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The 1911 Forestry Convention.

CITY OF QUEBEC, JAN. 18-20.

The Official Call Issued by Sir Wilfrid Laurier.

Office of the Prime Minister of
Canada, Ottawa, Dec. 8, 1910.

To the Citizens of Canada:

In the year 1906 the increasing necessity of inducing the people to take action to prevent the rapid destruction of the forests by fire and improper cutting led to the calling of a Dominion Forestry Convention in Ottawa. This Convention which was largely attended by representative citizens resulted in greatly increased interest in this most important subject, with very beneficial results.

The period since then has witnessed a great increase in the interest in forest conservation on this continent. Not to mention what has been done in the United States a great step forward has been taken in Canada by the establishment of the Commission of Conservation. The scope of the Forestry Branch of the Department of the Interior has been much widened and a number of forest reserves have been set apart in the prairie provinces. The most notable is the reserve covering the eastern slope of the Rocky Mountains, formed in order to protect the rivers and the agricultural lands of Alberta and Saskatchewan. In the various provinces reserves have been set apart, timber surveys made, improved fire ranging and timber cutting regulations adopted and

Cabinet du Premier Ministre du Canada, Ottawa, 8 décembre 1910.

Aux Citoyens du Canada:

Dans le cours de l'année 1906, le besoin se faisant impérieux d'engager la population à enrayer le ravage des forêts par le feu et leur déboisement irrational, provoqua la convocation d'une Conférence Forestière Canadienne qui se tint à Ottawa. Cette conférence, à laquelle assistèrent un grand nombre de personnalités officielles, donna un vif regain d'intérêt à cette question extrêmement importante et produisit d'excellents résultats.

Depuis, l'on a porté beaucoup plus d'attention à la conservation des forêts sur ce continent. Sans énumérer les mesures prises aux Etats-Unis, un fort mouvement a été effectué au Canada par l'institution de la Commission de Conservation. Le champ d'action de la division forestière du Ministère de l'Intérieur a été élargi, et, dans les provinces des prairies, un certain nombre de réserves de forêt ont été établies, notamment sur le versant oriental des Montagnes Rocheuses, afin de protéger les cours d'eau et les terres arables de l'Alberta et de la Saskatchewan. Dans les diverses provinces, des réserves ont été mises à part, des relevés du bois marchand ont été dressés, la police des feux et la coupe du bois ont été plus minutieusement réglementées, et des écoles ont été

schools for the training of forest engineers established.

Gratifying as this progress has been, the growth of the need for enlightened action has been even more rapid. The increasing value of waterpowers, the dangers confronting inland navigation, the realization of the asset which the country has in its forests as hunting grounds and health resorts, and the increasing scarcity of forest products, all show the need of further knowledge and increased vigilance.

To provide for the discussion of these matters with a view to the adoption of improved methods and the better and more enthusiastic enforcement of existing regulations, I hereby call a public convention to meet in the City of Quebec on January 18, 19 and 20, 1911, under the auspices of the Canadian Forestry Association. To this Convention are specially invited:

Lieutenant Governors of the Provinces,
 Members of the Senate,
 Members of the House of Commons,
 Members of the Legislative Councils and Legislative Assemblies of the Provinces,
 Dominion and Provincial Forest Officials,
 Officers and members of the Commission of Conservation,
 Members of the Canadian Forestry Association,
 Members of the Canadian Society of Forest Engineers,
 Members of the Canadian Bankers' Association,
 Members of the Canadian Manufacturers' Association,
 Members of Lumbermen's Associations,
 Representatives of Boards of Trade,
 Representatives of Railway Companies,
 Representatives of Universities,
 Representatives of Agricultural Colleges,
 Representatives of Farmers' Institutes,
 Representatives of the Canadian Press Association,
 Representatives of Canadian Clubs,
 Representatives of Horticultural Societies,
 Representatives of the Canadian Society of Civil Engineers,

instituées pour la formation d'ingénieurs forestiers.

Les bons effets de ce mouvement progressif ont rendu plus urgent encore le besoin d'une action raisonnée. La valeur acquise des pouvoirs d'eau, les périls auxquels la navigation intérieure est exposée, le bénéfice de la richesse que les bois fournissent au pays par leurs domaines de chasse et par leurs villégiatures, la rareté de plus en plus sensible des produits de la forêt, tout fait voir la nécessité de nous éclairer davantage et de redoubler de vigilance.

Afin de préparer le débat de ces questions dans le dessein de faire adopter un mode d'action approprié et de faire observer avec plus de spontanéité et d'efficacité les règlements qui existent déjà, je convoque par la présente une convention publique qui se tiendra dans la cité de Québec, les 18, 19 et 20 janvier 1911, sous les auspices de l'Association Forestière Canadienne, et j'invite spécialement à cette convention:

Les Lieutenants-Gouverneurs des Provinces,
 Les membres du Sénat,
 Les membres de la Chambre des Communes,
 Les membres des Conseils législatifs et des Assemblées législatives des Provinces,
 Les officiers forestiers fédéraux et provinciaux,
 Le bureau et les membres de la Commission de Conservation,
 Les membres de l'Association Forestière Canadienne,
 Les membres de la Société Canadienne des Ingénieurs Forestiers,
 Les membres des Associations de Marchands de Bois,
 Les membres de l'Association de Banquiers Canadiens,
 Les membres de l'Association de Manufacturiers Canadiens,
 Les délégués des Boards of Trade et des Chambres de Commerce,
 Les délégués des compagnies de chemins de fer,
 Les délégués des Universités,
 Les délégués des Collèges d'Agriculture,
 Les délégués des Associations de Cultivateurs,
 Les délégués de l'Association de la Presse Canadienne,
 Les délégués des Clubs Canadiens,
 Les délégués de la Société Canadienne des Ingénieurs Civils,

Representatives of the Canadian Mining Institute,

Representatives of Associations of Land Surveyors,

Representatives of Fish and Game Associations,

Representatives of the Bureau of Forestry of the United States,

Representatives of the American Forestry Association,

Representatives of the American Conservation Association,

Representatives of State Forestry Bureaus and Associations and all others who are interested in Forestry.

(Sgd.) WILFRID LAURIER.

Les délégués des Sociétés d'Horticulture,
Les délégués de l'Institut Minier du Canada,

Les délégués des Associations d'Arpenteurs,
Les délégués des Associations de Protection du Poisson et du Gibier,

Les délégués du Bureau Forestier des Etats-Unis,

Les délégués de l'Association Forestière Américaine,

Les délégués de l'Association Américaine de Conservation,

Les délégués des Bureaux Forestiers des divers Etats, des Associations et de tout autre corps intéressé à la conservation des forêts.

(Signé) WILFRID LAURIER.

Forestry for Municipalities.

By H. R. MacMillan, Asst. Inspector of Forest Reserves.*

The owning and management of forest lands, while a common and profitable department of municipal endeavor in Europe, is as yet comparatively unknown in America.

