

Three years after a fire on Turtle Mountain Forest Reserve, showing dense young growth.

# Canadian Forestry Journal.

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VOL. II.

MAY, 1906.

No. 2

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## ANNUAL MEETING OF THE CANADIAN FORESTRY ASSOCIATION.

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The Annual Meeting of the Canadian Forestry Association was held at Ottawa on the 9th March. Among those present were the President, Mr. E. G. Joly de Lotbiniere, Hiram Robinson, J. F. Ellis, Professor John Macoun, Wm. Little, H. M. Price, E. Stewart, W. C. J. Hall, Mr. MacLeod, Miss. M. Robinson, J. M. Macoun, Roland D. Craig, H. C. Wallin, R. H. Campbell.

The report of the Board of Directors was read by the Secretary as follows:—

### REPORT OF THE BOARD OF DIRECTORS OF THE CANADIAN FORESTRY ASSOCIATION.

Your Board beg to submit their report for the year 1905-06, and in doing so can congratulate the Association on the most successful year in its history. It is a subject for some pride to look back to the beginnings of this Association in 1900 when it commenced its career with a handful of members and made its appeal to a public which hardly understood even what the word forestry meant, with its present position, supported by a membership of nearly 1,200 representatives of the whole Dominion and with an aroused public opinion which is ready to listen and anxious to learn.

### FORESTRY CONVENTION.

The most notable event in the past year's history is the Canadian Forestry Convention which was held at Ottawa on the 10th, 11th and 12th January, 1906. This Convention was called by the Right Honourable Sir Wilfrid Laurier, Prime Minister of Canada, in accordance with the suggestion conveyed by him to the last Annual Meeting of the Forestry Association and the call was responded to by a large and representative gathering, which discussed forestry questions for a period of three



days. The interest taken in the proceedings by His Excellency the Governor General, by the Prime Minister, who personally presided over its deliberations, and by Mr. R. L. Borden, leader of the Dominion opposition, assisted much towards its success, and the Forestry Association, under whose auspices the Convention was held, owe the heartiest thanks to them and to those who assisted by the reading of papers and in other ways to the splendid result. The representative character of the Convention, composed as it was of clergymen, politicians, lumbermen, business men, educators, farmers, scientists, journalists, means that the effects will be far reaching. The success of this Convention means the opening of a large opportunity to this Association to advance the forestry movement and full advantage should be taken of the occasion to further the objects for which it exists.

## MEMBERSHIP.

In view of the Convention, a special effort was made during last year to increase the membership of the Association by sending out circulars of invitation and otherwise, and as a consequence of this work and the interest aroused by the Convention, the number of members has been increased from 562, as reported last year, to 1,161. In this connection the support given by the Banks to the Association deserves special recognition. The following Banks have paid the fees for membership of their Managers in the Association: Bank of Commerce, Merchants' Bank, Bank of Montreal. A comparative statement of the membership for the last two years follows:—

	1905	1906
Nova Scotia .....	21	67
New Brunswick .....	22	77
Prince Edward Island .....	3	6
Quebec .....	113	225
Ontario .....	187	368
Manitoba .....	72	115
Assiniboia .....	22	53
Saskatchewan .....	4	
Alberta .....	42	90
British Columbia .....	32	85
Yukon .....	.....	2
Newfoundland .....	1	1
United States .....	32	56
Other Countries .....	11	13
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Life Members .....	562	1,158
	39	



The receipts for last year were \$2,428, including a balance of \$916.11 from last year, and the expenditure \$1,124.84.

The thanks of the Association are due to the Governments of the provinces of Ontario, Quebec and British Columbia for grants in aid of the work of the Association, and also to the Forestry Branch of the Department of the Interior for providing for the publication of the Annual Report and other services.

It is only right that mention should be made of the work of Miss Robinson of the Forestry Branch, who though not on the recognized official staff of the Association, has rendered efficient service in the keeping of the Treasurer's books and in many other ways.

#### PUBLICATIONS.

The Canadian Forestry Journal has been published throughout the year as a quarterly and it is hoped that it has been satisfactory to the Association. It is desirable that the Annual Meeting should consider this question of the official organ carefully and fully. If the Journal could be issued more frequently its usefulness would be largely increased, and as the present editor has submitted his resignation, it is well to consider if the time has not arrived when provision might be made for an editor and business manager who could devote the greater part of his time to this and similar duties.

In addition to the Forestry Journal, the Association would find it of advantage to issue a series of bulletins for the information of the public and also to supply material to papers and news agencies. Despite all that has been done, there are large circles of public opinion still untouched and it will require persistent and constant effort to thoroughly reach all classes and all parts of the Dominion.

A well edited paper, with a large list of subscribers and frequent publication could, with good business management, obtain an income from advertising that would go far to make it self-supporting. For this purpose a managing editor, who can give most of his time to the work, is a necessity.

The Sixth Annual Report containing the papers and proceedings of the last Annual Meeting was published and distributed as usual. This report serves a special and useful purpose, but it may be considered whether the papers might not appear in the Forestry Journal if publication is made more frequently.

#### VICE-PRESIDENTS.

After the last Annual Meeting the Board of Directors appointed the following Vice-Presidents:—

Prince Edward Island, Rev. A. E. Burke; Nova Scotia, Hon. J. W. Longley; New Brunswick, His Honour J. B. Snowball;



Quebec, Hon. S. N. Parent; Keewatin, His Honour the Lieutenant Governor of Manitoba; Assiniboia, His Honour A. E. Forget; Alberta, Wm. Pearce; Athabasca, F. D. Wilson; British Columbia, Hon. H. Bostock; Manitoba, Hon. J. H. Agnew; Ontario, Hon. Nelson Monteith.

The Resolutions passed at the last Annual Meeting were transmitted to the Minister of Railways, to the Local governments and to others interested and were acknowledged with promises of consideration.

It may be noted that the Transcontinental Railway Commission, in calling for tenders for the construction of the Transcontinental Railway have included special requirements in regard to the protection of the forests along the route from fire, this being a question dealt with by one of the resolutions.

#### FOREST FIRES.

Forest fires caused considerable loss in different localities during the past year. In Nova Scotia one village was destroyed. In New Brunswick, Moncton was threatened and for a time the situation in several places was serious. In Quebec the smoke from fires interfered seriously at times with navigation on the St. Lawrence River. Ontario did not suffer heavily nor did the western provinces, except British Columbia. The weather conditions east of the Rocky Mountains during the early part of the season were such as not to require very close patrol service, but later it was found necessary to have the rangers continuously on duty. In British Columbia we seem to be passing through a cycle of dry seasons and that of 1905 was one that threatened the greatest destruction of timber. At one time it was feared that the whole of the valuable timber in the Shuswap country would be swept away, and for weeks a large body of men under the Dominion Fire Rangers were kept constantly fighting the fire with the result that only a small quantity of merchantable timber was destroyed. The Kootenay district seems to have suffered most heavily.

An important work to be done by the Dominion Government is the protection from fire of the large extent of northern forests, as settlement and railway construction extends into them.

#### TREE PLANTING.

The Dominion Government is continuing and extending the system of co-operation with the settlers in tree planting which was started in the year 1901. During the past season nearly two million trees were distributed to settlers on the bare prairie, and this spring (1906) a little over that number will be sent out, making a total distribution of about seven million trees, besides a considerable quantity of tree seeds.



The examination made by the inspectors last season showed that about 85% of all hitherto distributed were then growing.

In Ontario, in connection with the Agricultural College, preparations are being made for a supply of trees for distribution in that province, a nursery for that purpose having been established.

#### FOREST RESERVES.

An advance step which has been made in connection with the administration of the Dominion Forest Reserves is the commencement of a regular timber survey. The survey of the Turtle and Moose Mountain Reserves was completed and it is the intention to continue the work next season on the large reserve in the Riding Mountain. The value of such an examination will be to give data as to the quantities of dry and green timber on each reserve, the different species and the annual growth of each species.

Experiments are being made in Nova Scotia by private persons in the reseeded of burnt lands with spruce, the seed being imported from Germany. In one case a tract of ten thousand acres is being seeded.

#### FORESTRY LEGISLATION.

In all the Provincial Legislatures advances in Forest legislation are being foreshadowed and it is expected that the present year will show considerable activity in this respect, both in the Dominion and the Provinces. The Forestry Convention has had a great stimulating effect in this respect.

Invitations have been received from British Columbia and from the Maritime Provinces for the holding of a Summer meeting of the Forestry Association. These invitations will be submitted.

The thanks of the Association are due to the press for valuable assistance, and to the railway companies for their kindness in granting single fares for this meeting.

Respectfully submitted.

A letter from Mr. R. H. Alexander, Secretary of the British Columbia Lumber and Shingle Manufacturers' Association, was submitted by the Secretary, conveying an invitation to the Forestry Association to meet in Vancouver in June.

A similar invitation for a meeting at Halifax, Nova Scotia, was received from Rev. A. E. Burke, and was also submitted to the meeting.

After some discussion it was decided that the invitation from British Columbia should be accepted, provided satisfactory rates could be arranged with the railway companies.



The following changes in the Constitution of the Association were passed:—

Clause 1, setting forth the objects of the Association was amended by adding the following sub-clause:

(6) To secure such forestry legislation from time to time from the Federal and Provincial governments as the general interests demand and the particular needs of the people seem to require.

The office of the Secretary-Treasurer was established, the editor of the official organ was added to the list of officers, and the number of the Board of Directors increased from seven to fifteen. The quorum of the Executive Committee was fixed at five.

The Forestry Journal was discussed and it was decided that as soon as possible it should be made a monthly publication and that, in view of the resignation of the present editor, a permanent editor should be appointed so soon as the funds of the Association will permit.

