homestead or pre-emption should be granted on land more valuable for timber than for agricultural purposes, and that this

No. 1—The Chestnut as a Sprouter.

Convention urge on the proper authorities to make the necessary classification of the lands at the earliest possible date.

Votes of thanks to His Excellency the Governor-General, to His Honour the Lieutenant Governor and to the various Associations and persons who had assisted in the work of the Convention, especially to the press for their full and interesting reports of the proceedings.

The local committee in charge deserve all praise for the success of the Convention, and it was a matter of regret that the Chairman, Mr. C. M. Beecher, was unable, through illness, to attend. The Convention placed on record a resolution of sympathy with Mr. Beecher. Great credit is due to the Secretary, Mr. R. H. Alexander, upon whom fell the burden of carrying out the details of organization, for the completeness with which the arrangements were made.

It is with regret that the Forestry Journal learns that Ontario has lost the services of Dr. Judson F. Clark, who has resigned from the position of Forester to accept the management of a large timber company in British Columbia. In Dr. Clark, Ontario had not only a scientist of more than usual ability, but a practical forester with a wide experience. In his many addresses and writings Dr. Clark has shown himself a master of forest economics, and though the principles which he has advocated in forest management have been criticized as being too highly ideal for the present political status of Canada, we are pleased to see that they are being adopted in Ontario in the recent timber sales.

It was understood that Dr. Clark was to have charge of the Forestry College to be established at Toronto University and his removal to British Columbia will be a serious loss to the development of that institution. We are glad, however, that he is bettering himself so decidedly financially, and it is not to be wondered at that the Government could not retain his services.

Though not in the public service we feel sure that the cause of forestry will still continue to receive Dr. Clark's attention, and we shall be able in a few years to see a practical demonstration of the principles of forestry in British Columbia.

WOODLOT TAX EXEMPTION.

Under the terms of a bill introduced at the 1906 session of the Ontario Provincial Legislature by Mr. J. P. Downey, M.P.P., and subsequently passed, complete exemption of woodlands from taxation is now possible under certain conditions. This exemption depends, in the first instance, on the passing by any township council, of a By-law to allow this exemption, which may be either total or partial. Not more than twenty-five acres owned by any one man may be exempted.

What is Woodland?

The term "woodland," used in the act, is defined in the act. Such woodland must bear the following numbers of trees of the following diameters:

100 trees over 8 inches in diameter, or
200 " " 5 " " " "
300 " " 2 " " " "
400 trees of all sides.

No land, however, is to be considered woodland if stock is allowed to graze in it.

Varieties of trees allowed.

The varieties of trees which are to be allowed are as follows: Coniferous (*evergreen*) trees: White pine, Norway pine, hemlock, white spruce, Norway spruce, tamarack, cedar.

Hardwood (or broadleaved) trees; oak, ash, elm, hickory, basswood, tulip (or whitewood), black cherry, walnut, butternut, chestnut, hard and soft maples, sycamore, beech, black locust and catalpa.

How Exemption is to be Secured.

After the passage of such a by-law as that described above, the owner of any woodlot who wishes to secure exemption from taxation on it, is to make application to the township clerk before February 1st. The township assessor is then to examine the woodlot, and, if he finds that it fulfils the conditions mentioned in the act, the exemption may be granted. Such exemption ceases if grazing is allowed in the woodlot, or if the lot is cut over.

ADDRESS OF THE PRESIDENT, MR. E. STEWART, AT VANCOUVER FORESTRY CONVENTION.

I shall not on this occasion weary you with any lengthened remarks on the subject of Forestry in general, interesting and inviting as that subject is. Neither shall I quote any figures to show the extent of the existing woodlands of Canada as I have done on other occasions, suffice to say that this country does possess a heritage in her virgin timber, the extent and value of which very few countries of the globe can equal, and I need not say that British Columbia, in this respect, is unrivalled by any Province of the Dominion.

Recognizing this fact, and with the belief that our people did not appreciate the value of, and were negligent in conserving its forests, this Association was organized a few years ago.

The aims of its founders were to enlist the active co-operation of the people in every Province in the subject, and not only of every Province, but of those living in the un-organized districts of the wilderness regions of the far North. They also saw the necessity of the cultivation of at least a limited number of trees on the prairie lands of the Northwest, if those regions were ever to contain the real homes of a contented people, and not remain merely grain ranches.

The result has shown that the most enlightened members of the community in every part of Canada recognized that the movement was worthy of their support and the attendance here to-day shows that this Province of British Columbia is not behind any of her sister Provinces of the east in her appreciation of the importance of the subject.

Gentlemen, the fact is, the people of Canada have, in the years gone by, utterly failed to appreciate the value of their possessions. Their horizon has been too circumscribed. In too many instances the undeveloped wealth, the natural resources, not only in timber but in minerals, in fisheries, as well as in agricultural lands, have scarcely been imagined.

We should be very slow in pronouncing any district as worthless. Who, only a few years ago would have imagined the Yukon to contain the mineral riches which the succeeding years have revealed there? Within this generation the United States purchased the whole of Alaska for a less sum than has been realized in one season from a single mining camp in that territory, and I venture to predict that future years will afford similar results from regions at present known only to natives of this country.

But I am supposed to confine my remarks in some degree at least to the subject in hand, and permit me to say that utility of forest growth is too frequently regarded only for the monetary value of the product it produces, in other words the timber product. Valuable as this is, it is by no means the only, perhaps not the main or chief benefit it confers. Imagine what would be the condition of this Province if by some dreadful catastrophe the whole forest covering of those hills and valleys were swept out of existence.

The spring floods would then descend the mountain sides in such force as to carry away the gravel from above and deposit it over the now fertile valley land. Such floods as you have occasionally experienced on the Fraser and other streams, would become of annual occurrence. This prodigal waste of water would be followed shortly after by summer droughts rendering agriculture unprofitable if not impossible.

The miner would soon find it unprofitable to continue his operations, owing to the want of timber and water, both of which are necessary for his work. This is no fancy picture of what would be the result. It can be seen to-day in the lower Alps in eastern France as well as in certain parts of every country bordering on the Mediterranean Sea, and in other parts of the world.

Every one who has come over the mountains on the Canadian Pacific Railway, must have been struck with the great destruction that forest fires have caused along the route. The greater part of this was done during the construction of the road, but even since then, the annual loss during the dry summer months, continued until a few years ago, when a system of patrol was established along the railway belt by the Dominion Government. The result of having such a system speaks for itself, suffice to say that during the past five years since the present system was established, very little valuable timber has been destroyed. If we compare the loss before this work was begun with what little has taken place since, or with what has occurred on any similar area of unguarded territory, I believe it will be found that the cost involved has repaid itself a hundred fold, and I hope that the public of this Province will stand by the Provincial Government in any efforts it may make in the same direction. I am glad to know that a beginning has already been made by a small appropriation by the Provincial Legislature for such a service, but it should be increased at least ten fold to be at all effective over such a wide district. But the Government can only act so far as the public will permit as represented by the members of the Legislature.

The people of this Province should not only commend, but demand immediate action to lessen, as far as possible, the annual

loss from these destructive fires. It took nature hundreds of years to create those valuable forests. Will you allow them to be destroyed in a day and deprive posterity for a century to come of their inestimable benefits?

Owing to those immense ice fields of the higher altitudes, this Province is furnished with an abundance of water at the source of supply. The forest covering on the mountain sides aids in forming a natural reservoir by which a continuous flow is maintained. Allow it to be destroyed and you will do your part in creating a mountain desert.

Mention has been made of reforestation. Fortunately, in this Province nature, unaided, is doing that for you. A visit to almost any of those districts which have been burnt over a few years ago, will show you a splendid reproduction of the original varieties rapidly growing up to take the place of the original forest. You will see in most cases a splendid growth of young cedar and fir coming on. Nature, with the munificence which characterizes her operations everywhere in this favored land, seems in this instance, to be putting forth extra efforts to reclaim lost ground and all she asks is that you will not prejudicially interfere with her operations.

The costly work of artificial tree planting need not be attempted. Keep the fire out of this young timber and there is no reason why future generations may not be as abundantly supplied as you are to-day. It is neither good forestry nor good business to leave unutilized the product of the forest. As President Roosevelt pertinently says, the product of the forest is for use. And as this Province has a very large percentage of land unsuited for agriculture, but admirably adapted for the growth of timber, it follows that forestry here is a matter of great importance.

From what I have been able to learn of British Columbia, and I have had an opportunity of seeing a good deal of it, I am more than ever impressed with the vastness of its natural resources. Its fisheries, its timber and its minerals, almost overwhelm the imagination. Its future place as a producer of the economic minerals, will undoubtedly be foremost, but here again the timber is a necessity.

It was stated by an authority at the American Forest Congress that the mines of the United States consumed more timber than the railways, enormous as is the consumption of the latter. This being the case, it is apparent that those who are most interested in the success of the mines should not be indifferent regarding the forest.

The time was when the lumberman of the country looked with suspicion on the forester. Probably this was quite as

much the fault of the forester as that of the lumberman, and arose from a misunderstanding, the lumberman having the impression that the forester, if he had his way, would prejudicially interfere with his operations, and the forester blaming the lumberman for destroying the forests.

Now it is scarcely necessary to say that no intelligent forester would be so unwise as to prevent the utilization of full grown timber. His mission is rather to use his influence in such a way that a permanent production may be constantly maintained. But nothing serves so well to unite people as a common enemy, and that was not wanting in this case. The ubiquitous forest fire, to which I have already referred, and which I believe has destroyed in Canada, ten times as much timber as the lumberman has ever cut, furnished the rallying point. So alarming was this destruction in every Province, that every citizen, worthy of the name, became interested, and the authorities were urged to adopt a protective service. Never was a more reasonable request made. The public, in most cases, are the owners of the timber, it being principally on unsettled lands still held by the Crown, and even where timber berths have been sold to individuals, the Government still receives a royalty on the cut. It was pointed out that no city or town would think of doing without a fire service for the protection of buildings, which if burnt, could be rebuilt within a year or so, whereas, if a forest is destroyed it takes a century to replace it. In this movement for protection the lumberman became a forester. Again with the permanent tenure of timber berths, the intelligent lumberman is not satisfied to ignore the growth of young timber that is coming on to take the place of what he has removed, and the day has now arrived when I believe very many of our lumbermen are beginning to so work their limits that the ground, which has for ages been producing timber, one crop succeeding another, may continue to afford him a continuous supply.

We should not forget that the most reliable statistics show that the world's supply of timber is fast diminishing, while the demand is enormously increasing. Time will not permit me to quote the opinions of many of the best authorities in the world, backed by statistics on this point. I will only, however, trespass on your time to quote from an article which appears in the last July number of the "Nineteenth Century," written by Dr. John Nisbet, (late of the India Forest Service), on timber planting on waste lands in the British Isles, in which, after referring to the fact that Great Britain had heretofore been able to supply her timber through the enormous shipping facilities at her command, goes on to say that "the whole economic position has been entirely changed within the last thirty-five years, and the future outlook has, of course, thereby become profoundly affected.