Up to this time the energies of forestry in America have been directed towards securing a wise and businesslike management of the great public forest areas; there has been little attention paid to the profitable development of the non-agricultural tracts which are found in the midst of, or bordering on, even the oldest, most intensively cultivated and most prosperous settlements.

Two new influences are now operating which tend to show that the municipal ownership and management of forest tracts is advisable. One is the growing knowledge of forestry, the basic principle of which is that all land should be devoted to its most profitable use; the other, and perhaps the most potent in America as yet, is that many towns and cities must own the watersheds from which they derive their domestic water supply if they wish to insure the purity of the water. The logical combination of these two factors has proved, as may be conclusively shown from extensive European and slight

American experience, that the crop of timber upon the land pays a sure profit and at the same time exerts a wholesome influence by increasing the supply and maintaining the purity of the water.

Municipal Forestry in Germany.

Municipal forestry can best be illustrated by German examples. In Germany the practice originated and in Germany it has become most general. Villages, towns, cities, states, corporations and churches all own and manage forests as a source of revenue.

Forests have there proved so profitable under municipal control that all land that is not valuable for agriculture or other uses has been purchased by private and public bodies and planted to trees. Land which has until now been used for agriculture and which is worn out or returns only a very small profit is being bought for forest planting. Land which because of its character or situation exercises a great influence on the surrounding country is bought and forested by the state. Such are the shifting sand dunes, head-waters of navigable streams, valleys and watersheds of mountain torrents and steep slopes of mountains where avalanches and floods are frequent and dangerous.

*Reprinted from *Canadian Century*.

But though municipal forestry is sometimes undertaken for protection it is most often undertaken for profit. The examples given below, taken from state reports, indicate the enviable position in which the management of forests and woodlots has placed some German municipalities.

Communities in Germany must count themselves as incomplete and unmindful of their opportunities if they do not own forests, for of the

only when it has passed its most profitable period of growth, and that every cutting is immediately followed by natural or artificial regeneration of young trees of valuable species. Under the state officers are locally-employed guards who follow the plans drawn up by the superior officers, transact the business, do the manual labor and protect the forest from fire or other destructive agencies.

In the intensively managed Ger-



[Courtesy N. Y. State F. F. and G. Com'n.]

German Forest 65 years old, as productive as the best Canadian Forest.

1,564 communities in the State of Baden, 1,530 have their own forests. There forests are managed as are farms in the countries where the agricultural colleges have reduced, or elevated, farming to a science. They are under the supervision of the state or imperial forest service, an organization of highly trained men whose duty it is to see that the land is devoted to the most profitable species of trees, that the mode of management is adapted to the various species, that the timber is cut

man forests the expenses of administration are very high; much labor is employed, excellent roads are maintained and an attention given to detail which could not be possible in America. Yet, because of the high prices of timber, and because the well-cared-for forests produce a much larger proportion of valuable timber per acre than our natural forests, the municipal forests are without exception highly profitable.

The city of Baden, with a popu-

lation of about 16,000, owns a forest of 10,576 acres. The total income from this forest averages \$100,000 per year. All these communal forests are so managed as to yield a permanent income, fluctuating very little from year to year. The total yearly outlay on the Baden forest is about \$33,000, nearly all of which is for labor. There remains each year a profit of about \$66,000 for the city treasury, an average annual return

land bears productive forests and the income is in consequence comparatively low. Moreover, the Heidelberg forest is managed as much from the aesthetic as from the business standpoint. Utility and productivity are in many instances sacrificed to beauty; the forest is made to serve as a park. Yet, though it is a young, unproductive forest, though it is kept in a condition which would put to shame many of our parks,



[Courtesy N. Y. State F. F. and G. Com'n.]

Swiss Municipal Forest used also as a Park.

of over six dollars from each acre of forest.

The forest of Baden has been so long under scientific management that it has been raised to a high state of productivity and is very profitable. A newer forest is that belonging to Heidelberg, a city of 44,000 inhabitants, which owns a forest of 6,860 acres. The Heidelberg forest is yet in the process of formation, the city is still buying land and spending comparatively large sums in planting, which makes the expenses comparatively large, while on the other hand very little of the

the Heidelberg forest returns to the city which owns it a regularly increasing annual profit which is now about \$13,000 per year, or about \$1.90 per acre per annum above all expenses of maintenance and administration.

Village Forests.

Nearly all the villages in the State of Baden own and manage forests. Oberforster Jaeger of Donaueschingen, Germany, writes concerning the forests under his control: "The village of Braunlenger has 1,601 inhabitants and owns 4,507 acres of forest.

The amount yearly cut is 2,500,000 board feet of wood, comprising both lumber and firewood; of this all the firewood is given to the citizens as "Citizens' Gifts" up to 3,500 board feet each (about seven cords each); and a total of about 100,000 board feet of firewood (about 200 cords) is given to schools, town halls, churches and other public buildings. The lumber, amounting to about 1,500,000 board feet annually, is sold and brings to the community an average annual net income of \$21,600, so that the community is not only free from all communal taxes, but is also able to establish modern works, electric light plants, a water system, schoolhouses, churches and other buildings. Even the smallest villages profit by this common-sense use of the forest.

"The village of Aufen consists of 220 inhabitants and owns 163 acres of forest. The forester gives to each citizen about 200 board feet (about four cords) of firewood annually and sells annually 85,000 board feet of timber, which clears for the community more than \$1,440, with which the total expenses of the small village are met. The annual yield of this communal forest is 137,500 board feet."

The examples quoted are not exceptional. They are representative of the experience of thousands of the villages in Europe. The higher price of timber in Europe, the steady market for all the products of the forest, the leaves, the small trees from thinnings, the branches and the stumps, as well as the log contents of the trees, make the receipts higher than they would be in Canada. In addition, another source of profit lies in the great cheapness of labor. Men are hired for sixty cents a day; much of the work is done by women and boys who receive about forty and twenty-five cents each, respectively, per twelve-hour day.

Canada's Opportunities.