The election of officers resulted as follows:—

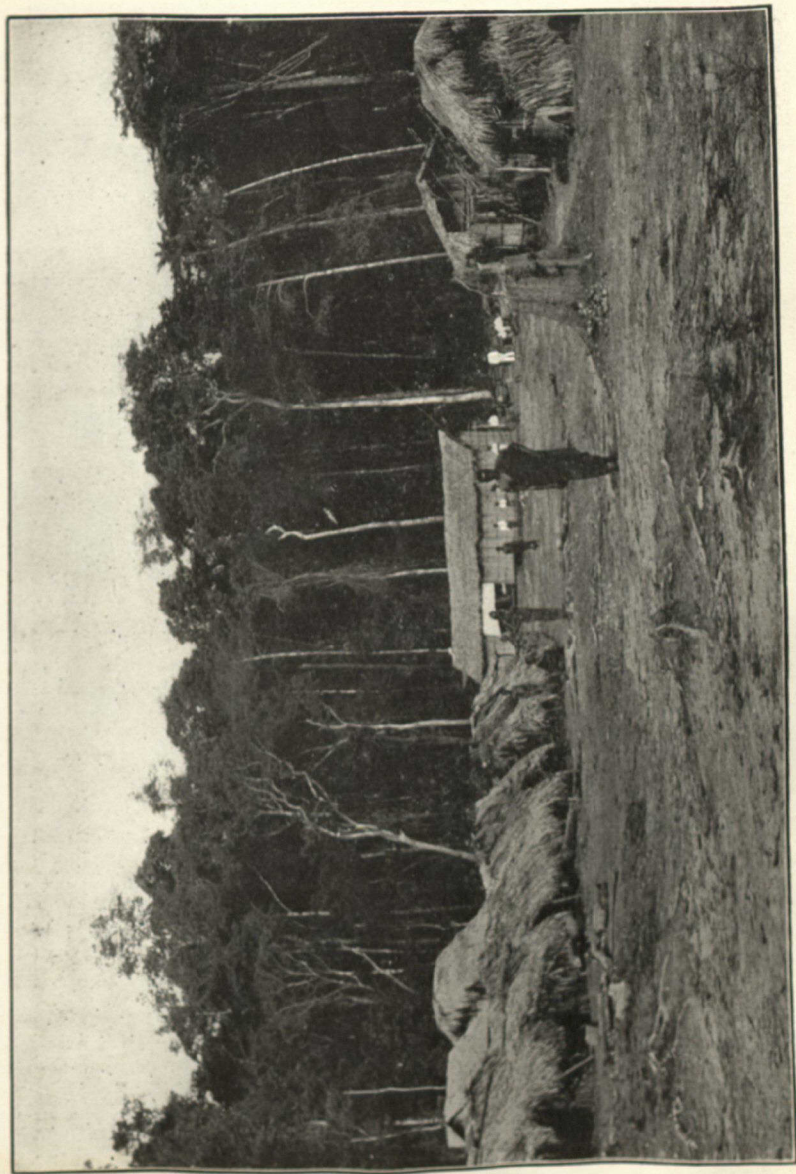
Patron, His Excellency the Governor General; Honorary President, the Right Honourable Sir Wilfrid Laurier; President, E. Stewart; Vice-President, H. M. Price; Secretary-Treasurer, R. H. Campbell; Assistant Secretary, Roland D. Craig; Board of Directors: J. R. Booth, Hiram Robinson, Monsignor J. C. K. Laflamme, Dr. Wm. Saunders, Hon. Sydney Fisher, Thos. Southworth, E. G. Joly de Lotbiniere, Hon. H. Bostock, Wm. Little, Hon. W. C. Edwards, Professor John Macoun, J. B. Miller, W. C. J. Hall, J. F. Ellis, Gordon C. Edwards.

At a subsequent meeting of the Executive Committee the following Vice-Presidents were appointed:

Ontario, Hon. Nelson Monteith; Quebec, Hon. A. Turgeon; New Brunswick, Hon. F. J. Sweeney; Nova Scotia, Hon. Arthur Drysdale; Prince Edward Island, Rev. A. E. Burke; Manitoba, Hon. J. H. Agnew; Saskatchewan, His Honour A. E. Forget; Alberta, Wm. Pearce; British Columbia, His Honour Sir Henri Joly de Lotbiniere; Keewatin, His Honour the Lieutenant Governor of Manitoba; Mackenzie, F. D. Wilson; Ungava, Peter MacKenzie, Hudson's Bay Co., Montreal; Yukon, W. W. B. McInnes, Commissioner.

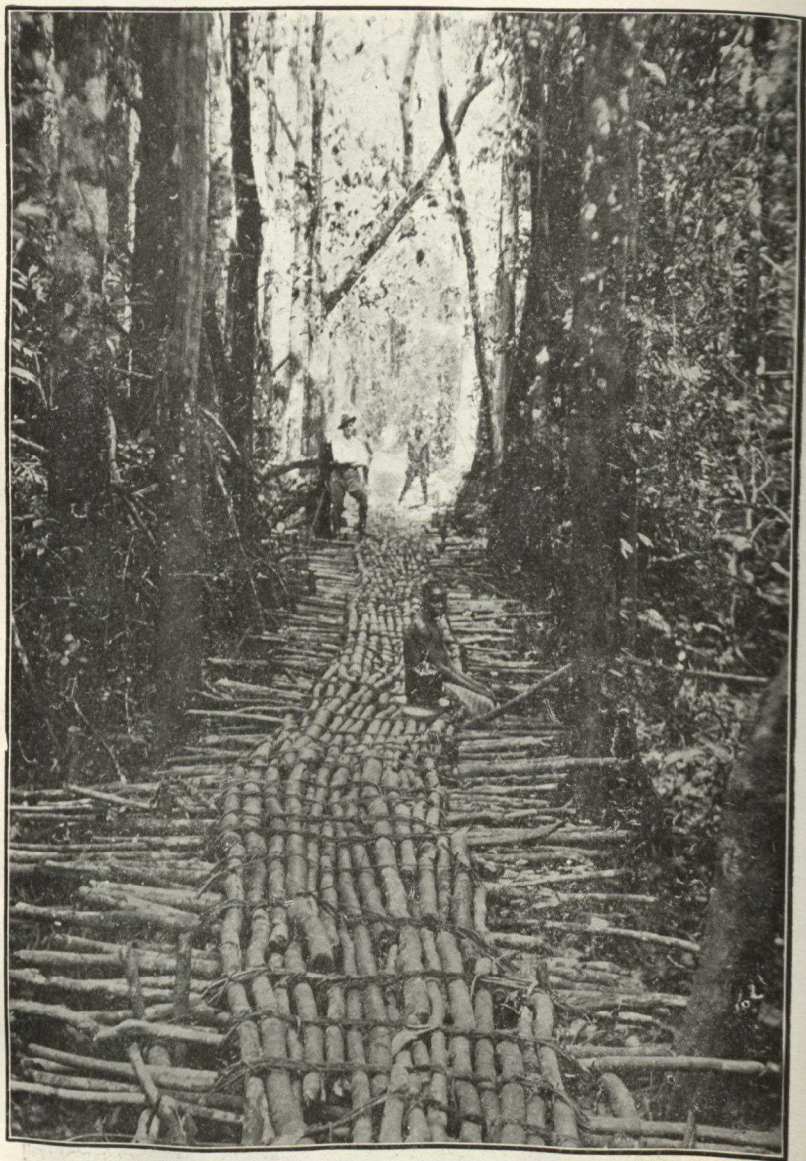
A committee consisting of Messrs. E. Stewart, J. M. Macoun, Roland D. Craig and R. H. Campbell was appointed to supervise the editing of the Forestry Journal pending the appointment of an editor.

A resolution appreciative of the service rendered by Miss M. Robinson of the Forestry Branch to the Forestry Convention and the Forestry Association was passed.



1. Puba from back. Bush with clearing in front of Manager's and Laborers' houses.



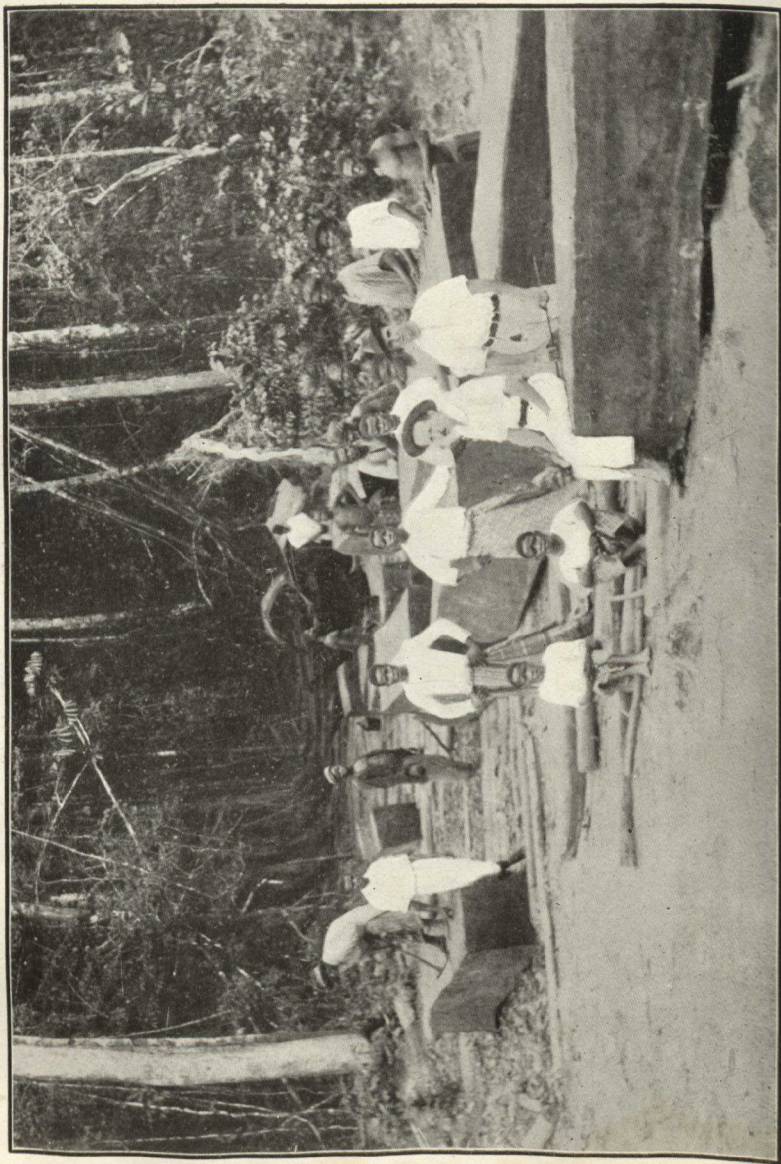


2. Bridge over Swamp, made by Puba Natives under white supervision.



3. Hauling Timber to Waterway.





4. Collecting logs previous to putting them in the water, just outside the picture;

## LOGGING IN SOUTHERN NIGERIA.

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A. HAROLD UNWIN, ASSISTANT CONSERVATOR OF FORESTS,  
BENIN CITY, SOUTH NIGERIA.

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In a previous article\* some account of the forestry and timber operations in West Africa was given. Logging in every country is a most fascinating work, both to take part in and to watch. In this tropical country the vegetation in the real forest belt is so dense that before actual felling operations can begin a large clearing is made near the river, which is to be used for floating logs. Here are native huts for the wood cutters, including a mat-roofed house for the white manager in charge. Such a view, with the typical "bush" in the background, is shewn in illustration number one.

It must be remembered, too, that in such a forest, only perhaps one tree in a hundred is a mahogany of mature growth, which makes it extremely difficult to control the varying felling parties, each under its native foreman. The trees having been felled, "roads" are made, i. e., the bush is cut up to 6 feet from the ground, and any very bad hollows filled in with small billets of wood. The whole gives the appearance of a large tunnel-like arbour. The swamps which occur at intervals have to be bridged by ramming in a number of small stakes and fastening with various vine stalks and crosspieces, making the whole a strong, though very elastic structure. Illustration number two shews one of these fully half a mile long. In crossing one, about a year ago, the writer saw a carrier go clean through, leaving his load, which he was carrying on his head, on the bridge. He was subsequently pulled out of the reeds and mud into which he had fallen.