Thirty-five years ago the population of the United States was only about forty-one millions and now it is over eighty millions, while that of Germany was forty millions and is now sixty-one millions. In both of these cases, the United States and Germany had thirty-five years ago, more than sufficient timber of home growth to supply all their internal requirements, but now they have become, owing to their increase of population and industries, far from self supporting, and are more or less dependent on the supplies of other countries.

"Then, the American resources seemed ample; now they have become so diminished as to have given rise to great and well founded anxiety for the future. This shortage in home grown wood must be supplied by imports; and as the great bulk of the timber required by ourselves and by these, our two great competitors is the light wood of coniferous trees, of which the chief stores are now to be found in Canada, Russia and Scandinavia, the amount we shall have to pay for this class of timber, (which constitutes about 90% of our wood imports), must be, to a considerable extent, determined by the requirements of the United States and Germany and by the price to which they will raise this raw material at the sea ports in the countries having surplus timber available for export."

He goes on to say, "that unless Great Britain can arrange some sort of preferential treatment with Canada for her timber exports, there is every probability that the annual sum she will have to pay for her national timber bill will be very much greater than at present, and how large this sum already is, seems not to be generally realized."

It is an extraordinary thing that notwithstanding the increased use of stone, cement, brick and iron for building purposes, the per capita use of timber has gone on increasing annually within recent years. In this connection the same writer says: "In 1882 the population of the British Isles was thirty-five and a half millions, and the timber exports were 18,300,000L; in 1903 the population was forty-two and a quarter millions, and they imported wood and timber to the value of 29,300,000L, thus showing a rise of over 50% in the total value of the imports as compared with an increase of only 19% in the total population."

A Committee on Forestry, appointed by the Home Government in its report in 1902, says; "The world is rapidly approaching a shortage, if not actual dearth, in its supply of coniferous timber, which constitutes between 80 and 90% of the total British imports."

With the nations of Europe looking to us for a future supply; with the ever increasing demand from South America and the Orient and perhaps more important than all, the increase in

home consumption, especially with the rapid settlement of our plains region, there can be no question that high as timber is to-day, its value in the future will certainly increase.

The intelligent lumberman is per force a forester, and I am glad to say that ever since the Canadian Forestry Association was organized the lumbermen have been among its leading spirits and the invitation of the Association by the Western Lumber and Shingle Manufacturers' here, is an evidence that they appreciate the work that the Association is endeavoring to do.

I trust that good results will follow the deliberations of this Assembly.

I know it is quite possible to have interesting discussions, and yet fail of accomplishing what should be done, and I would suggest that you appoint a Committee on Resolutions, so that a united expression of the meeting may be obtained on some very important matters, and as this meeting is in British Columbia, I think that the members of the Association will agree that it will be both profitable and fitting that Forestry matters, as they relate to this Province, should be given first place, and I would further suggest that certain amendments to your Bush Fires Act should be considered. One of the most important is to prohibit the setting out of fires in clearing land within any proclaimed fire district during certain months of the year, unless the party setting out the fire has obtained a permit from the Fire Warden of the District in question.

Another is the question of a patrol service on Provincial timber lands, to which I have already alluded.

We frequently hear it said that certain fires did not burn any timber large enough for commercial purposes, only small stuff, is the expression, but let me say that the farmer might as well consider his unripe crop valueless, as for the nation to place no value on the splendid young growth of timber that you will see, if you have an opportunity of visiting any of the surrounding country that has been swept by fire some years ago. It is only a difference in point of time, and a score of years in the life of a nation, is less than one in that of an individual.

Gentlemen, we should remember that this is an inheritance that nature is bestowing on succeeding generations, and the Government of the Country should recognize that they are Trustees of an Estate, and that their duties are not only to those whom they at present represent, but to future generations as well.

The favorite maxim of Adam Smith, that Governments exist for the protection of life and property, has to be read in its broadest and most comprehensive sense in a new country with growing, as well as undeveloped, resources.

No. 2—The Chestnut as a Sprouter.

TIMBER CONDITIONS OF BRITISH COLUMBIA.

WITH RELATION TO EXTENT, REVENUE AND LEGISLATION.

By Hon. R. F. Green, Chief Commissioner of Land and Works.

It is very gratifying for me to have the honour and pleasure of meeting such a representative gathering of patriotic Canadians as are assembled here to-day in the commercial Capital of British Columbia, for I look upon the work undertaken by the Canadian Forestry Association as patriotism of the highest quality. Your work, gentlemen, as it presents itself to my mind, is essentially a labour of love, in which self interest has no place, your sole aim being the protection and perpetuation of the forests of Canada for the use and benefit of future generations. Prior to the foundation of your Association, a few individuals, scattered throughout our broad Dominion, devoted their time and energy to the subject of forestry, but it was only after many disheartening failures that these enthusiasts succeeded in arousing public interest, and were at length rewarded by witnessing the crystalization of their ideas in the birth of the Canadian Forestry Association. It is unnecessary for me to trace the progress of the Association or to enlarge upon the good work which it has accomplished, for the results proclaim themselves from the pages of the statutes of every Province from the Atlantic to the Pacific. The earnestness, patience, and pertinacity shewn by the Association throughout its campaign for reform in the laws relating to forestry, and the methods of lumbering, cannot be too highly commended. The task undertaken is a gigantic one—the awakening of a whole people to the realization of a danger which, to the thoughtless majority, seems so remote as to be imaginary—and like all great movements for the betterment of humanity, complete success can only be achieved by such ceaseless and untiring effort as will win the weight of public opinion, and the sympathy and co-operation of the whole population of Canada, to the objects of the Association.

I have alluded to those enthusiasts on the subject of forestry, who made it a study long before forestry became a live issue in the public mind of Canada, and my thoughts are drawn to a central figure in the agitation which resulted in the formation of this Association and the subsequent good work accomplished—

Sir Henri Joly de Lotbiniere—that grand old man who may easily be granted the father of Canadian Forestry—a gentleman whom we are all proud to honour with our love and esteem. His work in the cause of forestry is of such a nature that it stands as an example to every person who professes an interest in the subject. Not content with spreading the propaganda by voice and pen, Sir Henri, with his own hands, made plantations of forest trees in Quebec and British Columbia and watched and tended their growth from the seed, thus securing practical information of great value, which he takes the greatest pleasure in sharing with all those who seek to profit from the results of his experience. Sir Henri will never need a monument if his dream of Canadian Forestry be half fulfilled, for what could be more noble tributes to his memory and his life work than the afforested prairies of Canada and the reforested timber lands of the older provinces—actualities which are made possible through the efforts of the Association which he founded. British Columbia is so very much a "wooded country"—so lavishly endowed with timber—that its people are hard to move to a sense of the importance of forest preservation—indeed the best years of the lives of many of the old timers were spent in destroying the big trees and thick underbrush which covered the soil now given to the production of bread, beef, and fruit, and it was a hard task for any man to convince those pioneers, or their descendants, that a day would ever dawn when the forests of British Columbia might be depleted—as well attempt one hundred years ago to arouse enthusiasm in forest preservation in the breasts of the men who were chopping out homes in the woods of Upper and Lower Canada, or the pioneers of Nova Scotia and New Brunswick. Sir Henri, however, after much effort, enlisted the interest of a number of gentlemen who formed the British Columbia branch of the Canadian Forestry Association, and who worked faithfully under his leadership to advance the objects of the Association.

The progress of the movement inaugurated by Sir Henri has been naturally slow, for one of the greatest stumbling blocks to the settlement of our public lands is the problem of clearing them of timber, cheaply and effectively. The cost of clearing land deters many a settler from staking a pre-emption, for labour is high and but few individuals are willing to undertake the work single handed. Speaking in round numbers the land area of British Columbia is 250,000,000 square acres, of which about 182,000,000 are forest and woodland, a large portion of which is classed as timber land. So dense are our forests and so big our trees that 20,000 to 50,000 feet, board measure, to the acre is no uncommon yield, but reducing an average of these figures to a reasonable amount we have in store a stupendous total of available timber.

Now, according to statistics, the lumber cut from 1888 to 1904, inclusive (17 years), aggregated 2,569,756,262 feet—a mere nothing compared with the grand total—and taking the average yearly cut for the 17 years, we find if that average were maintained for the next 200 years, our forests would still be far from exhausted. This is a hopeful outlook for the people of British Columbia, and the new provinces lying east of the Rocky Mountains, whose inhabitants must look to us for their supplies of lumber, but even with what seems at first blush an embarrassment of riches, we must not assume that this forestry treasure is inexhaustible. Prudently managed it will last to the end of time, but if wasteful lumbering methods (so general in the past) are persisted in, and fires allowed to run unchecked, our magnificent forest heritage might be dissipated in a generation or two.

In the Colonial period of British Columbia's history the question of forest preservation was given little, if any, consideration. What settlements existed were confined to the sea coast and the banks of the Fraser River. The great hinterland was unknown—a pathless wilderness—the home of a few scattered Indian tribes, and dotted here and there with the trading posts of the Hudson Bay Company. The policy of the Government of those days was to clear the land in and about the settlement at any cost, and the methods used were decidedly not in the line of forest preservation. The gold seekers came next, and in their eager quest for treasure, they naturally regarded the forest as a barrier to success and unhesitatingly destroyed it in order to clear the way for their mining operations.

It was not until 1874 that the Government of British Columbia took steps to preserve the forests. In that year what is known as the "Bush Fire Act" was passed. It provided that any person convicted of igniting fires in the woods during the months of June, July, August or September, and failing to thoroughly extinguish the same, should, in the case of damage resulting, be liable to a fine of $100.00, or three months' imprisonment. The same punishment was provided for persons allowing fire to spread from their own property to that of their neighbours, or to adjacent public lands. This Act was inoperative, however, except in districts of which two-thirds of the residents petitioned the Lieutenant-Governor-in-Council for its enforcement. In 1887 the "Bush Fire Act" was made general throughout the Province, and in 1896 the Lieutenant-Governor-in-Council was given power to define any portion of the Province as a fire district, and it was made unlawful to set out or start fires between the first of May and the first of October, except for the purpose of clearing land, cooking, obtaining warmth, or for industrial purposes. Provisions were made in this Act, and subsequent amendments passed providing for safeguards against the spread

of fires, and the penalties were increased to a maximum fine of $200.00, and not less than $50.00 in every case of conviction—half the fine going to the prosecutor. Convictions under the Act do not bar individuals whose property has been injured, or destroyed, from suing for damages. Railway companies are made liable for damage done through the medium of their locomotives, and it is laid down that all engines shall be equipped with approved appliances to prevent the escape of sparks and cinders. Neglect to provide such appliances constitutes an offence punishable by a fine of $200.00 in each case, as well as liability arising out of a civil action. Under the Act of 1897, every Government Agent, Gold Commissioner, Timber Inspector, Forest Ranger, Mining Recorder, Provincial Police Officer, or Constable, is constituted a fire guardian, and each of them is enjoined to prosecute every case which may come to his knowledge. Every pre-emptor of Crown lands is furnished with a copy of the Act at the time of his application. Enforcement of the law is difficult in a territory so vast as British Columbia, and in a majority of cases evidence is difficult or impossible to obtain. The miscreant who deliberately sets fire to the woods is usually careful to hide his guilt, and the hunter or prospector who leaves his camp fire extinguished, or thoughtlessly throws a lighted match, or cigarette stump, or "heel" of his pipe into the underbrush, will in every case proclaim his innocence when confronted with the serious results of his carelessness. Cases are rare in which positive evidence can be secured, and magistrates are loath to convict on circumstantial evidence, where the accused is a poor man to whom the infliction of a heavy fine would prove a great hardship. Many forest fires are also caused by lightning.