Though municipal forestry can not be as profitable in Canada as it is

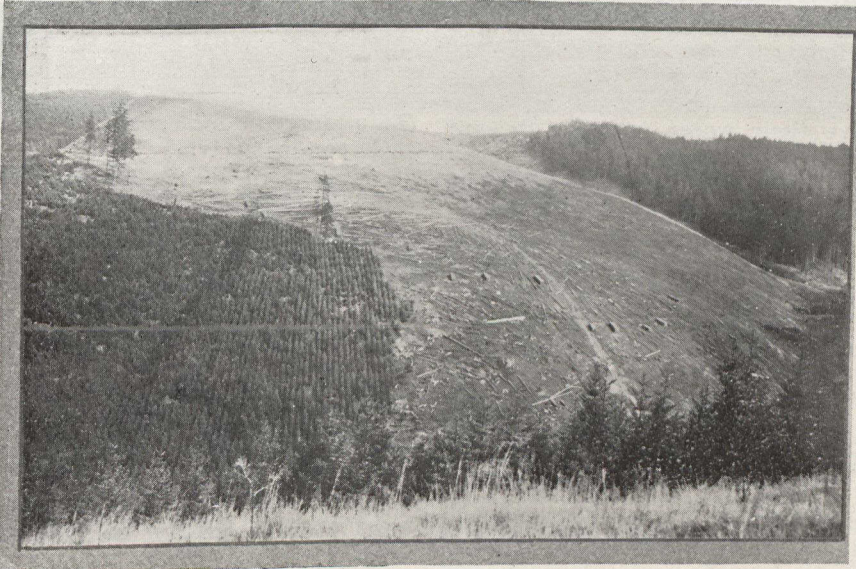
in Germany and other European countries, it will, while furnishing labor, converting waste land into productive woods and improving watersheds, pay good interest on the money invested. Near many Canadian villages, towns and cities there are areas of waste sandy or rocky land, which, after having been farmed, have been abandoned as worn out, or which have been cleared of timber but never used for agriculture. Such areas are usually wastes of ugliness which detract from the value of the neighboring property. Their unproductivity increases the proportionate burden of taxes on the community and renders such public works as roads and bridges unduly expensive or proportionately poor in quality. If the waste land is sand it is in many localities blown about by the wind so as to destroy or decrease the value of adjoining farms. There are instances of this along the shores of Lakes Ontario, Erie and Huron. In every way waste land is not only a loss to, but a drag upon, the progressiveness of a community. Such land will always grow trees, and if the proper species be chosen, will produce valuable timber.

Waste land not far from centres of population can be bought for five dollars an acre or less. In some districts it can be bought for two dollars an acre. If this land happens to be, as it frequently is, covered with young trees of valuable species, the cost of planting is considerably reduced. In Canada waste land can be planted to young trees, e.g., white pine, for about eight dollars per acre. The cost of the land, the cost of planting, the cost of management, protection and taxes, with compound interest at three and one-half per cent., brings the cost of the plantation to about \$160 per acre at the age of sixty years.

There are no sixty-year-old plantations of white pine in Canada, but studies which have been made by foresters in white pine forests on similar land in Eastern America justify the prediction that an acre of planted

forest at that age will produce 80,000 feet of merchantable timber. Timber will be worth more in sixty years than it is now, and as Ontario lumbermen are paying the government ten dollars and over for the privilege of cutting forest-grown pine in rather inaccessible regions, it is safe to say that plantations of pine in settled districts will sixty years from now be worth at least ten dollars per thousand feet on the stump. This would make the plantation worth

year bought 168 acres of land constituting the municipal watershed, and has adopted a plan for planting it to profitable trees. The county of York, in Ontario, is considering a plan of purchasing and planting up areas of waste sandy land. The Ontario Government has bought several thousand acres of worn-out farms in different districts in Southern Ontario with the intention of converting them into profitable forests.



[Courtesy N. Y. State F. F. and G. Com'n.]

A recent Cutting, showing also the nearly mature forest which will next be cut and the young tree growth.

\$800 standing, without the profit on the small trees, thinnings and cordwood. This crop at \$800 represents a rental of \$3.25 per acre for every year of the life of the plantation, in addition to three and a half per cent. on all money invested.

This well-tried and business-like method of securing a financial return from waste land is one which should appeal to many Canadian municipalities. There are evidences that the idea is being adopted. The city of Guelph, the leader in municipal ownership in Canada, has this

How Forests Improve Water-Supply.

It is becoming evident that it is more advisable for a community to secure its water supply from a small stream or lake over which it may exercise control, than to take it from a larger body of water which is public to many communities, cared for by none, and is the repository of the sewage of all. Acting upon this principle, many American and a few Canadian cities have acquired the land surrounding the sources of the small lakes and streams furnishing their water supply. Not only have

communities done this, but in some instances where the water is supplied by a company or private individual this policy has been followed. Such land is usually rough, rocky, of little value for any other productive purpose and consequently cheap.

The original idea in buying the land was to withdraw it from settlement in order that there might be no danger of pollution of the water. Further investigation proved that when such land was covered with forest it not only returned a profit as shown above, but exercised a beneficial influence on the water supply itself. Small watersheds, such as those from which many of our cities derive their water supply, depend upon the local precipitation of moisture. This moisture escapes in four ways from the ground upon which it falls: by evaporation, transpiration, surface run-off and seepage run-off. The water which evaporates, or which is carried off by transpiration through vegetable matter, is lost. It is upon the surface run-off and seepage run-off, which are, under ordinary conditions in Eastern Canada, about one-half the total, that the reservoir must depend.

Evaporation is less in the forest than in the open. The rate of evaporation depends upon the exposure to the sun and wind. A thick forest cover protects the forest from the wind and sun, cools the air and by thus standing between the moisture-soaked ground and the absorbent air gives rainfall more time to soak away into the earth to feed streams and springs.

Growing vegetation uses each summer a great deal of water, which is gathered from the soil by the roots and given off through the leaves and green foliage. The amount of this water used each year varies from about fifty to five hundred pounds for every pound of leaf matter. The amount used by forest trees, espe-

cially conifers, is less than one-half the amount used by forage crops and grass, so that for this reason alone a watershed covered with trees should return more water to a reservoir than if it were under any other cover.

It is important that the water which reaches the reservoir by surface drainage and seepage should be pure and clean. If the watershed is denuded the soil bakes in the sun, becomes hard, and during and after rain sheds the water with such rapidity that the loose particles of soil are carried away with the flood, and the reservoir is filled with turbid water. Owing to the rapidity of the run-off the underground seepage is under such conditions very little. On the other hand, if the watershed is forested the surface of the ground is covered with a deep sponge-like mulch of vegetable matter, which absorbs the water and prevents a rapid run-off, except under cloudburst conditions. At the same time the surface of the soil is so bound together by interlacing roots that it is not easily washed away. The consequence of this is that surface run-off is slow and carries very few impurities, and the underground seepage is much greater comparatively than from any other type of soil cover. The water from this seepage is later given out clean and pure in the form of springs, the most desirable source of domestic water supply.

There is no doubt that when more intensive conditions prevail in Canada, when it becomes more necessary to devote every acre to its most productive purpose, and when the many benefits of communal forestry are more generally understood there will be many towns and cities that will seize this opportunity of devoting to a useful, beautiful and profitable crop areas which now shame our economies and blunt our sensibilities by lying idle and ugly.



[Photo G. C. Piché.

Students of Laval University Forest School at work at the Provincial Government's Nursery, Berthierville, P.Q.

M. Charles Guyot.

Directeur de l'Ecole Nationale des Eaux et Forêts.