In the ordinary bush, skids, made of small billets of very hard wood, are laid on the tracks already cut. Along these the logs are drawn by other gangs of natives. A log 4 feet square and, say, 12 feet long on an average, takes 70 or 80 "boys," as the haulers are termed, to drag it at all, and then only with pauses every now and then and continuous shouts from the foreman, and a kind of "song" from the men. When a log really gets stuck, and this is not seldom, levers are supplied at the back and a tremendous lot of "human" energy uselessly expended. It is very difficult to get natives to haul together. Illustration three, though a poser, shews this to advantage.

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\* Canadian Forestry Journal, Vol. I, pp. 173 - 175.



The ground, as is natural by its low elevation about the sea up to 200 feet, and with it a very thick layer of forest humus, is very soft, or other means of transport would be adopted. Then too, the trees are so isolated that a tramline or light railroad would not pay. In the near future, the Indian buffalo, or the indigenous elephant, it is to be hoped, will be harnessed and thus draw the 3, 4, 5, and even 6 ton logs. During a day (6 a.m. to 5 p.m.) a gang of natives manage to bring in up to 5 logs grown a distance of a mile to a mile and a half, very slow work to be sure. These are gradually collected at the waterside to be stamped before being put into the water. In the fourth picture we have such a scene, though the quantity of logs is by no means typical, as there are few there, compared to some shipping points where hundreds collect in a month. From this place they are sent down in small rafts of 5 or 10 logs, about 80 miles, where they can be made up into large rafts to go down to Koko Town, or Benin River, where the steamers pick them up before starting back on their 5,000 mile track to Great Britain.

It goes without saying that all this is very expensive, and works out at roughly 2 cents a foot, board measure, which is, of course, very high, even for Africa with its undeveloped roads. It shews again the great part which transport plays in the timber and logging industry. The freight from the West Coast to England at \$6 a ton (recently reduced from \$8 and \$7 to this figure) is about the same as from similar distances from India, Siam or other countries, for the same class of material. Nevertheless, it amounts to roughly a cent a foot. Therefore, at a market price of, say 6 cents a foot, board measure, (an average rate for 1904) transport from the forest makes up half that. Government dues of all kinds, recently fixed at nearly \$14 per ton, works out at 0.6 cts. per foot on average material, and at the price quoted form 1-10 of the cost, which is by no means high, compared to Algeria, India, Ceylon and Java. The price of the timber at 6 cts. a foot, c.i.f. Liverpool, is low, and the above rates become very favorable at a price of 12 cts. per foot, such as was obtained during 1902 and 1903.

NOVEMBER, 1905.

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We are glad to see that the British Columbia government has made an appropriation, though only \$5,000., for fighting forest fires during the ensuing year. For an adequate system of fire protection at least ten times that amount would be required, but as the value of the forests become more fully appreciated we may expect the provincial governments to make larger appropriations for their protection.



## CANADIAN FORESTRY EDUCATION.

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A. H. D. ROSS, M.A., YALE FOREST SCHOOL.

The forest has been aptly described as "the balance-wheel of nature," and the farther we look into the matter the more firmly are we convinced that this is really the case. It is the most highly organized portion of the vegetable kingdom, and its effects upon its environment are extremely important and far-reaching. By a ruthless disturbance of the "balance-wheel," the once powerful Persian Empire has been reduced to a state of pauperism. The destruction of her forests was swiftly followed by the drying up of her streams, the disappearance of her fertile fields, and the shrinkage of her vast population to something less than eight millions of people. Syria, Spain, Turkey, parts of Italy and southern France also know, to their cost, what a disturbance of nature's balance-wheel means, and if we are wise in our day and generation we will heed the teachings of history and try to profit by the sad experience of these countries, and do our utmost to preserve the proper balance between our woodlands and the areas cleared for agricultural purposes.

In all parts of the world the forest was first valued as a harbor for game. Later it was regarded as an impediment to agricultural development and relentlessly slashed and burned to get it out of the way. As good timber became scarce it was exploited in the most ruthless manner and vast areas were rendered almost worthless for the production of further crops. Both in itself and in its far-reaching effects upon mankind the forest is marvellously complex and only the most highly civilized peoples have acquired a clear conception of its relation to the future welfare of the nation. By the decay of its resources a nation may cease to exist, and whilst debating over the best methods of disposing of its wealth it may even lose its capital without ever realizing the fact. Only slowly does it seem to dawn upon the public mind that the loss of our forests without adequate restoration will be the deadliest imaginable blow to our future progress and prosperity. It is high time that war should be waged against the useless destruction and needless waste of our forest wealth, and that provision should be made for future crops of trees. A prosperous nation cannot be built up in a desert, nor on the other hand can a people continue in power and influence when the territory from which they draw their substance shall have receded into barrenness. The standing of a nation is well



measured by the distance it is able to look ahead and make provision for the future, and in Canada the time seems to have arrived for a more systematic and scientific study of the conditions of reproduction and development of our forests, so that sufficient data may be available on which to base plans of management for the future. The attention of the world, and particularly of the great republic to the south of us, is being directed to our forests which are rich with a great variety of trees and constitute one of our most important sources of wealth. But it must be remembered that wood, in one form or another, is an absolute necessity in the present stage of our civilization, that our people use enormous quantities of it, and that during the twentieth century our population is almost certain to reach the eighty million mark. Hence, it will be seen that, even with our great forest areas (much of which is of inferior quality), we must adopt a more scientific method of management if we are to make anything like adequate provision for the home consumption, and leave a fair margin for export to other countries. It is only by a general and far-reaching system, based upon an adequate, scientific and practical grasp of the whole situation in all its aspects that our people can hope to avert the evils which have overtaken other lands as a result of the disappearance of their forests. Hence, there has arisen the necessity for a class of men with a training of a highly technical nature—men thoroughly grounded in the principles of silviculture, lumbering, milling, transportation, political economy, etc., and with a clear conception of the relations of things that at first sight do not seem to be related even in the remotest degree. In other words, Canada needs schools to train foresters to undertake the proper management of her vast forests, and to prevent their ruthless destruction by fire and axe.

To the objection that there is no room for trained foresters in Canada we would reply that, some thirty years ago when President Loudon and a few other far-sighted gentlemen advocated the establishment of an Engineering School in connection with Toronto University, they were told that there was no need for it, and that such a movement simply meant the stranding of a lot of young men at the end of their courses in engineering, without hope of employment. Fifteen years later when Professor Goodwin and others advocated the establishment of a School of Mining in connection with Queen's University, they were told the same thing, and to-day there are still plenty to tell us it is perfect madness to establish a Provincial School of Forestry in Ontario, in Quebec, in New Brunswick, or anywhere else. The fact remains, however, that neither Toronto nor Queen's University can meet the demand for graduates from their technical schools. The training received in both institu-



tions is so thorough that it has created a demand for itself, and there is every reason to believe that the graduates of a first class Forestry School would be just as eagerly sought after as the graduates of our engineering and mining schools. The science of forestry includes both the theoretical and the applied portions of botany, ecology, physiography, dendrology, wood technology, silviculture, treatment of woodlands, seeding and planting, forest engineering and mapping, forest administration and law, forest protection, lumbering and transportation in all their complex relations, and forest hydrography. Whether such an extensive course of studies should be attempted in a four years' under-graduate course as it was at Cornell, and as both Queen's and Toronto Universities have proposed doing; or whether it should be made a post-graduate course for men who are university graduates in the natural sciences, as at Yale and Michigan Universities, will depend upon the degree of specialization we wish our foresters to attain.

A forester is not a mere botanist let loose to air his facts at the expense of others; neither is he a fire ranger, a lumberman, a sportsman, an arboriculturist, a dendrologist, a silviculturist, or any other ist. He must clearly understand all these phases of the question, and their relation to one another. He is constantly being called upon to deal with universal and economic questions of tremendous magnitude and importance. His profession touches life at many points, and he must of necessity be thoroughly well trained for his life work if he is to be of the highest service to the state. The state cannot afford to place such tremendously important questions as the Science of Forestry has constantly to deal with in the hands of a corps of inefficiently trained men. President Roosevelt says "The forestry problem is in many ways the most vital internal problem in the United States;" and Ex-President Cleveland says "Through the teachings of intelligent forestry it has been made plain that in our Western localities ruinous floods and exhausting droughts can be largely prevented, and productive moisture in useful degree at needed periods secured by a reasonable and discriminating preservation of our forest areas. The advocates of irrigation have been led to realize that it is useless to provide for the storage of water unless the sources of its supply (the forests) are protected; and all those who, in a disinterested way, have examined these questions concede that tree growth and natural soil on our watersheds are more valuable to the masses of our people than the foot-prints of sheep or cattle." From whatever point of view we approach the subject we cannot get away from the fact that the forestry question is one of national importance. The forester must possess a thorough knowledge of the life history of each kind of tree to be grown; the influences effecting its welfare; the methods employed in its management; the technical proper-



ties and uses of its wood, bark, gum, or other products; the removal, preparation and marketing of these products, and the various economies that may be gained by skilful operations. He must possess a knowledge of all that pertains to the growth and production of forest trees, and with this knowledge he must combine the further knowledge of how to manage a forest property so as to produce conditions that will result in the highest attainable revenue from the soil by wood-crops. His business is to grow crops of trees, AND MAKE THEM PAY. If he does not succeed in this, we are better without him. If he can succeed, and does succeed, then we should secure his services as soon as possible.

The idea that scientific foresters are purely theoretical, and of little or no use, is now pretty well exploded, even in America, and it will not be long before the science of forestry is recognized as a distinct profession here as in Europe, where much of the timber land is made to yield a yearly revenue of five dollars per acre, instead of being sold for taxes. The forester does not aim to oppose nature, but to assist her; to make use of the favourable conditions naturally existing in any given locality, and to hold in check the unfavourable ones. He exercises his skill in the selection of the most suitable species, and modifies their growth so that they will produce the most valuable timber in the shortest possible time without diminishing the value of the soil for the production of future crops. Just as the agriculturist is engaged in the production of food-crops, so the forester is engaged in the production of wood-crops. Both carry on their business for the practical purpose of a revenue; both must protect the crop from insect ravages, fungous diseases and fire; both must guard against the impoverishment of the soil, and constantly aim to increase its value. In each case the land is the principal capital, and any part of it either wholly non-productive or turned to a less profitable use than it might be represents so much wasted capital. Like other forms of capital, there is no reason why our forest wealth cannot be made to perpetually renew itself and yield ample interest from year to year without diminishing the original endowment. In addition to the growing of wood-crops for profit, the forester must consider the indirect effects of the forest on rainfall, the flow of streams, the growing of grain and fruit crops, and many other complex problems. He must cultivate a receptive attitude of mind, and endeavour to develop what may be best described as FACULTY—the rare gift of understanding the real relations of problems that at first sight do not seem to have any bearing whatever upon one another. Just as the science of botany deals with everything pertaining to vegetation, so the science of forestry has to do with everything connected with forests—EVERYTHING.