The rigid enforcement of the "Bush Fires Act" is impossible without the earnest co-operation of the people themselves. The vigilance of an army of Forest Rangers would prove inadequate to prevent the occurrence of fires without the sympathy and assistance of the community. Eternal vigilance on the part of every man, woman and child in British Columbia is necessary to prevent our woods from suffering the scourge of fire, and in order to create a general interest in the subject of forest preservation the people must be educated to a sense of its importance to the future of the country. The Canadian Forestry Association has undertaken this work of education and every assistance should be extended to enable it to make its work thorough from one end of Canada to the other. The school children should be enlisted in the army of foresters and taught that the wanton destruction of a tree is a crime against society. I would like to see a copy of the Association Journal placed in every school-house and in every home in Canada, in order to awaken universal interest in the subjects with which it deals. It is to the lumberman, however, that the

Association must look for immediate results. Their interests should prompt them to bestow the utmost care and attention to the prevention of fires, and, if they are in the business for more than temporary profits, they should be possessed of sufficient public spirit to adopt the least destructive methods of logging and so dispose of tree-tops, and other debris, as to minimize the danger of fire and to encourage the second growth by clearing the ground as much as possible. The Government of British Columbia has done and is doing all in its power to prevent forest fires, and during the present season the fighting of fire was carried out in many parts of the Province with gratifying results. The Dominion Government officials in the Railway Belt have also worked hard to the same end, and through the united efforts of the federal and provincial fire fighters much valuable timber has been saved from destruction. The campaign inaugurated by the present Provincial Government, will be vigorously prosecuted in the future to the fullest extent which our funds will permit, and we look confidently to the people of the Province to assist us in every way.

Prior to 1871, when the Crown Colony of British Columbia became a Province of the Dominion, the lumber industry was comparatively insignificant. All the lumber cut from the foundation of the Colony in 1856 was estimated at 250,000,000 feet. Indeed, strange as it may appear, a great deal of the lumber used in those days was imported, and there is one house in Victoria to-day, within a hundred yards of the Parliament Buildings, the lumber in which was brought from San Francisco. The first legislation regulating the cutting of timber was embodied in the Crown Lands Act, 1870, which provided for the granting of leases by the Governor-in-Council to an unlimited acreage for the purpose of cutting the timber, subject to such rent as might be determined by the Governor-in-Council. The ground covered by these leases was open to pre-emption but the pre-emptor was debarred from cutting timber other than for his own use. This Act was re-enacted by the Provincial Legislature in 1875, but it does not seem, however, that advantage was taken of it to any extent, as it was not until 1879–80 that any revenue was derived from timber rentals. By an amendment to the Act passed in 1888, the tenure of timber leases was fixed at 30 years and a rental of ten cents per acre was charged and a royalty of fifty cents per thousand feet on all timber cut imposed. The lessees were required to build a mill with a capacity of 1,000 feet per day for each four hundred acres covered by the lease. This Act also provided for a penalty of $500.00 or thirty days' imprisonment for cutting timber from Crown lands without authority. Since 1892 no leases have been granted of timber limits without the limits being offered to public competition and the lease was

granted to the person offering the highest cash bonus. The rentals were increased in 1895 to fifteen cents per acre, and again in 1903 to twenty-five cents per acre, subject, however, to a reduction to fifteen cents per acre upon the lessee proving that he had a mill appurtenant to his lease, capable of cutting at least 1,000 feet per day for each 400 acres included in his lease in actual operation, and cutting that amount at least six months in the year. By the Act of 1888, the Chief Commissioner of Lands and Works was empowered to grant special licenses, valid for one year, to cut timber from Crown lands. The area covered by the license was limited to 1,000 acres, and the fee paid for the license was $50.00. Subsequently the area was reduced to 640 acres, to be taken up in one block with the boundary lines running to the cardinal points, and the fees have been increased to $140.00 per annum for licenses covering lands west of the Cascades, and $115.00 per annum for licenses east of this range. The Act of 1888 also authorized the issuing of Hand Loggers' Licenses—all timber cut under license being subject to the royalty of fifty cents per thousand. The Hand Loggers' license was a personal one, and only gave authority to the person named therein to cut timber as a hand logger. The fee was $10.00 per annum and the logger had the right to cut timber from any Crown lands that were not held as timber limits under lease or license.

When the present Government assumed office, there were thus three methods by which a person could obtain the right to cut timber from Crown lands, namely, under lease, under special license, and under hand loggers' license. It was deemed advisable to simplify this state of affairs, and in 1905 the provisions of the Land Act authorizing the granting of timber leases were repealed, so that now the right to cut and carry away timber can only be granted by way of a license. The lumbermen, however, complained that they were much handicapped in their business and the industry retarded by reason that special licenses were not transferable, and only renewable at the discretion of the Chief Commissioner and not as a matter of right; that such a license gave no stability of title and that capital could not be secured under such conditions. The Government considered their complaints to be well founded, and by the Act of 1905 it was provided that licenses then existing should be transferable, and the holders thereof could elect to have their licenses made renewable for sixteen successive years at the same fees per annum as were then paid therefor, namely, $140.00 or $115.00, as the licenses covered lands west or east of the Cascade Mountains. The royalty payable on timber cut under such licenses was increased to 60 cents per thousand feet. The same Act provided that all special timber licenses thereafter issued should be transferable and renewable for 21 successive years. This legislation

has completely removed all complaints about the lack of stability of title under the license system. Millmen can now enter into large contracts and carry on their business with greater security knowing that they can have their licenses renewed from year to year. Capital can now be secured and the result of this legislation has altogether proved most beneficial both to the lumberman and the lumber industry, and therefore to the people as a whole.

One of the most important features of recent legislation in British Columbia respecting the timber industry is that which was passed with a view of having British Columbia timber manufactured by British Columbia people in British Columbia. The shipping of British Columbia logs to the other side of the boundary line had reached formidable proportions, and our lumbermen were forced to look idly on, whilst their rivals from Puget Sound took their raw material from British Columbia, converted it into all kinds of lumber and supplied the settlers of Alberta, Saskatchewan and Manitoba with British Columbia lumber at prices with which our millmen could not compete. This state of affairs worked a double wrong to the Province, for it not only deprived our lumbermen of all chance of profit on their investments, and our workingmen from earning a livelihood, but threatened the depletion of the most valuable timber lands along the coast for the benefit of American millmen. The first step taken to put an end to this state of affairs was in 1901, when the Legislature enacted that all timber cut from leaseholds must be manufactured in the Province, otherwise the lease would be cancelled. This enactment has been kept on the Statute book, and in addition in 1903, a tax was imposed on all timber cut and not subject to the payment of royalty, that is on all timber cut from lands for which Crown Grants were issued prior to April, 1887, varying, according to the size and grade of the timber from $1.00 to $4.00 per thousand feet, board measurement, on spars and saw logs; from .01 to 2½ cents per lineal foot on piles and poles under 11 inches in diameter; and from $2.00 to $4.00 per thousand feet, board measurement, on piles and poles over 12 inches in diameter.

Then again at the last Session of the Legislature an Act, known as the "Timber Manufacture Act," was passed whereby all timber cut from ungranted lands of the Crown, or from lands thereafter granted lying west of the Cascades, must be manufactured or used in the Province and authorizing any such timber, or any steamboat towing the same, to be seized and detained when it shall be made to appear that it is not the intention that such timber is to be used or manufactured here. The action taken by the Legislature to compel timber cut from our Crown lands to be manufactured at home has been hailed with satisfaction, and the effect has been most beneficial. It may in a way

be said to be the turning point in the history of our lumber industry. Previously our lumber companies, handicapped by the competition of Washington millmen manufacturing our logs and sending back the finished product to Canada free of duty, were barely able to make ends meet, and in some instances the local mills were actually losing money. This has now all been changed. Capital, which had held back—hesitating to embark in a business in which the chance for success was problematical—hesitates no longer. New mills equipped with the most modern machinery have been and are being established. A number of American millmen, realizing that they can no longer depend on British Columbia for a supply of raw material, have come to the Province and started manufacturing here on an extensive scale, and many others are following them. The great influx of settlement on the prairies on the other side of the mountains has given a great impetus to the industry which has rapidly recovered lost ground, and which to-day, viewed from every standpoint, stands upon a most satisfactory basis.

A perusal of the output during the past few years will shew this. You will find a statement of this output on page 15 of Bulletin No. 21, copies of which are before you, and it will not be necessary for me to weary you with many figures. You will note that in 1888 only 25 mills were in operation. To-day there are 150 mills all working overtime and unable to fill the orders that are pouring in. In 1888 the output was 31,868,884 feet. In 1903 it was 317,551,151 feet. In 1904 it increased to 325,271,568 feet, and in 1905 to 450,385,554 feet. The output for the first six months of the present year was 235,387,000 feet—considerably over 50% of the total cut for the preceding year—indicating that 1906 will eclipse all former years in the volume of business in lumber.

But whilst the lumber industry is a most important one in British Columbia in relation to the development and progress of the Province, it is no less important in relation to the provincial revenue. In the fiscal year 1879–80, which was the first year any revenue was received from timber, the amount received was $1,263.41. In 1889–90 it amounted to $24,670.57. In 1899–00 to $136,330.00, and in 1904–05, the last fiscal year for which reports have been issued, the revenue received amounted to $486,516.46, being one-sixth, or nearly 17%, of the total revenue of the Province. It will thus be readily seen how important it is from a Government standpoint, that everything possible be done to encourage and foster an industry from which so large a proportion of the provincial revenue is derived.