Un changement important vient de se produire dans le haut personnel de l'Ecole nationale des Eaux et Forêts de Nancy, où M. François Dubreuil, Conservateur à Pau, remplace à la Direction M. Charles Guyot, admis, sur sa demande, à faire valoir ses droits à la retraite.

C'est une des personnalités les plus marquantes et les plus respectées du corps forestier français pour qui l'heure du repos vient ainsi de sonner, au terme d'une carrière des mieux remplies, toute d'honneur, de conscience et de travail.

Né à Mirecourt (Vosges) le 5 novembre 1845, M. Guyot, entré à l'Ecole forestière en 1866, en sortit le second et débuta dans l'Administration comme garde général à Dompaire, dans son pays d'origine. Dès ce moment, il s'adonna aux sciences juridiques, qui ont pour lui un attrait particulier, et commence des études de droit très complètes qu'il poursuit jusqu'à leur couronnement,

c'est-à-dire jusqu'au doctorat.

Ses aptitudes spéciales ne tardent pas à le faire distinguer, et en 1873, il est nommé Professeur adjoint à l'Ecole forestière, qu'il ne devait plus quitter par la suite. Il y occupa successivement les postes de Professeur répétiteur et Inspecteur des études (1880), Professeur titulaire (1889), Sous-Directeur (1893) et enfin Directeur (1898).

Dans la chaire de droit, M. Guyot fut un maître très écouté, clair et méthodique dans les exposés et les analyses, commentateur d'une érudition très vaste, toujours au courant des plus récentes décisions de la jurisprudence. Successeur de Meaume et de Puton, il soutient sans faillir la comparaison avec celle de ses illustres devanciers. Comme puissance de travail il leur paraît même supérieur, n'ayant jamais eu d'auxiliaire. C'est sur lui seul que pendant vingt ans reposa toute la charge d'un enseignement dont l'im-

portance, toujours grande, est allée croissant avec celle des attributions confiées aux Agents des Eaux et Forêts, aujourd'hui si variées.

Mais, ce n'était pas assez de préparer et de professer une centaine de leçons, de répondre aussi à maintes demandes de consultations, M. Guyot sut encore trouver le temps de composer de nombreux ouvrages, la plupart concernant naturellement les sciences juridiques, mais un certain nombre aussi traitant d'histoire ou d'archéologie, dont l'étude constituait pour lui un délassement de ses occupations habituelles. Parmi tant de publications d'un style toujours vigoureusement correct et châtié, il convient de citer surtout : Des droits d'emphythéose et de superficie, 1876—Contrainte par corps en matière criminelle et forestière, 1880—Répertoire général alphabétique du droit français; articles:—Défrichements, 1891;—Débits Forestiers, 1897;—Dunes, 1899;—Forêts, 1901.—L'enseignement forestier en France: l'Ecole de Nancy, 1898.—Commentaire de la loi forestière algérienne, 1904—Cours de droit forestier, 1909.

Comment, à ses occupations professorales, M. Guyot trouva-t-il moyen de superposer encore des fonctions administratives, sans que celles-ci fissent tort à celles-là? C'est son secret, tout ce qui est certain, c'est que soit comme Inspecteur des Etudes, soit surtout comme Directeur, il eut à remplir une tâche fort lourde, qui lui prit souvent le meilleur de son temps. Il sut s'en acquitter, non seulement avec conscience, mais de façon tout particulièrement remarquable.

M. Guyot fut le septième Directeur de l'Ecole de Nancy, et l'un de ceux certainement qui ont le plus fait pour sa prospérité; son nom est à placer à côté de ceux de Lorenty, Parade et Nanquette. Son administration a été marquée, en effet, par un grand nombre d'améliorations, dont certaines fort importantes: rattachement à la station de recherches et expériences de la série de futaie

résineuse des Elieux; création d'un Arboretum à Champenoux, d'un établissement de pisciculture à Bellefontaine; remise à neuf des casernements, amphithéâtres, études, maintenant installés avec tout le confort moderne, institution d'un cours consacré à la sylviculture coloniale, classement général de la bibliothèque, etc., etc. Il est à remarquer aussi que les publications des Professeurs et Agents de l'Ecole paraissent n'avoir jamais été aussi importantes que durant les dix dernières années, et on peut avec presque certitude voir là se manifester l'influence de l'homme éminent qui se trouvait à leur tête.

En effet, il donnait l'exemple d'abord, exemple contagieux d'amour du métier, d'accomplissement consciencieux du devoir, de labeur et de dévouement. Puis, nul ne savait comme lui exciter, encourager et diriger les initiatives, éviter à ses collaborateurs des soucis et des difficultés dont il assumait seul la charge. Son humeur était toujours égale, son accueil toujours affable, et il savait témoigner à tous un intérêt, une sympathie cordiale, par où son action s'exerçait bien plus efficace et féconde qu'en faisant appel à l'autorité.

Quels sentiments éprouvaient pour un tel chef ceux qui avaient l'honneur d'être placés sous sa direction, on en a la preuve lorsqu'à la fin de l'année dernière, le personnel de l'Ecole nationale des Eaux et Forêts eut pour la dernière fois l'occasion de lui présenter ses vœux de bonne année; une réduction en bronze de la statue de René II, ornant la place St. Epvre à Nancy, lui fut alors offerte, comme témoignage d'attachement et de reconnaissance, et M. Thiéry, doyen du corps enseignant, se fit avec émotion l'interprète des regrets unanimes et très sincères éprouvés par les collaborateurs de M. Guyot, en le voyant quitter la chaire qu'il occupait avec une si grande autorité, et la direction où, depuis douze années, il s'était prodigué avec tant de dévouement.

Ontario's Forest Fires.

Great Conflagrations that have Cost the Province Many Millions.

(Part of a paper read before the Association of Ontario Land Surveyors by J. F. Whitson, O.L.S., at their Sixteenth Annual Meeting.)

The most valuable of our hardwood timber was burned by the early settlers when clearing off their land, or was used as fuel, and to-day there are no hardwood forests to compare in area or quality with the original forests of the Indian peninsula (Bruce County), the Huron tract or the older part of Ontario bordering on Lakes Erie and Ontario, as hardwood is found only in small sections north and west of Lake Huron; nor can we compare our present pine forests with those that have been cut or burned over in the last fifty years.

Trent and Ottawa Valleys.

It is to be regretted that careless operations in the past by lumbermen have done much to lessen the supply of timber in this province. On carefully examining the reports of surveys and explorations made prior to 1855, I find that nearly all of the Huron and Ottawa territory, including the districts of Muskoka, Haliburton and Parry Sound and the counties of Addington, Hastings and Renfrew were practically a virgin forest of mixed timber, pine predominating, with only parts of a few townships burned over.

Prior to 1860 a virgin forest covered the territory on the upper branches of the Trent waters. In that year, however, a fire broke out on the Burned river, in the townships of Snowdon and Glamorgan, in Haliburton, caused by a trapper's smudge.