Like agriculture and mining, forestry has a scientific basis,



and when better understood will command equal attention and be recognized as a factor that enters largely into the more important economic questions of the day. Just as our agricultural colleges and experimental farms require a large number of professional men with superior technical training to teach the principles of agriculture and investigate the new problems that are constantly coming forward for solution, and just as our mining schools and our Geological Survey Department need highly trained specialists to teach us how to develop our mineral wealth, so our forestry schools and our Bureau of Forestry will be expected to employ highly trained specialists for the teaching of the principles of forestry and the investigation of its complex problems. Twenty years ago the science of forestry was regarded as an abstract and debatable theory, and all knowledge of it was confined to a few scientific experts and enthusiasts whose views were regarded as of doubtful value. To-day the most intelligent and public-spirited members of the community regard the treatment of our forest resources as a vital and urgent economic problem, and there seems to be widespread recognition of the fact that the preservation of a due proportion of the land in forest for all time is the only possible means of securing either agricultural fertility or a lasting supply of timber. The whole question is an exceedingly complex and difficult one, and calls preeminently for the exercise of the providential functions of the state to counteract the destructive tendencies of private exploitation. The state being an institution for the purpose of insuring not only our present, but our future and continued welfare must, necessarily, take an interest in the permanence of the natural resources upon which its welfare rests.

Inasmuch as the time required for a crop of trees to reach the most profitable age for cutting is so long that very few private owners can afford to adopt this branch of farming on a large scale, it can best be conducted by the state—by the people as a whole, and for the benefit of all. The experience of centuries goes to show that while the individual makes the best farmer, the state makes the better forester, and usually the only safe and good forester. This being the case it seems to be the plain duty of our legislators to make adequate provision for the training of an efficient corps of men with the technical training necessary for the proper management of our magnificent forests. Under rational management their producing capacity can be increased manifold, and a handsome revenue obtained from them. No other economic problem confronting our legislators is equal in importance to that offered by the present condition and future fate of our forests. The opportune time seems to have arrived when effective public interest in forestry education and forest preservation should be persistently aroused and stimulated.



## LETTER FROM MR. LOUIS MILLER.

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The following letter from Mr. Louis Miller, of Crieff, Scotland, submitted by Mr. F. C. Whitman, President of the Western Nova Scotia Lumbermen's Association, at the Forestry Convention, contains a criticism of Canadian lumbering methods which is frank, if not complimentary, and also shows that private enterprise is active in Nova Scotia in efforts to remedy the effects of deforestation. Mr. Miller expresses his thanks for the new Forest Fire Act, providing for a fire ranging system which has been passed in Nova Scotia and continues:

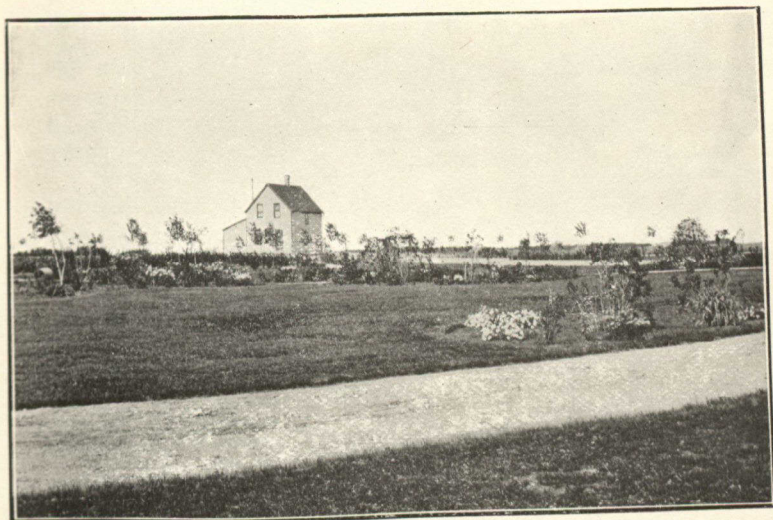
Unfortunately, however, the whole of Nova Scotia has not adopted that fire bill, but only certain portions of it, and I wish you could use your influence with the authorities to get it adopted by the whole of Nova Scotia. For instance, I have a property of about 100,000 acres of forest lands at Ingramport, at the head of St. Margaret's Bay, and the district of Nova Scotia, in which that property is situated, has not adopted the fire bill, and as I am practically a stranger in Nova Scotia and only come across for a month or two in summer, I don't know the parties to whom to apply, or I would urge them to get the whole of Nova Scotia to adopt that fire bill.

About two years ago we had a serious forest fire at Ingramport, caused by some fishermen coming out from Halifax—some of the officers of the garrison regiment there—to fish in the lakes on our property, with the result that they set fire to the forest and burnt up about 10,000 acres.

When a forest fire takes place in Nova Scotia, or any part of Canada, a crop of bushes and hardwood comes up afterwards, and the burnt ground is entirely lost for twenty or thirty years, for it is only after that time that the natural crop of spruce trees begins to come up.

I have had large experience in Sweden during the past 25 years, and I have been all over Finland and Russia. The accessible Russian forests are practically all exhausted, while those of Finland and Sweden are very nearly the same. During the past few years the Swedish people have taken alarm and started a Government system of planting over the country, which is the cheapest and probably the best I have yet come across. In Scotland it costs £2 per acre to plant young trees. In Sweden, however, they plant the seed. Wherever a forest has been destroyed by fire, or has been cut down, the Government employs a forester with about a dozen or twenty boys. The boys are





One year after planting at the Forest Nursery Station, Indian Head.



Cedar Forest along the Columbia River, B.C.



placed in a row about six feet apart, each with a small hand-iron; they take out a small hole in the ground, drop four or five seeds in it, tramp on it with the foot, and pass on, taking out holes in this way from three to six feet apart. One pound of seed plants about five acres and the seed costs one shilling per pound. In this way the Swedish forests are replanted at a cost of about 25 cents per acre. Seed thus planted grows up immediately, and I have seen Swedish forests planted a few years ago now with a young crop of trees a few feet high.

When I got the 10,000 acres burnt in Nova Scotia, I took out a ton of spruce seed from England to plant up that burnt ground, but was very much astonished to find I was charged 20% duty for importing it to Nova Scotia. I remonstrated with the Ottawa authorities, who compromised the matter by reducing the duty to 10%. I think, however, it is short-sighted policy on the part of the Canadian Government to levy a duty upon seed imported for planting up waste ground in Canada. For example, I reckon that an average acre of forest in Nova Scotia or Canada contains about 6,000 feet of timber, and the cost of cutting down, manufacturing and putting f.o.b. 1,000 feet of lumber is about \$10.; so that on every acre of forest property cut down, about \$60. has to be expended in wages disbursed in the country and which benefits the people of the country. It is therefore of very great importance to Canada to have its waste ground covered with forest, instead of lying barren, because it means employment for the people and benefit all round. I am planting up that 10,000 acres of burnt land on my property by employing about a dozen boys and doing it on the Swedish system. One man goes behind them to keep them in a straight line. A boy, as a rule, can in this way plant about five acres per day. By planting up this 10,000 acres of burnt land with spruce seed I expect in five years to have the whole ground covered with a crop of young spruce trees three to four feet high, which in 25 years, will be suitable for making pulp, and this instead of having the ground lying waste for 20 or 30 years growing hardwood bushes.

I also took over a small quantity of larch seed which I wish to experiment with on my property, but the Nova Scotia soil is suitable for spruce, and except for experimental purposes, the crop planted should be spruce.

Forest management in Nova Scotia and Canada is about the worst anywhere. In fact, there is practically none at all, and I don't think any of the Canadian or Nova Scotia lumbermen know anything at all about their forests. Some of the chief of them with whom I have conversed have never seen their forests, or at least only to a very limited extent. During the past five years I have had many forests in Nova Scotia, New Brunswick and Quebec examined with the view to purchase, only to find



the bulk of them terribly mismanaged and destroyed. I have reason to believe that the same state of matters exists everywhere in Eastern Canada, and that the forests there are much more exhausted than the Government or the people who own them themselves believe. In fact, I don't know where to find a really good forest to purchase in any part of Canada or Nova Scotia; they have all been cut down recklessly without any system at all. The easiest and best of the trees have been cut, the root cuts taken off for logs, and the great big tops allowed to lie in the forest. In fact, the forests have just been wasted and destroyed, and the Canadian Government will have to waken up immediately ere it is too late. All over Quebec and New Brunswick the big trees have been exhausted, and if the Government were to insist upon their conditions being adhered to and only those trees cut of stipulated size according to law, three-fourths of the Quebec and New Brunswick mills would have to close, because they are at present fed with under-sized trees, which, according to Canadian laws, are being illegally cut.

The Canadian Government should send young men to Germany for a year or two's study of forestry and forestry laws adopted there, their system being perhaps the best at present in existence. I think, however, that the Swedish system would be far cheaper and more suitable for Canada than probably the German system. The Germans have cheap labour and they can afford to plant young trees, but labour is dear in Canada, and the Swedish system, if adopted, would, I think, be more suitable for Canada and Nova Scotia, because it would be cheaper and could be done on a much larger scale. The German forestry laws compel proprietors to replant the ground and not to allow it to lie waste.

In fifteen years the pine in the Southern States of the United States will be exhausted; the United States will then be in desperation for lumber and will have to get its supply from Canada or the Pacific Coast. Canada will not be able to give the United States half the supply it requires, because Canada has destroyed and exhausted its accessible forests much more than people have any conception of, and the sooner Canada sets about preserving and protecting its forests and replanting the burnt ground, the better it will be for the future of the country.

I have been through the Northwest of Canada as far as the Pacific Coast, all through Manitoba on to Vancouver, and am of the opinion that Canada requires all its Eastern forests to supply the plains of Manitoba and the Northwest with the necessary lumber, during the next twenty to thirty years. I have been all over Quebec and New Brunswick, and everywhere I have gone to examine forests, I have found them depleted and exhausted, and especially in Quebec, no sooner is a forest cut down than a



fire sweeps up everything remaining; the damage by fire there is something enormous and a system of replanting the burnt ground should be immediately adopted all over Canada.

My experience of Nova Scotia is that an average or fairly good forest will give a growth of about 5% per annum—in other words, I reckon our property at Ingramport, Nova Scotia, to contain about 6,000 feet per acre of growing trees on an average over the whole ground. I don't mean 6,000 feet of big trees ready for cutting, but of all sizes of trees from perhaps the thickness of your arm upwards. On 100,000 acres this means 600 million feet, 5% growth on which would be something like 30 million feet per annum. Of course, the small trees are growing even more rapidly than the big ones. If any one were to cut down the big trees on this ground, there would not probably be more than half this quantity available of big timber suitable for deals, but the small growing timber is, in my opinion, quite as valuable as the big timber, because it is growing rapidly every year, and it takes the place of the big timber. Of course, lumbermen ignore the future, and look only to where they can get sufficient big trees every year as big as possible to feed their mills, and in a matter of five to ten years Nova Scotia will be practically exhausted, except a very few properties. The same remarks apply to Eastern Canada. Of course, there are large forests away north from Lake St. John and north in the direction of Hudson's Bay, but they are inaccessible, and the cost of getting them out is far too great at present, and what we have to deal with are the Eastern Canadian forests already opened up, and which, in my opinion, will be exhausted in ten to fifteen years unless some system is adopted by the Government of replanting on an extensive scale, and the only way to do that properly is to send men to Germany to study the German methods and also to study the system of planting adopted in Sweden and to have a system introduced into Canada which will benefit a future generation as well as the country.