With regard to the prospects of the pulp and paper industry there is much to be said. The supply of pulp wood, recognized as such, is enormous, and if the opinion expressed by Professor

Macoun be verified, that is that the Douglas fir is a paper making wood, there is practically no end to the possibilities of the business. If the waste of the fir could be converted into a merchantable pulp it would prove a boon to the lumbermen, and would go a long way towards removing one of the most prolific causes of forest fire, in the way of turning to use tree tops and other waste product which is now allowed to accumulate in the woods. Some years ago the Legislature granted power to the Lieutenant-Governor-in-Council to enter into agreements with and grant concessions of wood pulp lands to companies desirous of embarking in the enterprise. Several tracts of land were set aside in reserves to allow these companies to prospect for and locate areas of pulp wood, and select water powers for the operation of their plants. After selection, leases were granted on special terms which included the establishment and operation of pulp and paper mills, within certain time limits. Several companies took advantage of the law and considerable work has been done in cruising, surveying, and other necessary preliminaries. So far, however, the actual work of manufacturing has not been reached, although some of the companies have begun the erection of buildings and the installation of machinery. The chances for profitable business in pulp and paper making on this coast are unsurpassed, as the shipping facilities are cheap and adequate, rendering the markets of the world open to the trade. The Oriental countries afford a splendid market, and now with the trans-isthmian railway across Mexico completed, and the establishment of a steamship line from our ports to those of western Mexico, the whole of the Atlantic sea-board is thrown open to our trade in paper, pulp, and, in fact, to every product of the Province. The Panama Canal is, as yet, a dream of the future, but the trans-isthmian railway is a reality, and our shortest, cheapest, and most desirable freight route to the Atlantic.

One word in conclusion with reference to legislation. I feel sure the provincial lumbermen will agree with me in saying that the terms imposed by the Government of the present day are not onerous, or greater than the industry should bear considering the requirements of the Province. In this age conditions change rapidly—and particularly so in a new and rich Province like British Columbia, which is on the threshold of a great expansion. But no matter how great the development and progress the future may have in store for us, it must, to a very considerable extent, depend on the development and progress of the lumber industry; and, no matter how conditions may change, or what changes in legislation such altered conditions may demand, no Government can ever afford to enact any legislation that will, in any way, check or embarass, or in any way interfere with the development of the lumber industry on

which the progress of the Province so much depends, and from which the Government derives such a large proportion of its revenue.

THE CHESTNUT AS A SPROUTER.

The Chestnut (*Castanea dentata*) is almost unrivalled as a sprouter, and this marked and valuable characteristic is well illustrated by the accompanying reproduction of photographs furnished by Prof. Judson F. Clark, all taken in Southwestern Ontario. In No. 1 the sprouts are about 12 years old. No 2 shows three fine trees, 14 to 18 inches in diameter, springing from one stump. These would make excellent ties or telephone poles. No. 3 illustrates sprouting from a living tree. The stump of the mother tree, which was cut a few years ago, is about five feet in diameter and the sprouts are about 15 to 18 inches in diameter. The chestnut, on account of its straight splitting and desirable quality when used in contact with the soil, is in great demand for fence posts and similar purposes.

Henry John Elwes and Augustine Henry are about to publish "The Trees of Great Britain and Ireland," and judging from the prospectus and the specimen illustrations which accompany it, their work will be one of inestimable value to everyone interested in Forestry or forest trees. Five years have been given to the preparation of this work, which is published privately by the authors. The first volume has already been issued, the second is in the press and the other three volumes will appear shortly. The object of this work is to give a complete account of all the trees which grow naturally or are cultivated in Great Britain, and which have attained or seem likely to attain a size which justifies their being looked on as timber trees. About 300 species of trees will be described and figured, several illustrations in many cases being necessary to show one tree. The illustrations are beautiful reproductions of photographs or paintings, many of them made specially for this work.

No. 3—The Chestnut as a Sprouter

LUMBERING CONDITIONS ON THE COAST OF BRITISH COLUMBIA.*

By R. H. Alexander, Vancouver, B.C.

Mr. President and Gentlemen:—

The subject on which I have been asked to make a few remarks might, at first thought, be considered somewhat antagonistic to that of Forestry, as the Lumber industry is occupied chiefly in the destruction of the forests rather than preserving them, but in reality the subjects are intimately connected. The Lumber Manufacturer's vocation is the conversion of the raw supplies of the forest into a marketable commodity for the use of man, and the object of the Forestry Association I take it, is to conserve the forest so as to ensure an ever recurring supply. I would like to put the importance of this to the general community by making a comparison with the farmer, who is looked upon as the backbone of the country, not that I wish to decry the importance of the wheat industry, but it appears to me that the produce of the forest is hardly looked upon in the same way. Take one acre of ground producing 20 bushels of wheat, this would equal 1,200 lbs., one acre of average timber land in British Columbia would yield 20,000 feet, weighing 3 lbs. per foot or 60,000 lbs., so that it would take the farmer fifty years to furnish as much produce for railway transportation as the lumberman does in one.

The money expended in marketing the crop of this acre of timber would also represent $200, about 30 years of the farmer's expense. The exhaustion of the forests of a country means the extinguishment of its lumber trade, hence the importance of the scientific treatment of our forests, which the Forestry Association is endeavouring to bring about.

I need hardly, when addressing a gathering of Canadians, enlarge on the importance of the lumber trade, as they are all familiar with the great role it has played in the development of the Dominion; furnishing direct employment to a large portion of its population, consuming great quantities of the product of the fields and manufacturing establishments, and besides building up a merchant marine of our own, attracting vessels from all quarters for the transportation of the product of the lumber mills and camps, and last but not least, furnishing a large proportion of the revenues of the Provincial Governments.

* Read at the Forestry Convention, Vancouver, B.C., Sept. 27, 1906.

In all of these respects the Coast District of British Columbia has largely contributed, and the improvement of general conditions on the Coast is very greatly coincident with the expansion of the Lumber Trade.

The first mills in the Province were at Esquimault and Sooke, on Vancouver Island, and were only for the requirements of the early settlers. The first mill of any size intended for the prosecution of export business was established at Alberni on the west coast of Vancouver Island about 1861 or 1862, but the business did not prove successful and was in operation but a few years when it was closed, and the machinery sold to some of the mills on Puget Sound. There was a small saw mill at New Westminster in 1862, catering to the local trade, and which shipped I think one cargo abroad. Parties who had been connected with this enterprise started the first mill on Burrard Inlet a year or two afterwards at Moodyville, which was followed by the building of the Hastings Mill on its present site in 1865, and with the erection of these mills the foreign lumber trade of British Columbia may be said to have commenced. For a number of years the foreign trade of the Province averaged from 25 to 35 million feet annually, until the Chemainus mill came into operation, since when the trade has varied from fifty to eighty million feet per annum. This year the Fraser River mill has joined the export shippers, and the foreign shipments will probably reach 85 million feet, the largest volume since the inception of the business.

Until the construction of the Canadian Pacific Railway there was no market available but the foreign, and large quantities of lumber that, under other conditions would have found a sale, used to be burned as the only way for its disposal. The advent of the Canadian Pacific Railway opened a market to the east, and mills began to multiply. It was a long time before our Douglas fir established itself, but it crept further and further east until now we have customers even on the seaboard of the Atlantic provinces, and the quantity being shipped in that direction is ever increasing. Our export trade is distributed all over the world, shipments being made to Australasia, China, Japan and occasionally to India, Central America, Peru, Chile and the Argentine Republic, the United Kingdom, France and Germany; it has even penetrated to Baltic ports, which might appear like sending coal to Newcastle, and is being used in the modern development of that ancient country Egypt, and aiding in the building of Johannesberg and the winning of gold in the Rand mines of the Transvaal.

In several of these markets however, our wood is not in general use, but only taken in the form of special sizes and lengths that cannot be obtained elsewhere, our great distance from the points of consumption and costly transportation mili-

tating against it being used in a more general way. Until recently the transportation of lumber has almost entirely been left to sailing vessels, but steam is now competing for the business, and when by this means these distant markets can be reached more quickly, we may confidently expect our trade with them to increase. With the expansion of the export trade it is interesting to note the increase there has been in the size of the vessels used. In the early days of the trade a vessel carrying over 400,000 feet was a large one, and to supply a cargo of a million feet was an undertaking so colossal as to make a mill manager stand aghast, while now it is a difficult matter to obtain vessels to carry such a small cargo, and steamers carrying 3,000,000 feet are not uncommon visitors.

Coincident with the increase in size of the vessels, has naturally been the increase in capacity, and improvement in the machinery of the mills, from the mill of early days producing 50,000 feet in which a great deal of manual labor was employed, to those of a capacity of 200,000 feet per day, equipped with all the latest machinery and labour saving devices, whilst the working day has been reduced from 11½ hours to 10.

In 1886, when the Canadian Pacific Railway reached Vancouver, the output of the Coast mills of British Columbia did not exceed seventy-five million feet, and this year, including the shingle industry, will reach 525,000,000.

In that year the revenue arising from the forest was but $3,768.00, while last year it amounted to $578,748.00. In making this comparison, however, a large share has to be credited to the growth of the lumbering business in the interior of the province, which will be referred to more particularly by a later speaker. The development of the shingle industry has also greatly assisted this result, as at the commencement of the same period of twenty years, there were only a few machines in use supplying the local requirements and finding it difficult to supplant the old hand shaved shingle; there are now 155 machines in operation, capable of turning out one billion shingles per annum, and the excellence of our manufacture has not only obtained for B. C. shingles the trade throughout Canada, but has gained them a preference in the United States.

The increase in the manufacturing of lumber of necessity required an increased production of the raw material from the forests and an improvement in the methods of logging.

In the seventies, I think the only two mills having leases of timber land were the Hastings mill and the Moodyville mill, for which they paid the Provincial Government one cent per acre without any further dues, and the revenues could not have amounted to more than about $600.00, from which it has increased as before mentioned to nearly $600,000. Whilst these

mills operated their own camps on their leases, others cut timber wherever they felt inclined, no one then placing any value on the standing timber. Oxen were the motive power used for the transport of the logs to the water, and the most important man in the camp and the one getting the highest wages was the "bull puncher," or teamster, who gained the above name from driving with a goad stick, in the end of which was inserted a brad which was liberally used, along with a good deal of strong language to make the cattle exert themselves. When moving from camp to camp, a teamster generally carried his goad stick as a sort of insignia of office, and it may be a surprise to hear that $5.00 was an ordinary price for a good hickory goad stick. The teamster's wages ran as high as $125.00 per month without any deduction for lost time, and it was a sight to see their skilful manoeuvring of a team of twelve and sometimes fourteen "bulls" in the dense woods. At this time there were also a number of what were called hand-loggers, who finding a locality where the timber grew on a slope close to the beach, with the aid of a jack screw, wedges, an axe and a crosscut saw, put in the water no inconsiderable part of the log supply. Later on the camps substituted horses and mules as being faster than oxen, but all these methods have practically been superseded by the use of steam haulers, with fully equipped railways for the main roads where the operations are of sufficient magnitude.