In 1851 the first fire of any magnitude to visit the Ottawa valley commenced at the mouth of the

Bonnechere river and burned over what was locally known as the Big Pine country. This fire originated from the burning paper of a musket fired by a river-driver. In 1868 the Bissett's Creek country, from the Ottawa river to Lake Traverse, on the Petawawa, was devastated, and in 1870 the Skead limits on the Opeongo. In 1876 the country from the Petawawa to the Bonnechere met the same fate, the fire having arisen through the carelessness of a river-driver.

In these fires alone the province lost several billion feet of its finest white and red pine. To-day you will scarcely find a township in the white and red pine country that has not been burned over in whole or in part, and in many instances the fires have swept over them several times.

North Shore of Lake Huron.

A. P. Salter, who between 1855 and 1857 outlined the north shore of Lake Huron from Lake Nipissing to Sault Ste. Marie and explored the country to a distance of about forty miles inland, describes the country as a vast forest of green timber. Scarcely a burned area was met with. The country was not as heavily timbered with pine as the Ottawa valley; there were, however, large areas of excellent pine and other mixed timbers. Since that date a series of fires has reduced the pine area north of Lake Huron by almost one-half.

The fires began in 1864. The fire of 1864 was the first destructive fire to devastate the north shore. It began near Ottetail lake, on the

Thessalon river, and worked its way west into the old cutting around Bruce Mines, and east to Blind river, where it reached some old saw-log cutting made by a French-Canadian named Salvoil. Continuing east along the shore it reached the mouth of the Serpent, where it destroyed a local mill owned by Lauzon. Here it met fresh fuel in the old cuttings and continued east to the Spanish and up that stream for many miles, almost the entire southern slope of the Killarney mountain being swept over from White Fish west to Collin's Inlet.

While this fire was burning, a fiercer fire was, in August of the same year, working its way west from the west arm of Lake Nipissing, and the two finally met somewhere in the valley of the Wanapitei.

This was, however, but a small fire compared with the one which followed it in 1871. The fire of 1864 followed the dry, moss-covered rocks and small pine ridges, but when it struck a deep swamp or muskeg it stopped or smoldered until it was revived by high winds or found fresh fuel in some of the old timber cuttings. During the following six years winds and storms levelled the dead timber and piled windfalls around the skirts of swamps and muskegs.

The summer of 1871 was exceedingly dry and hot, and hence very favorable for the fires, and at many points along the north shore from French river to Kaminstikwia, on Lake Superior, fires started, swept over the dead timber and brûlé of 1864, destroying swamp barriers that saved the pineries six years before. Clouds of smoke, tipped with a fringe of flame, swept from one hill-top to another. Lakes, rivers and streams formed no barrier or protection. Township after township to the south of the French was swept over and millions of pine destroyed. The fire swept up the French along the west shore of Lake Nipissing and up the Sturgeon; then,

swinging around westerly, it crossed the Wanapitei and continued to the head waters of the Spanish, up the Vermilion and west to the headwaters of the Mississagi and down that stream for over fifty miles. This fire swept with fierce energy over an area of over 2,000 square miles, leaving blackened and giant pines to be a reminder for over half a century of the immense destruction there and then caused, when a virgin forest was converted into a barren and desolate wilderness.

During the same summer many smaller fires broke out in different parts along the north shore of Lake Superior, around Port Arthur and points east. Exploration surveys were then being made for the Canadian Pacific Railway, and many fires were started through carelessness on the part of the men employed. An axeman on Mr. David Beatty's exploration party started a fire by burning out a wasp's nest on the line east of Red Rock, on the Nipigon river, which Mr. Beatty was unable to quench. He and his party were forced to flee for their lives and take refuge in a stream, but unfortunately six of his packers were overtaken and perished in the flames.

Probably a more extensive fire than that of 1871 was the fire of (probably) 1855, which was started by an Indian on Lady Evelyn lake, while burning over a blueberry patch. This fire burned easterly to the shores of Lake Timiskaming, up the Montreal river to its source, and westerly along the height of land for over two hundred miles to near Michipicoten, on Lake Superior.

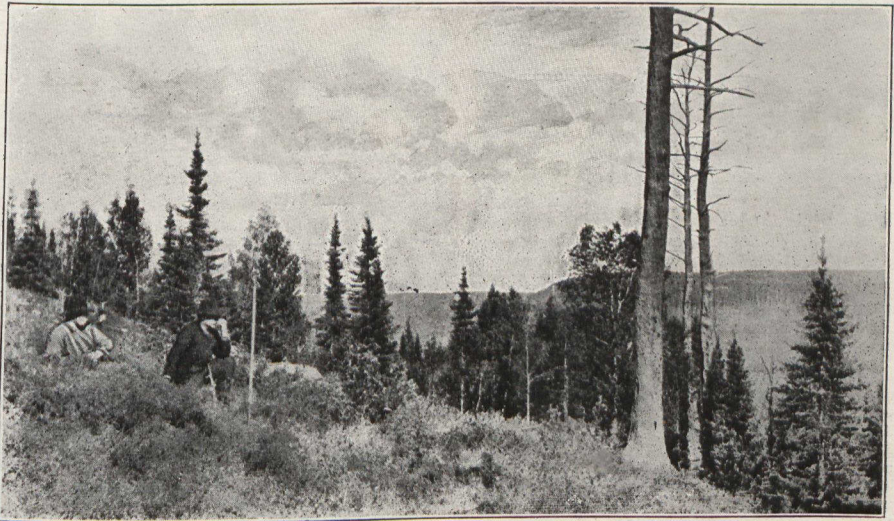
Surveyors Salter, Gilmour and Sinclair, in their reports (1867) of the baseline from Michipicoten to the Montreal river, describe vast areas of burned-over territory, and from the trunks of trees then standing they were able to state that the country at one time contained a heavy growth of pine. I can do

nothing better than quote Salter's own words: 'Almost the whole of this district appears to have been devastated by fires at different times and at periods more or less remote, which swept away the original forest, some remains of which are still to be seen in the shape of huge trunks of pine, blackened and charred by the fire. The country to the north of my line, along the height of land, has been swept over by fire, and now is, for an area of 2,000 square miles, a desolate wilderness. Judging from remains still standing it was formerly covered with pine and other timber.'

Vast areas west of Lake Superior, along the southern boundary of the province as far as Rainy Lake, which at one time contained large quantities of pine, were destroyed prior to 1857, probably about the year 1845. These fires burned over thousands of square miles, both in Ontario and Minnesota. From the top of a high mountain on Hunters' Island no less than 1,000 square miles of just such country can be seen, extending as far as the eye can carry in almost every direction.