On the 10,000 acres of burnt ground on my property, I have cut down all the trees, large and small, and have made the burnt trees into lumber to get the ground properly cleared up so that I can replant it immediately, and during the past two years I have been occupied at that. By the end of next year I hope to be finished with it, and then I propose to thin out the forest systematically year by year, as we do in Sweden, that is, to take a certain section of the forest each year and cut out the big trees carefully and to branch out these big trees to three or four inches at the small end, so that the branches may fall down on the ground and disappear quickly, and to log out these trees to about five or six inches at the top end and clear up the forest properly, instead of the system at present in vogue of cutting down a big tree and only taking off a root log and allowing 30 or 40 or 50 feet of the top



part of the tree to lie in a great big bunch with the branches all on it, which just means a temptation for a big forest fire, and a great waste of lumber. By taking say a certain section each year of 1,000 acres or more and thinning out the big trees, and cutting over the whole forest in this way, systematically, as we do in Sweden, the result is that in 20 years the forest that has previously been cut over and which has had the light let into it, is in a better condition than ever.

The big Swedish sawmill owners, as a rule, own sufficient forests to feed their mills for the future by cutting only what they estimate to be the yearly growth, and by going through the forest systematically section by section every 20 years or so and thinning out the big trees only in such a careful way that the forest is not destroyed and that fire is not encouraged. If the same system could be adopted in Canada it would be a great future boon to the country.

Norway and Sweden have practically for the past fifty to sixty years supplied the world with lumber, but now their forests are practically exhausted and their production will go down rapidly in the future, and the demand upon Canadian forests, both for Great Britain and the United States, will, in the future, be greater than ever. No system has been adopted by the Canadians of protecting and replenishing their forests for the future, and the result will be that the Canadian forests in ten or fifteen years will be entirely depleted and exhausted, unless the Government immediately wakens up.

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That Newfoundland is becoming interested in the preservation of her forests is shown by the following extract from the speech from the throne delivered recently:

"Fully apprehending the importance of our forest's wealth and its relation to the fisheries and other industries, my ministers have decided to create additional forest reserves, and while permitting legitimate lumbering operations in such localities as may seem expedient, to prevent the erection of sawmills upon such lands as are reserved in the public interest. A Bill dealing with this matter will be submitted for your consideration."



## HOW SHALL FORESTS BE TAXED?\*

EXTRACTS FROM A PAPER READ BEFORE THE SOCIETY OF AMERICAN FORESTERS BY ALFRED GASKILL, FOREST INSPECTOR,  
UNITED STATES FOREST SERVICE.

The question of how forest lands should be taxed is a most important one, and while the systems of forest taxation in the United States are in some respects very different from our own, just as our systems vary in the several provinces, the general principles underlying the systems of the two countries are nearly enough alike to make these extracts from Mr. Gaskill's paper of interest to Canadians. That inequitable taxation is responsible for much forest destruction is the claim made in the first part of the paper and all the extracts here given deal with this aspect of the question.

"No other question concerning the woodlands of the country, save that of fires is so important, and we shall make little substantial progress in the effort to induce private owners to maintain their forests until the present condition shall have been relieved and the forests be so rated that they shall bear no more than their fair share of the cost of government . . . . In all the older states, those wherein lumbering has greatly enhanced timber values, the tax levied upon standing timber is often a warning to the owner that he must cut it or run the risk of great loss, and when he has cut it the bare land is taxed so high that he is forced to abandon it.

"A few attempts to correct the evil, through partial exemption, rebates or bounties have been made. But, though such measures may serve for a beginning, the real need is for laws that, recognizing the public utility of forests, adjust the necessary tax levies to the facts and conditions that govern tree growth, and to the long periods of time that are required to produce timber.

"In general, it is assumed that taxes are imposed for the protection of persons and property, as well as for public necessities, yet rarely is the obligation extended to woodlands. The forest is not only allowed to go unguarded, but everyone may tramp and camp therein and do almost what harm he will. The common law and statutes relating to forest depredations are notoriously disregarded, and, though the conditions in some parts of the country have been bettered of late years, private forest and public suffers much damage from careless and malicious sojourners.

\* See paper on "Woodland Taxation" by Dr. J. F. Clarke in "Canadian Forestry Journal" for October, 1905.



“Under the common practice of intrusting to local officers the levying of taxes upon real estate, forests are assessed, almost without exception, on the basis of agricultural land; that is, the land is estimated to have a certain value if cleared, and the standing timber is worth so much more, or is viewed as an incumbrance. The latter case is by no means rare in hardwood sections. In many instances, perhaps in most, the assessment is fair so far as the value of the property is concerned. In many others it is far too high, because the land is not fit for farming, and therefore valueless, except to grow trees. At the same time, the timber often has only a potential value, since it can not be marketed for want of roads or some other temporary unreadiness. The argument is entirely apart from the admitted inability of many of the assessors to truly value woodlands, and who therefore resort to guessing, and from the quite general belief that in cases where the owner is a corporation or a non-resident with no local interests, the property may be taxed to the limit. These things are not to be avoided under any system. In short, whether the assessment be made fairly or unfairly, the forest is considered a form of property which should be realized on at the earliest possible moment and the more it can be made to yield to the county, prior to its extinction, the better for the county.

“One can easily understand the temptation that confronts the assessors in regions where everything is wanted—roads, schools, public buildings—to use the taxing power for present advantage, yet instances are plenty of communities established on the returns from forest property and utterly abandoned as soon as the original timber was all cut. The few farms that had been taken could not keep up the roads and other public works.

“But the wisdom or unwisdom of raising a revenue once for all upon forests is only a small part of the question. The forest land is not farm land uncleared, and a forest is not the crop of a season. The problem concerns itself chiefly with those areas which in their nature are fit only for tree growth, and with a crop representing the accumulated investment of the owner for as many years as were required to bring the trees to maturity. If a man buy a mature forest, he acquires the investment of another; if he plants or waits for a natural one to grow, he gets no return for many years. In either case, his forest serves the public by providing a common necessity—wood—and by the beneficent influences that it gives freely.

“These considerations make it apparent that the forests occupy, or should occupy, a separate place on the tax list; that they need to be treated differently from farms and town lots and mines. In fact, it will be necessary to show that growing trees should be considered personal property, not real estate, as they are now by practice or by law in virtually every state in the Union.



## FOREST FIRES IN BRITISH COLUMBIA.

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Mr. J. R. Anderson, Deputy Minister of Agriculture for British Columbia, has again furnished the Association with a detailed report on the fires that occurred in British Columbia last season, with a partial estimate of the value of the forests destroyed. Though the season was very dry in some parts of the province, the destruction of forests by fire was, on the whole, not great when the great extent of the province is taken into consideration. Railway locomotives are a constant menace to the forests through which they pass and as there is apparently some difficulty in punishing the offenders under the Act now in force, it is hoped that it will be so amended that railway companies may be compelled to take better precautions and be made liable for the full amount of the loss caused by the negligence of their servants.

The comparatively small number of fires last season was due in part to a better observance of the Bush Fire notices posted everywhere. These notices have made everyone familiar with the laws relative to forest fires and prospectors and miners, as well as ranchers and settlers, are acquiring the habit of putting out their camp fires, instead of leaving them to smoulder. More care is also taken by those clearing up land to prevent fire from spreading to the adjoining forest. The preventive measures taken by fire wardens and their promptness in dealing with fires have done much to restrict the loss from this cause.

There are few seasons in which there is not a considerable destruction of valuable forest by fire on Vancouver Island, but 1905 was a notable exception. In Cumberland District there were no fires, the greater care taken by settlers and the heavy rains of July and September being the cause. In Cowichan the only fire reported was a small one up the Koksilah River, on the lands of the Victoria Lumber Manufacturing Co. The fires in this district are as a rule attributed to prospectors. The agent at Alberni, where there were no fires, thinks that the best preventive measure is to warn the public just before and during the dry season. In Alberni District East, which includes all that portion of the district lying east of the head of Cameron Lake, as well as Lasqueti and Texada islands, there were no fires. The agent says: "This portion of the district has been entirely free from bush fires this season and as the Bush Fire notices were posted up all over the district before the dry weather set in, I think it has had the effect of making campers and others more careful in



setting out fires." The agent for Nanaimo District gives the same reason for there being no fires there. In the Newcastle District there was but one fire which was about 12 miles back of Ladysmith. It burned over a part of the ground that had been logged by the Victoria Lumber Co. in 1904, but it did little or no damage to standing timber.

On the mainland there were many fires in some districts, but none that destroyed a very wide extent of forest. For the Grand Forks District the agent reports: "Forest fires prevailed mostly in the latter part of July and up to the rainy weather in the beginning of September; they were not so destructive as those of the previous year on account of the breaks formed by the fires of the year before. The timber destroyed was mostly young, and consequently of small size. The most frequent origin of fires in this locality was the engines of the various railway lines, and as under the Act of last year there seems to be a difficulty in bringing a railway company to book they go merrily on with their destruction. Some of the fires were started by the Kootenay Power line-men, but after they had been given to understand that they would get into trouble, that source ceased. The estimate of loss by fires might be placed at about \$5,000."

In the Greenwood District, the first serious fire seemed to start in the Boundary Creek Valley near Anaconda. A few men were employed to prevent it from spreading, and at the same time protect the wagon-road bridges and culverts. In this they were to some extent successful, but soon a number of other fires were noticed in the mountains which quickly spread over a large area—about 10 square miles—which was particularly dry, owing to a long, hot summer and lack of rain. The police endeavored to trace the origin of the fires, but were unsuccessful.

The exceptional heat and dryness of the summer was generally thought to be the cause of the unusual number of forest fires in the Kootenay District where they caused more damage than for several years past. As the greater portion of the district is unsettled, it is impossible to arrive at any accurate estimate of the loss of timber, though it must have been considerable. Fires caused the destruction of government roads and bridges in this district to the extent of \$3,000. The efforts of the fire warden doubtless reduced the threatened fire losses. A system of supervision is recommended by the agent which will permit of officers getting early to the fire, and it is suggested that provincial police officers be authorized to make expenditures up to \$25, without waiting for special authority.

There were a good many small fires in the Okanagan District, but only one—near Peachland—that caused much destruction. In most cases the causes of their origin were investigated by the police, and there were several prosecutions. The agent there



reports a marked improvement in public sentiment in recent years, regarding the prevention of fires and thinks that the best preventive measure is a full investigation of the cause of every fire reported and the prosecution of the offenders when detected.

In the Upper Fraser country there were few fires, and none of them very destructive. The summer was unusually dry and warm in the Barkerville District, though almost continuous rains prevailed in the Clinton District. In the lower part of the Barkerville District, along the Fraser River, a fire started in July and ran a few miles through a sparsely wooded country, but was extinguished by the settlers before much damage had been done. About the same time a fire started in the Quesnel Section of the same district, a short distance from the town of Quesnel Forks, but was quickly got under control by the prompt action of the government agent at that place who engaged a number of men to fight the fire, which was put out with but trifling loss. About Lillooet there were three or four bush fires which covered an area of but a few acres. The rainfall was heavy and frequent.