Until comparatively recent years, the only lumber manufactured by the mills was the Douglas fir, which I regret to say is known abroad more generally under the commercial name of "Oregon Pine." How it received that name it is difficult to account for, as the first shipments were sent abroad from Puget Sound, then Washington Territory, but the name has remained and it is most difficult to change a name which by use has became a familiar commercial term. Our B. C. product, I am pleased to say, has in many instances a preference as having a closer grain, and in Europe at least, is frequently referred to as "Columbian Pine" in contra-distinction to the other. Our other woods of commercial use are cedar, spruce and hemlock. Our cedar furnishes the material for our large shingle trade, and is in request also for finishing lumber and the manufacture of doors and sash. Spruce is not so plentiful, but the upper grades find a ready sale in various forms, while the lower furnish the material for box-making. The last wood I have mentioned is hemlock, and hitherto hardly any use has been made of it except for piles and for no other reason that I know of than its name. The hemlock of the Pacific Coast is a very different tree from that in the east, being much longer in fibre, it is somewhat harder and heavier than spruce, though less than fir; experiments with it have proved it a first class wood for interior finish and I fully believe that its use will

quickly increase when prejudice is overcome, and will be esteemed as highly as our fir is at present. From a forestry point of view, I am sure it will prove of the highest value, as it rapidly reproduces itself and flourishes well in heavy shade. A walk through our park will furnish our visitors interested in forestry with examples without number of this tree having reproduced itself amongst dense underbrush, on fallen and partially decayed trees, and even on the tops of stumps of fir trees which have been felled, and it has been described by one of the timber experts connected with the University of Washington as an "ideal tree for reafforestation on account of its ability to exist under the conditions just mentioned."

Logging operations on the coast of British Columbia will always be expensive and rapidly increase in cost from the general characteristics of this country. This generally rises sharply from the sea shore without any large area of fairly level land; this necessitates constructing roads from the shore at several different points to obtain the timber from one moderately sized limit, and it becomes a question whether there is enough timber tributary to any one road to justify its construction. As the timber within easy reach of the shore becomes exhausted, this condition will be intensified in proportion to the length of the roads necessary and only large compact areas of timber will justify the expense of building railroads many miles inland. The cost of working small areas will rapidly increase and I am therefore of opinion that the price of the raw material will have to increase accordingly. If my view is correct, it follows as a certainty that the price of the manufactured article must increase also, and this I think will be the case generally on the Pacific Coast. The rapid exhaustion of many former sources of supply of constructional timber, leaves practically but two large areas available for future supplies, these are the yellow pine region of the South and the Pacific Northwest, and when I tell you that at a Convention of Lumber Manufacturers at St. Louis, which I attended last spring, it was stated by Mr. Long of Kansas City, a recognized authority on the subject, that the standing timber in the Southern states represented but fifteen years consumption, you may realize what the future value will be of the almost virgin forests of British Columbia. In my opening remarks I referred to the Lumber Manufacturers as destroyers of the forests, but Mr. President, there is one agency which yearly takes a greater toll than the Manufacturers, I refer to fire; each year we see large areas of timber destroyed, the ultimate value of which is certainly not realized by the public. I trust that the Forestry Association will, as one of their first and most important duties awaken public sentiment to the necessity of protecting the timber supply which we possess whilst preparing for the reproduction of our forests in the future.

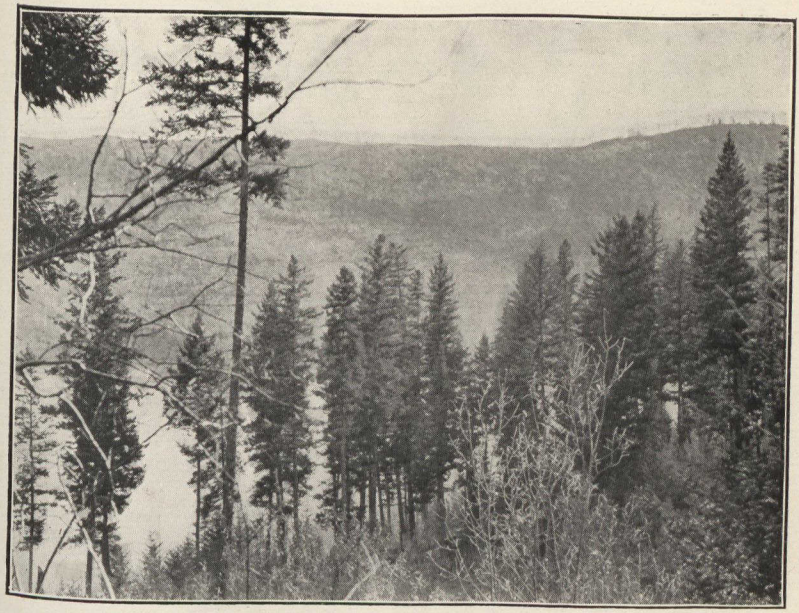
THE DOMINION FOREST RESERVES IN THE DRY BELT IN BRITISH COLUMBIA.

By Roland D. Craig, F.E., Inspector of Forest Reserves.

The Hat Creek, Tranquille, Long Lake, Niskonlith, Martin Mt., and Monte Hills Forest reserves, form a group which resemble each other in situation, purpose and sylvicultural characteristics. Situated in what has been known as the "Dry Belt," but what should be called the "Irrigable Belt," the chief function of these reserves is to protect the watersheds from which flow the streams which are turning a land resembling the Majara Desert into a region of fruitful valleys. The great possibilities of these fertile valleys when watered, are just beginning to be appreciated, and anything which assists irrigation cannot easily be over-valued.

Heretofore the cattle industry has been the chief source of revenue to this district, but the large ranges required in this region of scant vegetation has made it not the most profitable business, and over-stocking has resulted in serious deterioration of the grazing possibilities. It has been demonstrated, however, that by irrigation $300 to $500 per acre per annum can be secured in fruit, and now settlers are pouring into the valleys with the intention of entering this profitable business. The profit nd permanence of this industry is, however, directly dependent on the preservation of the forests on the mountains surrounding the valleys, for in the valleys there is very little precipitation, only 2 inches falling last year in Kamloops, and irrigation must be depended upon. At higher altitudes the precipitation, both in snow and rain, greatly increases, and if protected and controlled there is an ample supply of water for the land which is available for agriculture.

The value of a forest cover for catchment basins is often not fully appreciated. Dams and reservoirs may assist in controlling the run-off, but they are expensive and often unnecessary, and besides they do not protect the water from evaporation, which is one of the chief sources of loss. The forests not only retard the run-off, but prevent a large part of the loss by evaporation by excluding sun and wind. In that region too, where much of the water comes in the form of mists, which are blown along the mountain tops, the increased surface afforded by the forests arrests much of the moisture which would otherwise be lost. Persons travell-



Tranquills Forest Reserve, a source of water irrigation.

3-year old apple tree near Kamloops—the result of irrigation.

ing in a forest on a misty day will have noticed how the water drips from the leaves, while in the open very little reaches the ground. Observers will also have noticed the almost entire absence of perennial springs and small streams on bare mountain slopes, whereas wooded slopes of similar altitude and other conditions will be dotted with springs.

Kamloops valley, which lies in the midst of these reserves, has an altitude of 1600 feet, while the hills about rise to 6000 and 7000 feet. The valley and lower hills are almost treeless, except for the poplars, willows and alders which grow along the water's edge. At about 2000 feet open park-like stands of bull pine occur and increase in density with the altitude. At about 3000 feet a mixture of Douglas fir occurs with the pine and gradually replaces the pine as the altitude is increased. At 4000 feet black pine becomes prominent and between 5000 and 7000 feet forms the main stand with Douglas fir, Englemann's spruce, black and white poplar as secondary species. The supremacy of the black pine is undoubtedly due to the ability of the cones to protect the seeds from fire, and the density of the black pine reproduction following a fire makes it difficult for other species to compete with it. Most of the black pine stands are young and are evidently replacing the fir and spruce. The bull pine being more tolerant of drouth, succeeds over its competitors at lower altitudes. There is very little undergrowth in these forests and the ground is covered with needles.

Compared with the Coast these reserves do not contain the best quality of timber, but it will be useful for mining supplies and fuel and some for saw material. Very little cutting has yet been done on the area reserved. The quality of the timber is largely due to fires which seem to have run almost everywhere, and have injured to a greater or less extent, even those trees not actually destroyed. Many trees die after a fire, even though the bark is not burned, on account of the heat injuring the tender cambium layer under the bark. Ground-fires decrease the vegetable matter in the soil and remove the mulch of needles which protects the soil moisture, so that the vigor of the tree is decreased.

The chief causes of the fires have been the railway, cattlemen, prospectors, campers and Indians. During construction and since, many fires have been started along the C.P.R., which have destroyed the timber in the vicinity, but now the officials realize the injury to the road from the loss of freight and spoiling of the scenery caused by fires, and are endeavoring to prevent further devastations. Cattlemen are in the habit of burning the forests annually, in order to increase the grazing area and to improve the grass. This short-sighted practice has been very costly to the forest and irrigation interests and must be stopped.

Prospectors sometimes burn the forests in order to expose the underlying rock. Carelessness with camp fires has been the cause of some fires and the Indians are accused of setting fire to round up game and to improve the feeding ground for the deer.

There are still numbers of deer and some bear in these mountains, and in places there are beaver, which at the end of the closed season in 1910, will stand considerable exploitation. One of the finest trout lakes in British Columbia is in the Long Lake Reserve and many of the small lakes and streams in the district abound in Dolly Varden and Rainbow trout, attracting anglers from all parts of the world.

The area under reserves in this region should be considerably increased in order that the watersheds may be adequately protected, and then with a sufficiently large force of rangers to guard these reserves, they will be of inestimable value to the surrounding district.

FOREST RESERVES AND PUBLIC HEALTH.

With industrial development and its accompaniment of crowded cities and strenuous business applications, the need of mankind to return to the great out-of-doors for rest and health is increasing. Never before were the forests more appreciated for the invigorating life they afford than at present. Not many years ago people who would spend their holidays camping out in the wilderness would have been ridiculed. Now, however, thousands seek the sylvan solitudes in the summer, enduring many discomforts and often privations in order to get back as near as possible to the natural life. The forest reserves which are being established throughout Canada, will preserve for future generations these recreation grounds. In the fight against tuberculosis, the establishment of isolated sanitaria where the patients can enjoy an out-door life, is one of the chief means of combat. It would seem that the forest reserves, situated as they are away from settlement, should provide ideal sites for these sanitaria and that the Government should offer every encouragement for the use of the reserves for this purpose.

A DAY'S WORK IN RIDING MOUNTAIN.

By H. Claughton-Wallin, F.M., Forest Assistant, Forestry Branch.

When approaching Gladstone, on the Canadian Northern Edmonton Line, the traveller will notice how the flat treeless prairie is gradually disappearing and being succeeded by a wooded country. As the train carries you further towards Dauphin, the trees increase in size and variety. There are among the poplars, scattered oak, elm, ash and Manitoba maple, and also here and there an old shaggy lopsided spruce, looking lonely, as if it was wondering why on earth it was left there to struggle for existence among so many strangers.

On your left you see a bluish wall a few miles distant following you for several hours. Coming from the east, with your head full of talk about the level prairies of Manitoba, you are surprised. Being a person fond of nature as it was before man tried to improve it, and having thoughts for something else than the prosaic "How to invest your spare money to the best advantage," your interest is aroused.

It is not that the scenery is in any way startling. Had it been, for example, in Quebec or British Columbia, you would never even bother to lift your eyes from your paper to look at that blue mountain wall. But it being situated in Manitoba your interest is, as was said before, awakened.