Coming down to more recent dates, I might mention the fires of 1877, which burned over extensive areas in Parry Sound; the fire of 1891, which swept along the Canadian Pacific Railway for nearly sixty miles from Pogamasing Station to near Woman river, and a more recent one which in 1896 burned over the same territory and the entire shores of Biscotasing and Ramsay Lakes, and from the headwaters of the Spanish and Mississagi rivers to near Flying Post, north of the height of land, a distance of over seventy miles. These two fires alone devastated over a million and a quarter acres. Being an eye-witness of this fire, I am able to form some idea of what a forest fire in a pinery in a dry season is, and how utterly impossible it is to check it.

I might also mention the fires of 1894, which swept over Northern Minnesota destroying over 140 lives; this fire crossed Rainy River into the Rainy River Valley, burning over several of the newly scattered townships, and destroying the lives of six members of a family named Gamsby.



[Photo R. B. Miller.]

Looking for Old Lines, part of the Field Work included in a Forest School Course.



[Photo R. B. Miller.

Forestry Students of the University of New Brunswick Scaling and Tallying Logs.

A Uniform Log Rule for all Canada.

By A. H. D. Ross, M.A., M.F.

Up to the present time, no less than 54 different rules have been devised for the purpose of estimating the contents of logs of given diameters and lengths. Some 46 of these may be described as board measure rules, and the remaining 8 as volume rules. The board measure rules profess to give the number of "board feet" of inch lumber that may be sawn from logs of given dimensions, and the volume rules give a more or less accurate estimate of the cubic contents of the logs.

As milling operations extended into new regions, and as improvements were made in the machinery used, it was found necessary to devise new rules to suit the changed conditions; hence the great number of rules in use in the different lumbering regions. Of the 46 board measure rules, 17 may be described as formula rules, 17 as diagram rules, 8 as mill tallies, and 4 as combination rules.

What I have designated as formula rules include the International, Champlain, Universal, British Columbia, Preston, Baxter, Doyle, Ake, Square of Three-Quarters, Square of Two-Thirds, Cumberland River, Forty-five, Ropp, Vermont, Winder, Stilwell and Orange River Rules. A comparison of the formulæ upon which these 17 rules are based brings out some very interesting regulations.

To the diagram class belong the Scribner, Maine, Bangor, Parsons, Quebec, Spaulding, Favorite, Hanna, Drew, Baughmann Rotary Saw, Baughmann Band Saw, Derby, Part-ridge, Wilson, Finch and Apgar, Warner and the Younglove Rules.

The mill tally rules include the Carey, Chapin, Dusenberry, Saco River, Northwestern, Wilcox, Herring and Schenck. From the nature of the case, these rules have only a local value.

In the combination class we have such rules as the Doyle-Scribner, Doyle-Baxter, New Brunswick and Boynton. The first of these has been adopted by the National Hardwood Lumbermen's Association, because the hardwoods are generally very defective. It is a combination of the Doyle figures up to 28 inches and the Scribner figures above that diameter. The New Brunswick rule is a combination of the Vermont figures from 11 to 18 inches and the Maine figures from 19 to 24 inches, but is too limited in its range to be of much practical value.

The volume rules include four 'standard' rules: the Ohio River Cube, the Constantine, the Ballon and the New Hampshire.

The Nineteen-inch Standard, or 'Market,' is equivalent to the volume of a log whose middle diameter is 19 inches and whose length is 13 feet. As the volumes of logs of other dimensions vary as the squares of

their diameters and directly as their lengths, it therefore follows that if D is the diameter of the log in inches and L is its length in feet, it will contain $D/19 \times D/19 \times L/13$ Standards, or 'Markets.' In the case of the Twenty-one Inch Standard, the standard diameter and length are 21 inches and 13 feet; in the Twenty-two Inch, 22 inches and 12 feet; and in the Twenty-four, 24 inches and 12 feet.

With such a welter of rules — many of which are grossly inaccurate and no two of which agree — is it any wonder that there is a widespread desire for the adoption of a universal standard of measurement?

Factors to be Considered.

In the framing of a board measure rule, the following factors should be taken into account: (1) An accurate knowledge of the volume of wood inside the bark; (2) The percentage of the wood that will be converted into sawdust by the sawing of the log into inch boards; (3) The amount of waste in slabs and edgings; (4) The minimum width, or minimum board measure, of the boards to be included; (5) The effect of the taper of the logs upon the amount of lumber that can be sawn out; (6) The effect of normal crook in diminishing the amount of lumber that can be obtained from perfectly straight logs. In all cases it is assumed that the machinery used is in good condition and of modern type, that the sawyers are reasonably skillful and that the logs are sound. Discounts for such defects as 'butt-rot,' 'ring-shake,' 'gum-seams,' etc., must necessarily depend upon the experience and judgment of the scaler.

The saw-kerf waste is always some fraction of the area of the end of the log, and consequently increases as the square of its diameter. Some of the first saws in use cut a kerf of almost half an inch and consequently wasted 33 per cent. of the wood in separating the log into inch boards. Simple arithmetical calculations show that the percentage waste for saws of given kerfs is as shown in the table given below.*

From these figures it will be seen what a saving may be effected by the use of thin saws.

The deduction necessary for the square-edging of the boards is found to be almost proportional to the bark surface of the log, and therefore increases directly as its diameter. Curiously enough, the only rules which provide for the edging allowance in a rational way are the International, Champlain, Universal, British Columbia, Baxter and Preston. In the International it is computed from the circumference of the log at its middle point; in the Champlain and Universal from the circumference at the small end; and in the

British Columbia, Baxter and Preston at certain depths beneath the bark.

The most peculiar thing about the whole business, however, is that the International is the only rule which properly takes care of the allowances which should be made for the taper of the logs, and the normal crook found in nearly all classes of timber. It assumes that in 12-foot logs the taper averages $1\frac{1}{2}$ inches, and that the average major crook is also $1\frac{1}{2}$ inches. The saw-kerf allowance for this rule is one-eighth of an inch, with a safety factor of $1/16$ of an inch for uneven sawing and the shrinkage of the boards in drying. This makes the volume of the untrimmed boards $16/19$ of $.7854 D^2 \times L \div 12 = .6613 D^2 \times L \div 12$. When L = 12 feet, this formula becomes $.6613 D^2$; or for each four-foot section, $.22D^2$.

The amount of the surface waste was calculated geometrically, checked by means of diagrams, and tested at the mills. The result showed that it amounted to $2.12 D$ for 12-foot logs, or $.71D$ for each four-foot section.

The extra short boards had to be at least 3 inches in width or contain at least two board feet.

The formula for each four-foot length is $.22D^2 - .71D$, and the rule has been computed for logs varying from 8 to 20 feet in length, and for diameters varying from 3 to 60 inches. In order to effect a saving in the clerical work of computing tallies, the figures were then rounded off to the nearest multiple of 5, the error being compensating where a considerable number of logs is measured.

International Rule the Best Rule.