Although the early part of the summer was one of the hottest and driest on record in the Nicola District, the destruction of forest by fire was very small. The agent reports that recent years show that increased care is being taken to extinguish fires.

The only fire near Port Simpson was one in the neighborhood of Lorne Creek, which was started by lightning. The area burned consisted mainly of small spruce, birch and poplar, of little or no commercial value.

All the government agents were asked to state the causes of fires, so far as known, and to suggest remedies. Their replies are naturally somewhat similar and only a few of them have been quoted in the preceding paragraphs. The agent at Nicola makes a suggestion that seems well worth acting upon. It is that a special effort should be made to interest the Indians in forest preservation. A circular addressed to all the chiefs could not fail to cause the matter to be discussed in their councils and if in the different sections one reliable Indian, at least, were appointed with instructions to act promptly when a fire started and even given some authority to take preventive action much loss might be avoided. Ignorance and carelessness on the part of the Indians doubtless cause many fires, but it should not be very difficult to teach him to be more careful.



## \*SCOPE AND USE OF ARBOR DAY.

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### SUGGESTIONS FOR MAKING THE PLANTING OF TREES BY SCHOOL CHILDREN AN EXERCISE IN FOREST WORK.

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Arbor Day was instituted in Nebraska in 1872 by Hon. J. Sterling Morton, afterwards Secretary of Agriculture, and has since made its way from State to State until provision for its observance exists in almost every State and Territory.

The central idea of Arbor Day is the intelligent and appreciative planting of trees by school children. The planting is usually accompanied by exercises, which are intended to impress upon the children the beauty and usefulness of trees and thus to lend to the work the value of a bit of nature study. Arbor Day has undoubtedly done much to inculcate a love of trees, and has given added impetus to the general movement for the better knowledge and the wiser use of forests.

Yet there is no question that Arbor Day can be made more practical than it has been; that it can be brought into closer touch with forestry by being made the opportunity for carrying out simple steps in forest work. The permanent results of Arbor Day from the standpoint of successful planting have frequently been disappointing. Too often species entirely unsuited for either economic or ornamental planting have been used. Still more common causes of failure have been the lack of sufficient care in doing the work, and neglect of the trees after they are planted. In this way much of the educational value of the work is lost. By leaving the trees unprotected from animals, insects, and other destructive agencies the intended good example is turned, for want of a little care, into a negative one.

But even when the planting has been well conceived and wisely carried out, there is often lacking, in work of this nature, all reference to the larger aspect of forest planting. The ultimate aim of the day might well be to prompt and encourage not so much a sentiment for trees as a sentiment for the forest. Yet the practice has been to plant individual trees rather than groves, and the relation of the single tree to the forest has not been pointed out. Talks on Arbor Day have not dwelt enough upon the economic side of forestry, or have tended to give a wrong impression of the whole subject by lamenting all cutting of trees.

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\* U. S. Dept. of Agriculture, Forest Service Press Bulletin, No. 123.



The effect of this has been actually opposed to the forester's teachings.

Arbor Day is the time for disseminating sound, practical knowledge regarding forestry in its broader aspect. The mere act of setting a few trees, without reference to the commercial utility and the protective value of forests, is but a small part of the work of the day.

The proper season for planting is not everywhere the same. South of the thirty-seventh parallel, especially in the more humid regions, fall planting is perhaps preferable, but north of this the winter comes on so quickly that the trees have scarcely time to develop roots strong enough to support them until spring, and spring planting is therefore more advisable. The right time to plant in spring is when the ground has ceased to freeze and before budding begins. Evergreens may be planted somewhat later than hardwoods. The day to plant is almost as important as the season. Sunny, windy weather is very unfavorable; cool, damp days are the best. For this reason it is well to leave the date for Arbor Day unfixed, so that the best opportunity may be chosen. Such exercises as are desired can follow when the planting is done.

The careful selection of trees for a specific use and situation is essential to success, and proper planting is equally important. Though less fastidious than agricultural crops in their demands upon the soil, trees can not be set in a rough soil at random and then expected to flourish. They should be planted without allowing their roots time to dry out from exposure to the air. When delay between procuring the trees and their planting cannot be avoided, the roots must be kept moist by standing them in a "puddle" made of earth and water mixed to the consistency of cream, or "heeled-in" by nearly burying them in fresh earth. In setting the trees it is important to place them about three inches deeper than they stood originally, and to spread out the roots and pack the soil firmly about them. Two inches of soil at the top should be left very loose, to act as a mulch to retain the moisture.

Large trees are by no means always the best to plant. Small seedlings may be secured easily and cheaply, and are much more likely to live. If these are set out in good numbers after the pattern of a commercial plantation they will become in due time a true forest on a small scale.

If only a few trees are planted, as is usually the case, it is still possible to make plain the true relation of such work to forestry. No matter how few the trees, they may be made to illustrate planting for commercial or protective use.

The scope of Arbor Day planting may be sometimes broadened by securing permission from some public-spirited citizen or



nearby farmer for the children to plant a small block of trees on his land. This could be made a practical demonstration of how such work is done on a large scale.

Outside the scope of the actual planting, it is well to bear in mind that Arbor Day is not the only day on which trees deserve the intelligent thought of the children. They need care throughout the season. Watching the plantation thrive under right treatment greatly adds to the educational value of the work, which otherwise leaves but a slight impression.

It is all-important that the plantation should become a model of what can be done along these lines. In after years the children should be able to point with satisfaction to the work of their school days.

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A bill of great importance to the forest interests of New Brunswick was introduced by Hon. Mr. Tweedie, which provides for the appointment of a sub-committee of the Executive Council to act with the Surveyor-General in the carrying out of the provisions of the act and authorizes them to employ the necessary number of competent men who will be charged with the following duties:—

(a) To make a complete survey of the Crown timber lands of the Province and to divide the same into districts.

(b) To classify such lands and make a thorough and exhaustive report on the same.

(d) To describe as minutely as possible the character, quality, rate of growth and accessibility of the timber in each district.

(c) To distinguish lands fit for agriculture from forest lands and to subdivide the former into one hundred acre lots.

(e) To report on the value of timber lands now under license.

The Lieutenant-Governor in Council is authorized to reserve from settlement or from license Crown timber lands at or near the head waters of rivers to such an extent as may be deemed advisable to preserve and protect the water supply, and to make regulations against forest fires and for the general administration of the Crown timber lands.

The bill also authorizes the Lieutenant-Governor in Council to make regulations governing the charges of boom companies for log driving.



## THE WESTERN HORTICULTURAL SOCIETY ENDORSES WORK OF FORESTRY CONVENTION.

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The Secretary of the Western Horticultural Society has forwarded from Winnipeg a copy of the resolutions passed at the recent convention of the Society. The members of the Canadian Forestry Association will be delighted to know of the great interest taken in the west in everything pertaining to the preservation of forest lands.

The resolutions are:—

“RESOLVED, that the Western Horticultural Society, having more than 200 members resident throughout the three central provinces of Central Western Canada, in annual convention assembled, heartily endorses the action of the Premier of Canada in calling the recent Forestry Convention at Ottawa, and that this Society is in full accord with the resolutions passed at said convention, and

“RESOLVED, that in the opinion of this Society, the forest reserves now existing in Western Canada by order-in-council should be immediately made permanent by legislation, and that the most stringent regulations be enforced to protect these reserves from fire, including the acquirement of the right of any settlers therein, where their presence may endanger forests, and

“RESOLVED, that in view of the rapid settlement of the country, an immediate topographical survey should be made of the forest areas bordering on or situated within the prairie districts with a view to setting aside further forest areas as permanent reserves, and

“RESOLVED, that in view of the great destruction caused to the forest areas dotting the prairie districts in many parts of the country by prairie fire, that any restrictions upon the railways looking to the prevention of fires caused by locomotives, etc., should be made to apply to the prairie country also, so far as it is within the jurisdiction of the federal authorities. The destruction of timber within the prairie country by fires has been proportionately as great as in the wood districts of the eastern provinces, as witness the enormous destruction wrought in the Turtle and Moose mountains and other timber areas within the prairie area. An effort should be made to restore and maintain these forests, even to the extent, if necessary, of acquiring the rights of settlers therein, and



“RESOLVED, that this Society hears with pleasure of the reported acquirement by the Federal Government, of railway woodlands in Northern Manitoba, with the object of conserving our valuable northern forests. Large areas of these northern forests should undoubtedly be maintained for all time as forest reserves, and

“RESOLVED, that this Society endorses the plan of tree distribution in the west as carried out by the Department of Interior and would advise a continuation of the same within reasonable limits as to the varieties distributed, so as to cause as little injury as possible to our important home nursery interest, an interest which has done a great work in encouraging horticulture and forestry throughout our prairie regions; also, that special attention be given to the planting of trees on government lands in the prairie provinces which are not suited for general settlement.”

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The past month has been unusually dry and warm in the Northwestern Provinces and as a result the Dominion Forest Fire Rangers were called out earlier than usual.

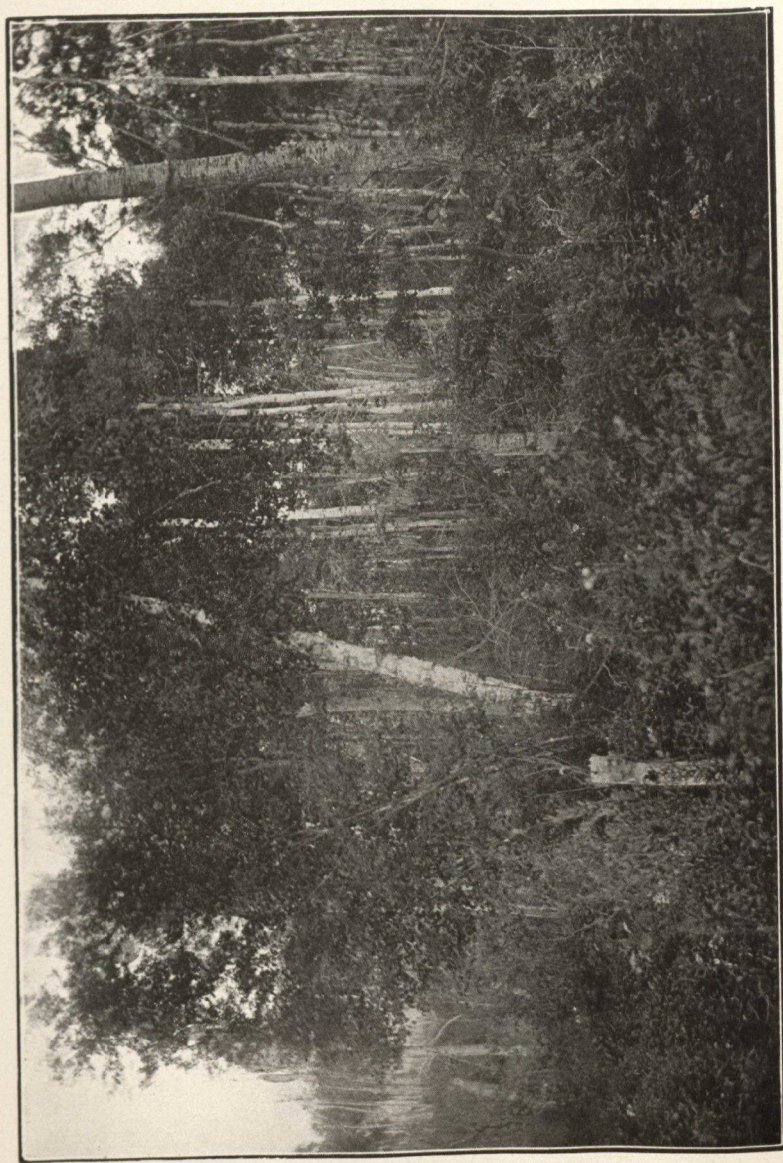
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Reports received at the Forestry Office, in Ottawa, record numerous fires as having been started. Generally, they have originated on the prairie, but in some cases have, notwithstanding the efforts of the rangers, assisted by the settlers, spread into the timber. In the southern part of the Spruce Woods Forest Reserve, in Manitoba, it is feared considerable damage has been done to the young timber and in the foot-hills of the Rocky Mountains along the valley of the Red Deer River a large fire was fought for a week. Something like six miles of trench was dug, from which back firing was done, making a fire break around the timbers. Notwithstanding this, a strong wind sprang up and the fire leaped over this guard, got into the timber and destroyed a small sawmill which was operating there. It was feared that another larger mill with some 400,000 feet of lumber would also be destroyed, but was saved by very hard and continuous work. It is to be hoped that the dry and warm weather that has prevailed in Alberta and Saskatchewan ever since the spring set in may soon change or serious consequences will result, both to those interested in the forests and in agriculture.