In your mind you see yourself there in the wilderness, following an old Indian bridle path through the beautiful forest, drinking the refreshing cold water from some little mountain stream and now and then getting a glimpse of a majestic moose or a graceful elk.

Well, those were the thoughts running through my mind, and the only thing to regret is that my fellow passengers on the Edmonton Express did not have the same good luck as I, to spend a whole summer up there in the Riding Mountain.

The writer had received instructions from the Forestry Branch of the Interior Department to proceed to the Riding Mountain to conduct a valuation survey on the Dominion Forest Reserve situated there, and at the end of May I arrived in Dauphin. To those of my readers to whom this name is not familiar, I may say that Dauphin is one of Manitoba's most progressive towns situated on the Canadian Northern line from Manitoba to Edmonton, twelve miles north of the boundary of the Riding

Mountain Timber Reserve. This town was to be our headquarters.

After all arrangements had been made about the "grub," and about the—for some of the fellows it looked just as necessary—mail, etc., the party started for the mountain, all expecting interesting work and a pleasant summer. If we were disappointed or not I will leave to the reader to decide after reading this article.

About twelve or fifteen years ago the timber reserve, consisting of about forty-three townships, was visited by immense forest fires devastating considerable areas. Where before had been valuable spruce timber the fire left it a wilderness. The grey tree stems stand there for a time till insects, fungi and storms have played their parts and felled them to the ground, where they in places form an almost impenetrable chaos—in truth a sorrowful sight! These fires were however, confined mostly to the western parts of the mountain, though the east was far from left intact. But still tracts of good forest are left in these eastern parts, and it was there the valuation survey was conducted last summer.

The first thing that caught my eye was the richness of vegetation. Following a winding trail up the mountain side you will find poplars, oak and ash, mingled with Manitoba maple, elm and birch. Coming higher up on the second plateau, white and black spruce, larch, poplars, birch and also balsam seem to gain ground and leave the other varieties behind. Jack pine is found in the southeastern part of the Reserve. There are in some of the valleys groves of Manitoba maple. When I first wandered into one of them I was surprised to find, at the foot of almost every tree, a basket shaped thing, made of a single piece of birch bark. On looking more closely I noticed in the trees a cut in which was placed a little piece of wood sloping downwards. Here is where the Indians come in the spring to tap the maples for sap of which they make syrup.

The undergrowth is quite dense, mostly consisting of hazel and mountain maple.

The scenery is very picturesque, deep ravines from the bottom of which you can hear the rushing of some rapid river or creek, beautiful little lakes lying there in the stillness of nature, the home for one or two families of the white-breasted northern diver, or a little colony of ducks, and serving, on a hot summer day, as a place of refuge from flies and mosquitos for the aristocrats of the forest, the proud moose and elk.

Now, may I ask you, my readers, to forget the worries of life and come and spend a few days in the camp of the forest survey party. It is the month of August and you will find our

Black and White Poplar in the Riding Mt. Forest Reserve.

tents pitched at Lake Audy. Well, early in the morning you will be suddenly disturbed in your slumber by a cheerful: "Get up here, six o'clock, weather is fine, not a cloud. Get a move on!" That is George, our cook, whose head never fails to appear in the tent door at this time, Sundays excepted. After a few minutes there is another call: "Ain't you up yet? Pancakes is getting cold." Everyone has a soft spot for George's pancakes. I believe he had to start to make them at five o'clock; so up you get, a dip in the lake, on with some clothes, and you are ready for the breakfast. At seven o'clock there is nothing left on the table except the hardware, and out we go to work; one party of four on a valuation survey, and another party to take stem analyses. Let us follow the former party. There are two men on the chain, the head man carrying a compass to maintain a straight course, the rear end man keeping the tally. The other two fellows go one on each side of the chain, calipering the trees to a distance of 16½ feet from same, calling out their variety, diameter 4½ feet from the ground, and how many logs they can get from each tree, to the tallyman, who puts it down on a printed form. On the back of this he makes note of everything that is particular to the stand he is going through, location, situation, soil, ground cover, undergrowth, variety of trees, density, silvicultural conditions of the stand, reproduction, etc. Insects and fungi are collected and damage they do is studied. These lines all run parallel at different distances depending on the type of the forest and how careful an estimation you wish to obtain.

But what is all this racket about? Oh, Dan, the teamster's dog, which is following the party, has got hold of a wolf. He bites and shakes it, but poor Dan's teeth are not very sharp and not much harm is done. Disgusted, he lets go his hold and quick as lightning the wolf has got him by the nose. There is a yelp and the wolf is caught in Dan's grip again. But the result is no better. This time, however, he is careful not to open his jaws and with the help of Gus, who is "found carrying concealed weapons," the poor wolf is passed into eternity.

And the surveying party continues its march, through good timber, over big brulés and muskegs, crossing rivers, wading through sloughs, tumbling down a deep ravine only to have to climb up again on the other side the next minute. But everyone is cheerful and if the sloughs become too deep there is always Parker's "It's a gay life, boys!" which means that you are not going to be a quitter.

Seven o'clock finds us all at supper table. The stem analysis party tell their experience, how they have been occupied finding out age and annual growth, height, merchantable length, etc., of different trees, and how they saw a big bull moose on a cutting biting off the tops of young trees, showing a most alarming dis-

regard for forestry; and fresh tracks of bear had been found on the trail just outside camp.

What is more pleasant than an evening in camp, especially on a lake full of fine pike? When too late for fishing there is always a vacant place for you at the camp fire. The pipes are lighted, good yarns are following each other, and for hours you sit there listening, till suddenly you find yourself alone Throwing a piece of wood on the dying fire you manage in the upflaming light to look at your watch. Midnight! All the fellows in bed. And with lingering steps you go to follow their example. From the lake there comes the weird cry of the loon and back in the forest the wolves are howling.

Much more could be said about a forester's interesting work and his pleasures; about rainy days and millions of mosquitos. But what true woodsman would mind the latter when he knows that they are the evils of the early summer and that better days are coming?

There are farmers in every section of the older provinces who regret their lack of foresight in the early days of settlement, when trees were cut down heedlessly and indiscriminately on their lands and burnt on the spot or sold as cordwood in the neighbouring towns leaving them, as many are to-day, with little or nothing to occupy them in the winter season, and without shelter for their live stock at a time when pasture in the old days was still accessible for weeks longer on the approach of cold weather than it has been of later years.

The influence of the forests of Canada upon the streams and lakes has long been a problem with our people. The floods at Montreal have cost the city hundreds of thousands of dollars besides interfering with business and affecting the health of the citizens. It has been well known for years that the almost sudden downpour of water and cakes of ice in the spring, as compared with early days, was due to the denudation of the forests in the upper reaches which prevented the too rapid thawing of the ice and snows on the inland lakes and streams, the feeders of our great rivers. —*The Canadian Journal of Commerce.*

TREE PLANTING AND NURSERY WORK AT INDIAN HEAD.

BY NORMAN M. ROSS.

The season now closing has been a most favorable one for general nursery and tree planting work. The crop of seedlings grown for distribution, though not quite so large as that raised last year, owing to a very dry spell of weather in August, which practically stopped all growth, is a very good one, the seedlings being particularly strong and vigorous. All the permanent plantations and belts have made wonderful growth, the new wood on the cottonwoods and willows averaging at least 4 feet—the maples not quite so much.

This year about 5 acres of permanent plantation was set out in native white spruce and Scotch pine; the former were raised from seed in our own nurseries and when planted were 4 years old, having been 2 years in the transplanting beds. The young plants were from eight inches to one foot in height and very strong and healthy. Of the Scotch pine 75% were grown at Indian Head and were 4-year transplants, 25% were imported from France as 3-year transplants. It will be interesting to notice which lot of plants come through the winter best. Up to the present date these evergreen plantations have done very well, on the whole not more than 15 to 18% of the young trees having died. As they are very slightly protected it is expected that a considerable number may not survive the winter should the snowfall be light. Last year about 500 Scotch pine from France were set out in mixture with native spruce and tamarac. The winter was not very favorable for young evergreens, as there was practically no snow cover. In early spring, owing to very severe winds and bright sun, many of the young trees were browned up and did not recover. However, 60% came through and have made a very good stocky growth this season. This winter, as the plantation has made considerable headway, much more snow will be held on the ground and very little loss should occur from winter killing.

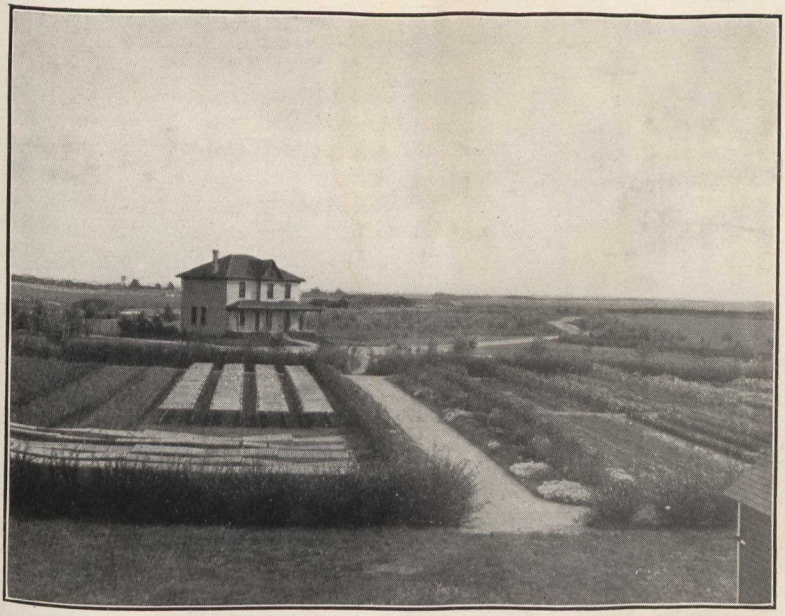
The native white spruce in the nursery, which were planted in spring of 1904 in mixture with native larch, are now well established, and this season many of the young trees made a growth of over two feet. The tamarac however, is evidently too strong for the spruce and will overgrow them completely in a year or so more. The growth that the tamarac has made is wonderful. When planted in 1904 the seedlings were not more

than 1½ feet high and about the diameter of a lead pencil or perhaps less. Several are now over 6 feet high. The growth is exceptionally strong and vigorous, the young trees measuring on the average at the ground about 1¼ inches diameter. This plantation was set out on very rough backsetting, without the slightest protection of any kind. After transplanting not 1% died and there was no loss at all from winter killing. Those planted in 1905 were equally successful. From present indications this variety will become of great importance for prairie planting, owing to its hardiness, rapidity of growth and the many valuable uses to which the wood may be put.