As this is the only log rule which takes into account the factors that influence the amount of lumber that can be produced from normally straight and sound logs, I have not the slightest hesitation in championing the cause of the International. I do not hold a brief for the author, or the rule, but judge it simply on its merits. A test of it was made in one of the mills in the Ottawa valley and showed that the rule is an exceedingly accurate one. The theoretical scale of 402 white and red pine logs of average quality, measured as they came to the saw carriage, was 82,920 board feet. The sawyer was reckoned by his employers to be a good man, but not the best in their employ, and the actual product in square-edged boards was 83,288 board feet—thus overrunning the scale by $4/10$ of one per cent. Some 245 of the logs were from 6 to 20 inches in diameter and 157 of them from 21 to 33 inches. For the sake of comparing this rule with the Champlain, Scribner and Doyle rules, the diameter between 6 and 17 inches are overlapped in the following table:—

*Saw kerf (inches)...	1-2	7-16	3-8	5-16	1-4	3-16	5-32	1-8	7-64	3-32
Percentage waste ...	33	30	27	24	20	16	13	11	10	8.6

Diameter of small ends of logs.	Number of logs tested.	Percentage over-run of saw-cut as compared with the scale by			
		Inter.	Champ.	Scrib.	Doyle.
6-8 in.	28	2.6	10.3	33	143
7-9 in.	54	2.3	8.8	35	115
8-12 in.	101	0.0	7.1	34	72
10-17 in.	104	-1.1	4.7	23	45
18-20 in.	90	0.5	6.7	14	24
21-24 in.	126	1.1	5.2	14	18
25-33 in.	31	-0.5	3.3	9	10

These figures show that the Scribner and Doyle rules are not at all suitable for small logs; and the logs are becoming smaller and smaller all the time in Canada, as most mill men know to their cost.

Another point in favor of the International rule is that, being based upon a correct mathematical formula, it can be modified to meet the case of saws with a different kerf from that upon which the rule was built up. In this connection, I recall an amusing instance of a friend of mine who made a most elaborate calculation to prove that the kerf of the saws has nothing to do with the amount of the surface waste. A little reflection would have shown him that the width of the edged boards depends entirely upon the distance between the saws and is quite independent of the width of the track they cut.

If the kerf of the saws which separate the log into inch boards is $\frac{1}{8}$ of an inch and the scale is 1,000 feet board measure; then, with saws cutting a kerf of $\frac{7}{64}$ inches it will be 1,013 feet; for $\frac{3}{16}$ inch, 950 feet; for $\frac{1}{4}$ inch, 905; for $\frac{5}{16}$ inch, 864; for $\frac{3}{8}$ inch, 826; and for $\frac{7}{16}$ inches, 792 feet.

Other Formula Rules.

The Champlain and Universal are the only other rules which can be modified to meet cases of this kind, but, unfortunately, neither of them takes into account either the taper or the crook of the logs.

The Doyle, Square of Three-Quarters, Square of Two-Thirds, Ake, Cumberland River and other formula rules are based upon formulae which are purely arbitrary. The Doyle rule, in particular, may be defined as a regular mathematical monstrosity. Its formula is $(D-4)^2 \times \frac{3}{4} \times L$ 12; which may be written in the form $(D-4)^2 \times L$ 16. In the case of 16-foot logs this becomes $(D-4)^2$. If we now take the case of a 4-inch log the scale would be 0, which is manifestly absurd. The following table compares the Doyle scale for 16-foot logs with the actual scale and the Scribner, Quebec, Champlain and International scales, and proves rather conclusively the unsuitability of the Doyle rule for the smaller sizes of timber:—

Diameter of 16-foot logs	Doyle scale	Actual scale	Scrib. scale	Que. scale	Champ. scale	Inter. scale
4 in	0	6	7	12	8	5
5 in	1	12	13	15	14	15
6 in	4	19	18	16	22	20
7 in	9	30	24	24	32	30
8 in	16	40	32	32	43	45
9 in	25	55	42	45	56	55
10 in	36	67	54	59	70	70
12 in	64	101	79	80	105	105
14 in	100	154	114	120	146	150

From these figures it may be argued that the Scribner rule should be adopted as a compromise between the Doyle and actual scales. As a matter of fact, it has been in use for some years now, in the work connected with the National Forests of the United States. This does not necessarily mean that it is a satisfactory scale, but rather that it has been adopted for the sake of uniformity in the work of estimating timber, making tables of growth, etc. Being a diagram rule (as is also the Quebec) its values cannot be readily corrected so as to make them conform to new or special conditions of manufacture.

The Cubic Foot Unit.

From what has been said, it will be seen that there are real difficulties in the way of adopting any particular board measure rule as the standard unit of measurement throughout the whole Dominion. What I would suggest is the adoption of the cubic foot unit. It has been used for many years now for the measurement of square and waney timber, and everybody understands it. For the sale of pulpwood, extract wood, fuel, etc., it is a most satisfactory unit of measurement, and the purchaser knows exactly how much he is paying for.

Even if all the parties interested could be got to agree upon any one of the log rules at present in use, much would depend upon the method of applying it, particularly in the case of long logs. In South America, in Japan, in the Phillipine Islands and throughout the greater portion of Europe, timber is generally sold by the cubic metre. As Canadians would find this unit of measurement rather confusing, and are already familiar with the cubic feet unit, I should say, by all means, let us adopt it. Logs with the greatest diameter would naturally command the greatest price, as is already the case with poles, posts and spars; and the manufacturers would soon find converting factors if they wished to saw them into boards. People in other countries find a cubic unit of measurement a most satisfactory one, and there is scarcely any doubt that the Canadian people would find the cubic foot the most satisfactory unit of measurement. Such unit would be fair to both buyer and seller and it would be a matter of supreme indifference to the seller whether the buyer saws them

into boards, plank or deal, converts them into railroad ties, dimension stuff, scantling, lath, pickets or shingles, grinds them up for pulp, slices them into veneer or burns them.

[At the annual meeting of the Canadian Forestry Association a committee was formed to consider the possibility of a uniform log rule for all Canada. Some lumbermen are already discussing the same subject, so that this article by Mr. A. H. D. Ross, M.A., M.F., lecturer in the Faculty of Forestry of the University of Toronto, from the Canada Lumberman, is quite apropos. Those who have given the matter attention are invited to send in their views for the guidance of the committee.—Ed. C.F.J.]

RESPONSIBILITY FOR FIRES.

Writing to the Secretary, Dr. A. T. Drummond, of Toronto, in referring to an editorial recently published in the Toronto Globe, 'Forest Fires—A National Menace,' says:—'It interested me especially as it seemed to suggest what, for many years, I have been trying to emphasize, viz., that the carelessness of the camper in creating forest fires should be regarded as criminal, and, further, that the railways should be forced, under a large penalty, to become responsible for the protection of the forests along their tracks.'



[Photo R. B. Miller.]

A Cruising Party.

PLANTING RIVER BANKS.