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We notice a very strong popular demand for government control of water powers. If we wish to protect the power for the use of the people, we shall have to start at the source and withhold from private control the watersheds from which the supply of water comes.





Aspen and Birch on the Turtle Mountain Forest Reserve.



## TURTLE MOUNTAIN FOREST RESERVE.

ROLAND D. CRAIG, F.E.

During the past summer the Forestry Branch made an examination of the Turtle Mountain Forest Reserve in southern Manitoba, with a view to obtaining definite information as to the condition of the present stand, the possibilities of timber production and the steps necessary for the protection of the forests growing thereon.

The Reserve covers 69,920 acres of rough, hilly, and sloughy country in Township 1, Ranges 19, 20, 21 and 22, and as is almost always the case in the middle West where there are hills or water you will find timber, as a result of these natural fire breaks protecting the trees from the fires which sweep over the prairie. The general elevation is only 300 to 500 feet above the surrounding prairie. Lakes and sloughs cover about 15,000 acres, leaving 55,000 acres of timber producing land. As a glance at the accompanying map will show, the country to the north and east is watered by many streams which rise in these hills. Some of these form the head-waters of the Pembina and Whitemud rivers, but a number of others lose themselves on the prairie.

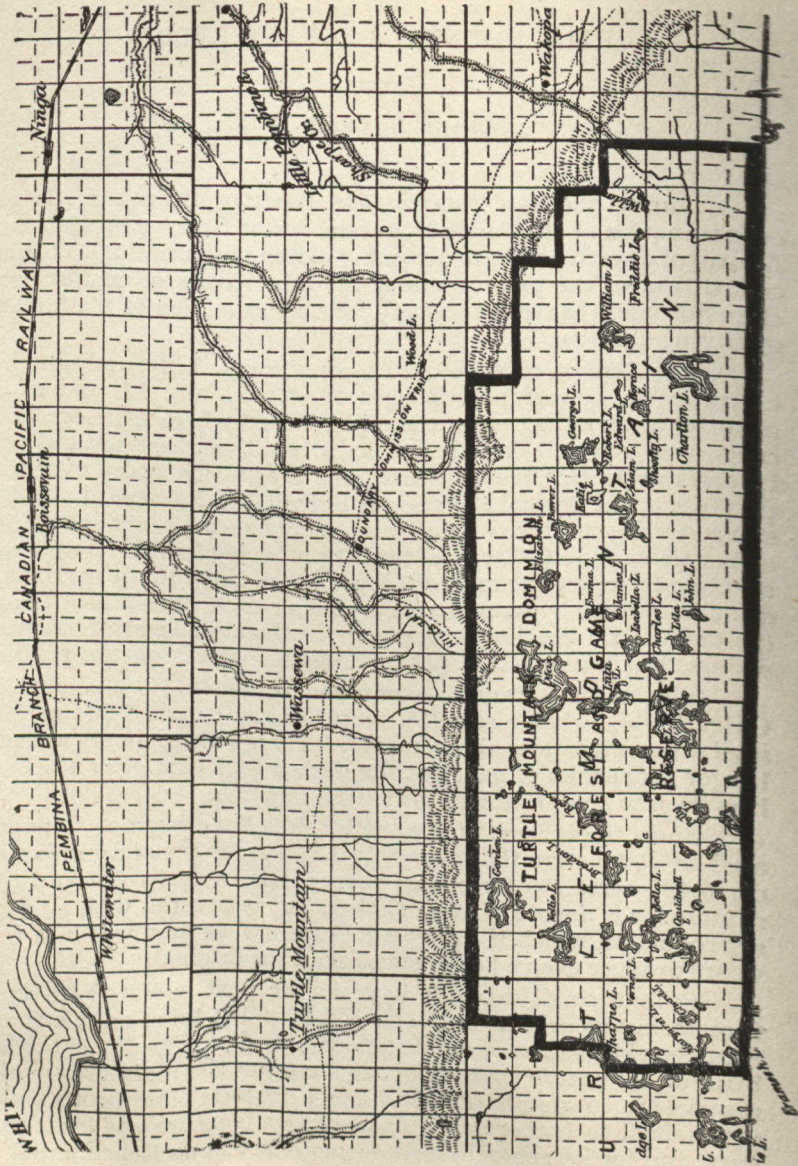
The mature stand is composed of aspen, 43%; balm of Gilead, 14%; white birch, 21%; scrub oak, 9%; ash, 8%; elm, 5% and an occasional Manitoba maple. There was originally a much larger proportion of oak, but the demand for oak logs and posts has been so great that now very little remains.

Since the advent of the settler fires have been so frequent and so destructive that now only 1,600 acres remain uninjured; on 6,400 acres the forest has been partially destroyed and the remainder is devoid of large timber, but is covered with a dense reproduction which if protected from further fires will in a few years produce even a better stand than the original.

Several small sawmills have in the past operated in these forests, but at present only one is left and it takes only a small number of logs for a very limited local trade. The day of the log buildings is past in that region, so that now the main uses of the reserve are to supply fuel and fence material, to protect the watershed, to harbor game, to serve as a pleasure and health resort, and for its general ameliorating effect upon the climate.

Farmers living within a radius of 50 miles come to the Reserve every year for their supplies of wood and during the last









Measuring the rate of growth of Aspen in the Turtle Mountain Forest Reserve.



three years an average of 425 permits have annually been granted to settlers, who have taken out 4,900 cords of fuel, 25,000 b. ft. of logs, 3,350 fence posts, 715 roof poles and 200 fence rails. As private land outside the Reserve becomes cleared and the population increases, the demand on the Reserve timber will become greater.

The present stand contains approximately 75,000 cords of green wood and 60,000 cords of dry wood, fit for fuel. About 1,333,000 b. ft. of saw material could be cut from the green wood. Though the amount of mature timber is small, there is a most excellent reproduction throughout the Reserve, which, from the standpoint of the forester, is the most important part of the stand. On account of their ability to throw up suckers, the aspen and balsam reproduce more readily than the other species and form respectively 69% and 12% of the reproduction.

From the data collected this summer the following table gives a conservative estimate of what may be expected from the dense stands of reproduction now one to twenty years old.

Age	No. trees per acre	Av. dia. Bk. inches	Av. height feet	Av. volume cubic feet	Yield per acre-cords
10	4,000	1.5	13.5	.1	4
20	2,500	3.2	28.0	.8	22
30	1,200	4.7	38.0	2.4	32
40	850	6.0	46.5	4.3	41
50	625	7.2	51.0	6.8	47
60	425	8.7	54.0	11.1	52
70	335	10.1	56.5	14.0	55
80	300	11.1	58.0	17.4	58

With a rotation of forty to fifty years, which would be sufficient for fuel production, an annual cut of one cord per acre or 55,000 cords could be made without reducing the capital stock. This amount would supply a farming area of over 2,000 square miles with fuel and fence material.

This supply of wood in the midst of a bare prairie country is of great value to the settlers and there is no reason why, if protected from fire and indiscriminate cutting, there should not be sufficient timber produced on the area now reserved to supply the local demand for all time to come.

In a plan of fire protection the first requisite is a system of trails which will enable the ranger to thoroughly patrol the Reserve and to quickly get to a fire. At present the greater part of the Reserve is inaccessible in summer. These trails will also act as fire guards and will often prevent the spread of fires before they reach large dimensions. Outfits of fire fighting tools should be kept at two or three convenient places ready for use. It is



impossible for a single ranger to notice every fire when it first starts, for he may be in a distant part of the Reserve, but there are along the edge of the bush farmers who could be appointed fire guardians, and whose duty it would be to report fires to the ranger as soon as noticed, and to take such steps as are necessary to put them out. Three or four of such men would greatly assist the ranger in protecting the forests. The fire guardians and the ranger should be supplied with telephone communication with Boissevain, the nearest town, so that fires can be promptly reported and assistance procured if necessary. By comparing the direction of the smoke from the various stations a fire could be readily located.

Placing the value of the wood at the low figure of \$1.00 per cord, the annual revenue of the Reserve would be \$55,000.00, which justifies considerable expenditure for protecting and improvement. There is no reason now when the pioneer days of the country are past that the farmers should not pay for their wood, at least enough to make the Reserve self-sustaining. In this way the expense of administration would be borne by those who are benefited by it and they would be more directly interested in having the forests protected.

There are within the Reserve a number of squatters who settled there in direct defiance of government orders, and have therefore no rights beyond those of any law breaker. These men are a constant menace to the forest, directly by the fires which they frequently set and by grazing large numbers of cattle in the young forests, and indirectly by encouraging trespass. There should be as little delay as possible in removing these objectionable and dangerous settlers.

As a summer resort, the Turtle Mountains are becoming very attractive, and as the timber grows the beauty of the country will greatly increase. Picturesque lakes abound, and in some of them there is good pickerel fishing. On the United States side bass have been introduced with good success, and the example is worthy of imitation. Large game is not plentiful, but there are some jumping deer which, if protected, would soon increase in numbers.

This Reserve, though not large, is of immense value to the surrounding country, and as the land is not at all suitable for agriculture it should on no account be opened for settlement, or the timber allowed to be destroyed.