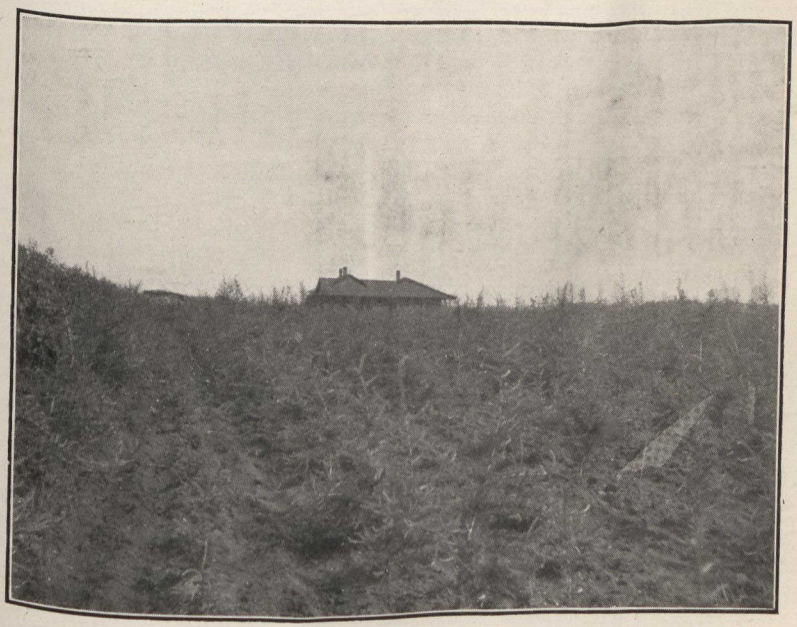
It is unfortunate that up to the present we have not been able to secure any seed from the native larch. The seedlings are got from the natural swamps and therefore cannot be obtained very generally. However, it is hoped that we may be more fortunate in collecting seed in the future. The natural reproduction in places is so thick that very heavy seed years must occasionally occur.

The question of collecting seed is of considerable importance where trees must be raised in sufficient numbers to meet the demands of the present tree planting work. From 2½ to 3 million trees will be required annually from now on. This season, owing to late spring frosts, no maple or ash seed in any quantity can be found in Manitoba or Saskatchewan. In order to be safe in a poor seed year, we have always tried to keep at least a year's supply of seed on hand, unfortunately however, last season was also a very poor one for maple seed, and only enough could be obtained for this year's sowing, consequently great difficulty has been experienced in arranging for a supply for next spring. We have been fortunate enough in obtaining a sufficient quantity in North Dakota for our own use and possibly may have a little for distribution. In the past a considerable number of Dakota cottonwoods have been sent out. These are imported from North Dakota, where the seedlings are gathered on the sandbars of the large rivers. The people through whom our supply is obtained, state that owing to the cutting of the old seed trees along the river banks, seedlings are becoming scarcer year by year, and it is quite possible that in a few years we shall be forced to propagate this variety from cuttings. This, however, is a very expensive method and does not produce nearly as healthy stock.

The elm bore a fairly good crop of seed this summer and about 50 lbs. was collected. Three acres were sown in drills 30 inches apart and now show a very fair stand, which should result in the neighbourhood of 300,000 seedlings next fall. This is the first season since 1903 that we have been at all successful in securing seed of elm. It is a very desirable variety for planting



Forest Nursery Station, Indian Head.



Spruce and Larch planted 1904, at Forest Nursery Station.

in the west and it is unfortunate that the supply of seed should be so uncertain. In 1905, as no seed could be obtained in the west, a quantity was procured in the Eastern States. The stand produced during the first season was very good, but every seedling was killed during the winter, proving conclusively that the seed must be collected in this country. Some years ago we had a similar experience with the Manitoba maple. Owing to a scarcity of seed here, a quantity was purchased in Minnesota. The seedlings however did not mature and although not actually killed outright, were in such poor condition that we would not distribute them.

The fact that wood for fuel can be grown most profitably in this country is demonstrated more clearly every season. In some districts wood can be obtained from natural timber belts with little difficulty, but away from these restricted areas, the settlers are limited to the supply brought in on the railways, poplar wood of only average quality being worth $6.50 per cord. There is not the least doubt in the mind of the writer as to the possibility of growing fairly good fuel within 6 to 8 years, when cottonwood or willow are used, and when the trees are properly set out and cared for. In the spring of 1903 we were using some land on the Experimental Farm at Indian Head for our nursery work and in order to obtain a quick shelter a few rows of cottonwoods were planted. The total length of the rows would be about 700 yards, the trees being set 30 inches apart and were about 1½ feet high. We are now giving up this land and consequently had to cut out these hedges, which in 4 years have made great growth. The trees average 15 feet high and many are over 6 inches in diameter at the ground. We have now cut up and piled over 3½ cords of wood cut from these hedges. This wood is not of course best quality, though it is just as good as hundreds of settlers get after travelling to the bluffs in the winter and probably taking three days for the round trip. At the present time growing trees for profit on the prairies has not received any general consideration, but before many years it is hoped that every farmer may devote a few acres to this purpose.

At the nursery station it is intended to establish several large plantations, which will be sample plots to test the value of the different hardy varieties planted in mixture and pure st nd and at different distances apart. As a considerable area of land will be necessary for this purpose, an additional ¼ section adjoining the one already under cultivation has been reserved for the work. At present the land is unbroken. Fifty to sixty acres will be ploughed and backset next season; part of this may be planted the following spring, but most will be put into oats, after which the land will be summer fallowed and got into a better condition for planting.

Throughout the country general interest in tree planting is rapidly increasing. Applications from settlers wishing to avail themselves of the Government distribution are being received daily. The tree planting inspectors report that the plantations are set out and cared for in a more intelligent manner than formerly, and particularly it is noticed that more care is given to the preparation of the ground.

It is encouraging to note that the C.P.R. are undertaking the planting of trees for snow breaks along their tracks and are also about to experiment in the growing of wood for ties and posts. It is to be hoped that the first plantings will prove successful and that this line of work may be more extensively carried on.

DESTRUCTION OF PINES NEAR BANFF.

During the fall of 1905, I noticed a stretch of timber with all the appearance of having been burnt over—this was while coming back from a day's work on Sulphur Mountain. I had no reason to believe that it had been burnt over, as no forest fire had been in the neighborhood, to my knowledge. The matter having been brought to my attention by another observer, I resolved to visit the locality when opportunity afforded.

About a year went by before I had an opportunity of examining into the cause for such a phenomenon. On September 5th last, in the morning, I walked to Rundle Mountain—the locality—arriving at my destination within 2 hours, and took the following notes of the surroundings: About 1000 feet above the Spray River (possibly more above the town), and 5500 feet or so above sea level, I found from 1 to 2 miles or thereabouts of dead or nearly dead pines (*Pinus Murrayana*), that is from the appearance of the leaves. These ran from E.S.E. to W., the width about 600 ft., or more in places. The leaves on the trees were yellow, many having been blown to, or fallen on, the ground, the tops were green as a rule, the dying leaves only covering part of, and seldom the end of, the branch.

These trees are in what might be called rather open woods and run up to a rocky ledge; above this a few yards on, are spruces which remain uninjured; below, there is a continuation of pine (*Pinus Murrayana*), growing more densely and much smaller in size, gradually merging from trees whose top only was scorched with those uninjured. The bark was in no way injured, but

dead leaves ran up the trunks and on others these had fallen off branches growing closely to the ground on a fairly gradual slope. A few balsam poplars (*Populus balsamifera*) were dead, about the margins of dried rivulets. Some spruces (species uncertain) held dead or partly dead leaves. Gravel, loose rock, and earth formed a soil which was overgrown by grass, bearberry (*Arctostaphylos Uva-ursi*), etc.

I was careful in going over the ground to look for insects or disease, but an examination of a number of trees gave me no reason to suspect that either of these had affected the trees. As the meteorological conditions during the last two years may have caused the conditions described above, especially the amount of moisture precipitated, the following data are submitted:

The snowfall from January to October, inclusive, was for:—

1902	1903	1904	1905
97.45 in.	78.83 in.	50.14 in.	21.25 in.

The rainfall was for:—

1902	1903	1904	1905
20.96 in.	16.04 in.	7.89 in.	13.18 in.

The snow on the mountain slope would possibly be more than in the valley.

As to the temperature for October.

The lowest recorded was 3.3 on the 18th October, 1905, with about 2 inches of snow in the open valley; the lowest previously recorded, occurred on the 31st of October, 1893, with about 8 inches of snow in the open valley.

The snow on the ground for October 1904 was on the 7th, 0.65 in. with practically none to the 20th November, when 5.25 in. fell, and from 5 inches to 1.75 in. to end of November. For December practically none to the 16th, then 5 to 8 in. to the end of month October 1905, no snow on the ground till the 17th, then 2.45 in., from the 20th practically none till the 26th November, when 2 in.

The snowfall for 1905 was exceptionally light. Precipitation below the average for 1904 and 1905.

I therefore attribute the dying of these trees to the low temperature coming rather suddenly, and earlier than usual, after comparatively mild weather, with perhaps insufficient moisture and winter protection, as a secondary cause. I would ask what is the opinion of others.

N. B. SANSON, Curator,
Rocky Mountains Park Museum,
Banff, Alberta.

VIEWS OF A DISTINGUISHED FORESTER.

Sir Dietrich Brandis, the father of the present system of Forestry in India, in a letter to Mr. E. Stewart, Dominion Superintendent of Forestry, makes some valuable suggestions. He says:

"I cannot sufficiently urge upon you the necessity of concentrating all your energies upon one point, that is the constitution of as large an area of State Forests as possible, to enable Canada (I mean the Dominion) to supply the greater portion of the coniferous timber now imported into Great Britain, permanently.

The timber now imported into Great Britain annually amounts to over nine million tons, valued at £24,000,000; and the greater part of this is coniferous timber. Of this quantity

Sweden and Norway supply.....	5	million tons.
Russia supplies.....	2	" "
Dominion of Canada supplies.....	2	" "
	9	" "

Russia, as soon as the present troubles have been overcome, will develop its trade and industries in a manner not anticipated at present, and the result will be that they will consume all the timber this country can produce. Germany formerly was a timber exporting country and it now imports five million tons a year. And this, though the area of productive forests has been steadily increasing, and the annual yield per acre is now much larger than it was thirty years ago.

Sweden and Norway, tempted by the high prices and the ready market in England, are cutting more than what their forests annually produce. At the same time industry and manufactures are increasing, and the result will be, that that source also will come to an end.

The United States export very little to England now, and the Dominion of Canada is the only country from which, if the forests are properly managed, a permanent supply of coniferous timber for Great Britain can be expected.

All this means that prices will rise steadily, and it is for you in Canada now to seize this opportunity and to lay the foundation for a magnificent future development of your wealth.

Hence it is necessary that you should form as large an area as possible of State forests, and that you should place them under efficient, systematic management so as to secure ample regeneration of the species you want, either naturally or by planting.

I hope you will not establish a Forest School before you have forests under systematic management where your students can learn what is wanted. You will, of course, require a number of Forest Officers. Government forest management in India on a large scale, did not commence until in 1866 I obtained sanction to select two first rate German foresters, Schleich and Ribbentrop, who both were my successors, and to organize the professional training of young Englishmen for the Indian Forest Service in Germany and France, one of whom (the late Mr. Hill) was my third successor.