## NOTES.

The "Indian Forester" has for its leading article in a recent issue an editorial on "Forestry in Canada" in which the work of the Forestry Department and Forestry Association is written of in terms of the highest praise. The tone of the article may be judged from its opening paragraph:

"Among the British Dependencies which are now paying serious attention to the future adequate protection of their forests, Canada may be said to take a foremost rank. For many years the destruction of the vast forests existing in the colony had been carried on unchecked and this reckless over-cutting has within the last few years attracted the attention of all thoughtful statesmen and others interested in the future well-being of the Dominion. It became increasingly obvious that if some steps were not taken to put a stop to the existing state of affairs irreparable damage would result, both climatically and financially, to the country. Opinions were also freely stated in the home markets that it would be but a matter of a few years for the supply of Canadian-grown timber to give out, even in spite of the fact that 75% of the Dominion is under forest. This being the state of affairs the forestry movement will be welcomed alike by statesman, financier and merchant."

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The Minister of the Interior has introduced an important Bill in the Commons which, if passed, will set aside some seventy Forest and Game Reserves on Dominion Lands within the Provinces of Manitoba, Saskatchewan and Alberta and in the Railway Belt in British Columbia.

The lands proposed to be set aside are *non-agricultural* but suited for a permanent production of timber. They are situated at the sources of water supply so necessary in every district but especially so in a country like our prairie provinces where the precipitation is scant and where under the most favorable conditions summer droughts are always feared.

It is not the intention to prohibit the cutting of mature timber on these reserves but rather to place these to their highest use for the production of timber and with this object in view a rational system of cutting will have to be enforced and care taken that fire does not follow such cutting as has been the general rule in the cut over lumber districts in the past. Prospecting and mining will be allowed under special regulations.

Grazing will be permitted only to such an extent as not to interfere with the growth of the young trees.



Regulations will be enforced to protect the animals, birds and fish on the reserves.

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A meeting of the Executive Committee of the Canadian Forestry Association was held on the 27th of April to consider the summer meeting and the appointment of an editor for the Forestry Journal. As the Committee were not in a position to make the appointment of a permanent editor, Mr. J. M. Macoun was appointed temporarily, and the editorial committee, previously elected, were continued as an advisory committee.

It was decided that, although final word as to rates had not been received from the railway companies, sufficient information was available to justify confirming the acceptance of the invitation of the British Columbia Lumbermen's Association for a summer meeting in Vancouver, in September. Messrs. E. G. Joly de Lotbiniere, Thos. Southworth, Gordon C. Edwards, Revd. A. E. Burke, G. Spring-Rice, Roland D. Craig and R. H. Campbell, were appointed a committee to carry out the arrangements.

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One of the most beautiful of our forest trees is the Tulip-tree (*Liriodendron tulipifera*) which is found growing wild in many places in southwestern Ontario. Its name is derived from its large tulip-like flowers and wherever it grows it is real addition to the beauty of the region and has besides great economic value. It is not probable that the Tulip-tree can be successfully grown north and east of Kingston but anywhere between Kingston and Detroit and on almost any kind of soil it should thrive. Propagation should be entirely by seeds and these should be sown thickly in a bed of light, rich, sandy soil. Of the possibility and uses of this tree "Forestry and Irrigation" says:

"For shade and ornament the Tulip-tree possesses great merit and is deserving of very general propagation. \* \* \* Forest planting of the Tulip-tree for economic purposes has never been attempted, but judging from the form and rate of growth of the natural forest-grown tree, and the value of the wood, few trees would be more profitable for such a purpose."

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Mr. E. Stewart, Dominion Superintendent of Forestry will leave for the west about the middle of May.

It is Mr. Stewart's intention to visit a considerable portion of the afforested area of the western provinces before returning and he will probably make a trip down the Mackenzie river.



## HISTORY OF THE LUMBER INDUSTRY OF AMERICA.\*

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“To the memory of men of brain and brawn who hewed out of the forests of the New World room for Civilization, and to the men of to-day who are making the American Lumber Industry an agent of commercial progress at home and abroad, this work is dedicated.”

It is now pretty well understood by all students of the subject that the success of a nation in almost any part of the world depends upon the maintenance of a due proportion of forest, for the forest not merely distributes water in the soil, but regulates the precipitation which is necessary for the proper cleansing of the atmosphere. More than this, modern industries depend, to a far greater extent than has hitherto been generally understood, upon a due supply of timber for the thousand and one uses to which wood is put by civilized man. In a word, the life of a nation is largely the life of its forests. Yet, strangely enough, this fact has never been sufficiently recognized by the historian, and the consequence is that those who seek to follow the life history of many nations are reduced to collating the gossip of the court or the official records of battles when, in fact, the real sources of the actions which they record lie far back in the treatment by the people of their forests and forest wealth. The cutting off of the forest has turned many a place into a desert, making it necessary for its inhabitants to move on and possess the land of some less wasteful people, and so have come those intrigues and wars the minutiae of which are so faithfully recorded by the writers of history. It seems strange that the original facts have been so generally omitted by the historians that it is almost impossible—even in the case of those nations whose rise and subsequent downfall have clearly followed the wilful waste and afterwards woeful want of their forests—to trace back to their cause even effects so marked and, in the end, so disastrous. Even in America, whose chief attraction from its earliest settlement has been its forest resources, the historian seems not only to have failed to collect material easily available, but to have been almost wholly blind to the importance of such facts as were easily within his reach.

Fortunately for those who are to come after us and who will seek to understand our actions, as we seek to trace out the causes

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\* The History of the Lumber Industry of America, by James Elliott Defabaugh, Editor of the American Lumberman. Vol. 1, Chicago, the American Lumberman.



of the actions of those who preceded us, the widespread interest in forestry promises to repair this neglect in very large measure. One of the most striking evidences of this movement is the first of a series of four large and handsome volumes on "The History of the Lumber Industry in America," which is just now claiming the attention of the public. This history, which promises to be an indispensable work of reference for those interested in the subject, as well as a most interesting account of the facts, is the work of Mr. James Elliott Defebaugh, editor of the *American Lumberman*. The work is published by the *American Lumberman* in Chicago. Volume I, which is now before us, contains 559 large octavo pages. The matter is divided into 31 chapters. After an excellent account of the discovery and early settlement of America in which the attractions to settlers held out by the forest are clearly shown, the author goes on with an account of North American forest geography. This chapter is especially valuable. It gives an account of the timbered area, with some consideration of the influence of climate upon forests and vice versa, and closes with a cyclopedic list of the commercial tree species of America. This latter portion of the chapter, which must depend for its value upon its perfect accuracy is based upon Mr. Charles S. Sargent's work, "The Sylva of North America," and is illuminated with foot notes giving quotations from that work on all points likely to arouse questions or require elucidation. Following this comes a portion of the work which will be of special interest to Canadians. About 135 pages, divided into three chapters are taken up with an account of the forest resources and lumber history of Newfoundland and Eastern Canada. One chapter is devoted to Labrador and Newfoundland. In the account of the latter is given a list of the principal trees found on the island and a brief history of the lumbering business leading up to the Harmsworth concession of which so much has recently been written. A brief summary of the Crown lands timber regulations is also given.

The first chapter, relating to Canada, is devoted to the commercial forests of this country. The omission from this portion of the work of any account of the great Pacific Coast forests of Canada and the industries which have been founded upon them, which omission naturally challenges the attention of the intelligent reader, is explained by a paragraph in which the author says that this 'will be reserved for detailed treatment in connection with the history of the lumber industry of the Pacific coast of the U. S. with which it is closely connected and which have been developed together.' Bare mention is made of the forests of the Canadian Northwest, although the author speaks of a practically continuous forest of sub-arctic species and characteristics, as existing to the north. It is to be hoped that in subsequent volumes the facts concerning this vast forest, which is becoming



better known every day, will be summarized. In the chapter under discussion the general accounts of Canada's forest resources, such as those made by Mr. Stewart, superintendent of Forestry for the Dominion are drawn up so that the reader is given a general idea of the wealth of Canada in this respect. Closing this chapter the author says:

"These speculations are extremely general, but they serve the purpose of pointing out that Canada is enormously rich in timber and the possibilities of long continued production are almost incalculable."

A valuable chapter on the forestry and forest reserves of Canada then follow. This gives an idea of the general trend of the legal conservation of Canada's forest resources. The records of the Canadian Forestry Association have evidently been liberally drawn on for this chapter, and, as near as we can judge, the facts and figures accurately state the position up to the time at which the writing of this volume must have ceased. Concerning the Dominion Forestry Association, the author cites one fact which, as this great work will probably be the standard for many years to come, is worthy of note as giving credit where credit is due. The author says that "to Mr. E. Stewart, superintendent of Forestry, more than to any one man is due the credit of the formation of the Dominion Forestry Association, for it was he who, on February 15th, 1900, called the meeting at which the organization was recommended, and as a result of which the organization was effected on March 8th, 1900, in the city of Ottawa."

The summary of Canadian Forest Reserves shows a grand total of 18,760,000 acres, and an addendum refers to and describes the Nepigon forest reserve of 4, 578,560 acres and the more recent Gaspesian reserve of about 1,600,000 acres under the Provincial Government of Quebec. In the chapter entitled, 'Canada—Production and Trade' the census figures of 1901 in relation to forest products are summarized, as well as many other tables of products, exports and imports, showing the greatness of Canada's trade in these lines. A special chapter is devoted to the cooperage stock industry of Canada which affords opportunity for summarizing the history of a most interesting trade which, to a far greater extent than many think has affected the progress and development of Canada.

Each of the Eastern Provinces of Canada is dealt with separately, a vast deal of information being summarized concerning its forest area and products, the laws governing the exploitation of the forest, the history of lumbering and even the personnel of the trade. As affording a means of comparing the present with the past, the account of Canadian lumbering conditions closes with a summary of a careful article published in 1874, showing the state of the industry at that time.



About half of the present volume is devoted to the history of the lumber industry of the United States. A feature of the first chapter is a table which, though it covers less than a single page, gives a mass of information of immense statistical value. It shows the wooded area of each state, originally, and in 1905, in comparison with its total land area. According to this, the present wooded area of the U. S. is 1,040,450 square miles, or 35 per cent. of the whole. The States vary in wooded area from Alabama, 72 per cent., to Nebraska, 2.9 per cent. The different wooded areas, as well as the changes that have taken place in the course of industrial development are described so as to form an excellent basis for the work that is to follow. The next chapter deals with the U. S. public land policy, which leads up to a consideration of forestry and forest reserves—a most interesting subject—and to tariff legislation, lumber production and foreign trade, each of these great subjects being handled in a separate and voluminous chapter.

Author and publisher alike are to be congratulated upon the design of this work and upon the splendid way in which that design has been carried out thus far. The work is one which must have a large sale not only among those engaged in the trade, but among the students of economics everywhere.

A recently enacted bill in Iowa does away with a long-standing grievance, and ought to do much to encourage the planting of forest and fruit trees in that State. It provides that on any tract of land in the State of Iowa the owner may select a permanent forest reservation not less than two acres in continuous area, or a fruit tree reservation not less than one, nor more than five, acres in area, or both, and that upon compliance with the provisions of this act such owner or owners shall be entitled to an assessment on a taxable valuation at the rate of one dollar per acre for the land.

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