The United States would have done well, had they followed this example. But my young friend and pupil, Gifford Pinchot, thought that for political reasons it was necessary to proclaim the principle: "The American forests for the Americans." He and the small number of those who have received their professional training in the forests of France, Germany and Switzerland under my guidance are doubtless doing their best to bring the enormous area of forest reserves into working order, but in my opinion they would have done well had they strengthened their hand by the introduction of a limited number of men from Germany, of Dr. Schenck's knowledge and experience.

I doubt whether your hand will be free to act in this matter, and I will not therefore, in any way urge suggestions that may not be practicable. Fortunately the Forest School under Mr. Graves at Yale College and the Biltmore Forest School are, I understand, so far advanced that you can get men from these sources for your work. And you can wait until more of your forests are in proper working order before you establish a forest school of your own.

As soon as you have a suitable area of State forest entirely at your disposal, then place the most competent man you can get, and let him commence the management of that estate. The first operation will be to divide the area into compartments; in hilly country following the configuration of the soil; on level ground with uniform soil and other conditions, rectangular areas with due regard to river roads and other natural features. The Forest Ranger in charge is not master of the position unless he has divided his range into compartments.

When one forest range has been brought into working order then you will have to select from among the assistants whom you should at the outset give to each forest ranger, the most competent to take charge of a second range and so on, until gradually a good system of work has been introduced in the whole of your State forests.

By all means arrange for the exploration of your northern wilderness region, for the reservation of lands from settlement at the sources of your great rivers and for tree planting on the

plains. But your first work must be, to place those forests in working order which yield the timber used in your country and exported abroad.

At the outset this, as all similar operations, will entail expense, which you will I hope, be able to get Parliament to sanction. But after a few years, the revenue from these forests will far exceed the annual outlay, and then you will be independent, and can think of other branches of your business. Your aim should be, to make yourself financially independent as soon as possible.

In the teak forests in Burma, I commenced work in January, 1856, and in 1860 I was so far as to make a good annual surplus, and to sell at my Rangoon timber depot, timber of the first quality. Then, however, the timber merchants at Rangoon, who at first had looked with contempt upon my operations, demanded that the forests should be made over to them, and with the help of their friends, the powerful firms at Calcutta, they induced the Government of India to send orders to Rangoon (February, 1861), to throw open the forests to private enterprises.

Your Government will, I trust, be more far-sighted when the time comes, and I have no doubt they will be glad to have the revenue which your forests will produce, and which, under good management, will eventually become very large.

You will naturally ask: Why is not the coniferous timber which Great Britain imports, produced in this country? The reply is, that the land is nearly all private property, and as a rule the great proprietors are too rich to feel the necessity of increasing their incomes by making their forests pay. There is an immense deal of talking and writing regarding the necessity of planting up the waste lands, and managing the existing woodlands to greater avantage. In my younger days I have talked and worked in this direction, and since Dr. Schlick has taken charge of the Cooper Hill Forest School in 1885, he has been indefatigable in writing and speaking publicly. I have purposely kept in the background during this time, as it was better that the movement should be in one hand, and as Dr. Schlick had thrown himself into it heart and soul."

THE MACKENZIE BASIN.

Mr. E. Stewart, Superintendent of Forestry, is now preparing a report for publication of his visit during the past summer down the Mackenzie River and as far as the delta of that stream. In returning he crossed the mountains with Indians to the Porcupine River which he followed to its junction with the Yukon at Fort Yukon where he got a steamer south to Dawson, coming from there to Vancouver by the usual route via Skagway. About three months were spent on the trip and the distance covered from Edmonton to Vancouver was upwards of 4000 miles.

Mr. Stewart's main object was to gain a knowledge of the timber in the basin of the great Mackenzie River, but he also took note of the general character of the country and its natural resources, as far as a hurried journey would permit.

The area drained by this stream, including its tributaries, many of which, such as the Athabasca, Peace and Liard, are themselves great rivers, is greater than that drained by the St. Lawrence above Montreal, including the Great Lakes, and nearly three times that of the Saskatchewan.

From Athabasca Landing to Fort McPherson, a distance of 1854 miles was made by water, first down the Athabasca to Lake Athabasca; across a bay of that lake; then down the Great Slave River and across Great Slave Lake; then down the Mackenzie proper, nearly a thousand miles to the delta; then a short distance up the Peel River to Fort McPherson, which lies well within the Arctic Circle and is the most northerly of all the Hudson Bay Company's posts.

It is not possible here to give details of this interesting trip, but members of the Forestry Association will be supplied with copies of the report now in course of preparation as soon as it is issued.

Mr. Stewart says, among other things which greatly impressed him, was that the general character of the land, on the route from Athabasca Landing to Fort McPherson, is that of a rich, alluvial deposit, similar in appearance to that of our great prairies. Vegetable gardens were found at the different posts, as far north as Fort Good Hope, which is within twenty-five miles of the Arctic Circle. Another point was that he was never at any time beyond the limit of tree growth. Even at Fort McPherson, in latitude 67° 26′, the houses are built of spruce timber cut nearby, while the lumber for general use in flooring, sheeting, etc., is whip-sawed into lumber from logs, some of which were a foot in

diameter. There was also a vast quantity of spruce observed along the route, which is rather too small for lumber, but would furnish a world's supply of pulpwood.

The driftwood carried down to the Slave and Mackenzie rivers by such streams as the Peace and the Liard, is conclusive evidence that there is large timber up these rivers.

The fish in these northern waters, especially in Athabasca and Great Slave lakes, are of excellent quality and will some day be of great value.

The weather during the latter part of June and the beginning of July was exceedingly hot, and with the almost constant sunshine, vegetation was forced with hot-house rapidity.

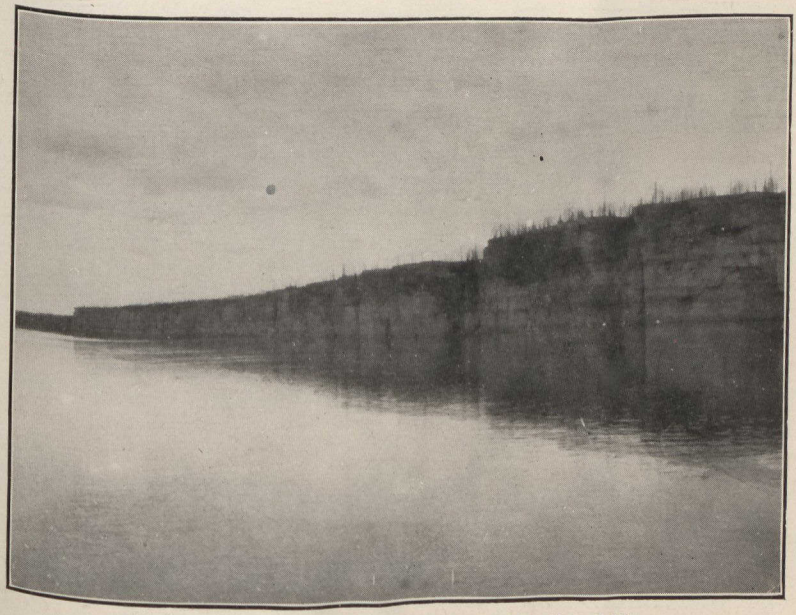
The general conclusion arrived at, was that this country, both in climate and soil, is quite equal to northern Europe, and that when the more southerly lands are appropriated settlers will find comfortable homes in portions of the Mackenzie watershed that are now generally regarded as unfit for settlement.

SPRUCE INJURED BY FUNGUS NORTHWEST OF LAKE WINNIPEG.

In making a geological exploration of the country between the lower Saskatchewan and Churchill rivers during the past summer, the white spruce, over a tract of forested land between Lat. 54° 45′ and Lat. 55° 30′, and extending to about half a degree east and west of Long. 100°, were found to be all more or less withered and yellow, as though a fire had run through the moss covering their roots. Closer examination shewed that the damage was caused by a cup-shaped fungus growing on the leaves. Specimens of this were collected and submitted to Professor John Macoun, who was able to identify it as a species of *Peridermium*, a fungus attacking all the spruces.

Ascending the Burntwood River, a tributary of the Nelson River from the west, the spruces were first found to be affected on July 23rd, at a point on the river a few miles below Burntwood Lake, where the tips of the branches, the growth of this year, were quite yellow, and where the surface of the water was covered with a bright red powder, made up of the spores of the fungi that were shaken off in clouds by every breeze.

Spruce along the Athabasca River, 300 miles north of Edmonton.



Ramparts of the MacKenzie, above Ft. Good Hope.

A little further west, on Burntwood Lake, and southerly up the File River, the damage was more striking, whole trees, instead of only the tips of branches, standing yellow and apparently dead, the boughs wreathed with cobwebs.

Along the Grassy River, another tributary of the Nelson, about sixty miles south of the Burntwood, the trees were affected in like manner to a point a little east of Wekusko Lake. It was noticed that on points projecting from the north shore of the lake, trees on the east side were quite yellow, while those on the west side were only tipped, and generally the more exposed sides of the trees everywhere were most affected.

Throughout the whole region, white spruces alone were attacked, though black spruces are common, and often grow in close association with the white. A small branch, with the fungi, was sent by Prof. Macoun to Prof. Geo. F. Atkinson of Cornell University, who writes:

"It is *Peridermium decolorans* Pk., 27th Rept. N.Y. State Mus. Nat. Hist., 104, 1875. This has a wide distribution in alpine regions and northern North America. It occurs on *Picea Mariana, rubra, Engelmannii, Sitchensis* and *Canadensis*, the latter one being the white spruce.

Here it occurs along the mountains of the Pacific from Banff, British Columbia, into Alaska. Probably the reason it does not occur on the black spruce, is because this form on the white spruce may be a biological or physiological form. You will find an account of its distribution on pages 428 and 429 of the August, 1906, number of the Bulletin of the Torrey Botanical Club."

The attack of this fungus, though probably only in extreme cases resulting in the death of the tree affected, must retard its growth, and, if recurring year after year, to a very marked degree.

There are specimens in the herbarium of the Geological Survey, collected by Prof. Macoun in 1881 near Lake Manitoba, but no serious injury to spruce trees in that region has been reported.

WILLIAM McINNES.

Geol. Survey, Ottawa, Canada.

The Annual Meeting of the American Forestry Association will be held in Washington on Wednesday, January 9th, 1907. Reduced rates on all railways have been secured for members and friends. Programmes, full particulars as to rates, etc., and other information may be had from the Secretary of the Association.

NOTES.

The National Lumber Manufacturers' Association of the United States has undertaken to raise an endowment fund of $150,000 for a chair of practical lumbering at the Yale Forest School. The work will be under the direction of a committee of lumbermen until the full amount of the fund has been raised, and no professor of lumbering will be appointed until the full amount of the endowment has been collected. In the meantime lectures and class work will be conducted by practical lumbermen from different parts of the country and in addition to these special lectures, instruction will be given at New Haven in the economics of the lumber industry in the nation, its position in commerce, industries dependent upon it, cost of logging, and in fact on all branches of the lumber industry.

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