Mr. David Robertson, barrister, of Walkerton, makes the following suggestion: 'On almost every cleared farm that is cut by, or borders on, a river, there is a vacant space between the cultivated fields and the river that might well be utilized for the purpose of forestry. The almost complete destruction of timber along the banks of rivers is certainly affecting the climate and making the spring floods greater and water in the summer time very much lower. It has struck me that legislation might well be passed either empowering municipal councils to grant a bonus to farmers who would plant trees along the banks of the river or authorizing the municipal councils to do so themselves.'

RAILWAY FOREST POLICY.

'One of the best methods by which railroads can insure themselves against a shortage of ties and timber in the future is for them to own and manage their forests. A number of roads have already adopted this policy. Some have withdrawn from the market the remainder of their forest land grant areas; others have purchased forest land outright. The management of the existing forests is more economical and in the long run will probably be more satisfactory than the establishment of plantations.'—President Wm. McNabb, of the American Railway Engineering and Maintenance of Way Association, in his annual address, Chicago, March, 1910.

Another Forest Fire Horror.

Two Minnesota Towns Burned and Forty Lives and Much Property Lost.

After the awful forest fires that occurred in Montana and Idaho in August last it would have seemed that the United States had had a sufficiency of forest fire horrors for one year; but there was still in store one of the worst calamities of 1910. In a part of the country that already had been badly afflicted, earlier in the season, by the fire scourge, there occurred, in early October, a disastrous fire that in one day exacted toll of some forty lives and several millions of dollars in property.

In Northern Minnesota the whole season, from April forward, had been an unusually dry one, and the county had become dry as tinder. Quite a little of the territory in the vicinity of the Lake of the Woods (traversed by the Canadian Northern Railway) had been cut over and much brush and refuse lay on the ground. The soil, too, was of a peaty nature. Conditions, consequently, could not have been much worse for the starting and spread of a fire, nor the chances of extinguishing it, when once started, much less. Some of the country had been already burned over and considerable debris remained on the ground. The country is sparsely settled, and there are scarcely any wagon roads, only mere trails.

The state appropriation for fire protection was exhausted on Sept. 1st and the service was then discontinued.

Many fires had already occurred during the season and part of the area had been already burned over in July. Hence the people had become so accustomed to the fires that their proximity gave rise to no alarm. In Beaudette, it is said, many packed up their furniture and other belongings on the day of the fire; but the fire, when it came, swept down on the place so suddenly that there was no chance to save anything.

The fire is reported to have started during the latter part of July on the Canadian side, and to have slowly worked its way, as a ground fire, along, and in, the peaty soil southwards to the main branch of the Beaudette river and north to Rainy river, covering an area of about eight square miles.

Up till the beginning of October it merely smoldered, but finally began to assume serious proportions, and on Friday, October 7, a very high wind arose and fanned the fire to tremendous proportions. Another fire raged about the same time along the railway right-of-way, just east of White Road river, which worked east three miles and about two miles back on each side of the track.

Despatches of Oct. 5 reported the de-

struction of Graceton, Minn., a small place on the C.N.R., some thirteen miles west of Rainy River, Ont.

The hurricane of October 7 raised the fires to fearful proportions. At 2 o'clock in the afternoon Pitt, a small town on the line of the railway, a few miles west of the international boundary, was reached and consumed. The fire, working eastward, reached the towns of Beaudette and Spooner about half past eight in the evening, and a couple of hours later little remained of the places but blackened ruins. The fire also crossed the river to Rainy River, and the Rat Portage Lumber Co.'s mill, which was with great difficulty saved from the fire of July 21 and 22, was burnt, with several dwelling houses and small buildings.

Prompt action on the part of the C. N. Railway saved the lives of the people in Beaudette and Spooner, the railway having made up a train of box cars, which carried the people across the river to the town of Rainy River, Ont.

The entire zone covered by the fire was estimated to have a length of 85 miles and a width of 30 miles.

The burned district was immediately placed under martial law and little or no lawlessness is reported.

The county swept by the fire is generally level, covered principally with Norway and jack pine, spruce, balsam, white birch and tamarack.

The greatest loss occurred in the counties of Rousseau and Beltrami. The property loss in Beaudette, Spooner and Rainy River is reported to be \$1,500,000. The Shevlin-Mathieu Co.'s mill at Spooner was saved, but 30 million feet of lumber in their yards was destroyed. The C.N.R. had 250 tons of coal burnt at Beaudette.

In the towns of Beaudette and Spooner but one life was lost, that of a servant of Mayor Berg of Spooner. This is the more remarkable as there were many sick people in the town at the time who had to be hurriedly moved.

The loss of life occurred in the country districts, where people in their efforts to escape were overtaken by the flames. In several cases, whole families were blotted out in this way. Several made their way for safety to the railway, but in vain, the fire sweeping down on them, killing them. Many saved their lives by getting into streams or into cellars or caves.

Relief for the sufferers was at once forthcoming, the cities most active in this being

St. Paul, Minneapolis, Duluth, Crookston and Virginia (Minn.), Fort Frances (Ont.) and Winnipeg (Man.). The chief private contributors from the last named place were the T. Eaton Co. and J. L. Hyland. Chisholm, Minn., the little town that was burned in the forest fires of 1908, sent a contribution of \$200.

Twelve families in all were burned out on the Canadian side, in Rainy River and the township of Atwood.

The distribution of relief in Spooner and Beaudette was in the hands of the National Red Cross Society of the United States.

Up to October 12, 28 bodies had been recovered.

Much credit for life saving is due the C. N.R. who freely put special trains at the disposal of refugees.

On the evening of Oct. 12 a heavy rain came up which continued some time and the fire was thus quenched.

The town of Warroad, Minn., was also threatened by the flames which were, however, fought off.

Steps for rebuilding were at once taken in Spooner and Beaudette.

Dominion Forestry Work.

Resumé of the Report of the Superintendent for 1909.

The report of the Superintendent of Forestry for 1909, lately issued, gives many interesting particulars of the work of the Forestry Branch of the Department of the Interior, and notes considerable progress in the work over previous years.

Forest Fire Protection.

During the year 1909 the number of fire rangers employed was 96, as against 47 during the previous year. Nearly half of these (45 in all) were employed in patrolling the Rocky Mountain country from the international boundary up to the Peace, Athabaska and Lesser Slave regions. The Railway Belt in British Columbia was guarded by 37 rangers, while in Saskatchewan 14 were employed. As in most previous years the largest number of fires—those, at least, whose causes were known—arose from the building and operation of railways. Next to these, settlers clearing land and burning brush were most culpable, while campers and travellers were also to blame for a very large proportion of the fires.

Constant patrolling of all places where danger exists is the chief means taken for the prevention of fires. As opportunity offers, this is supplemented, especially on the forest reserves, the comparatively limited areas of which give better opportunities for careful fire protection. On Shuswap Lake, B.C., for instance, a gasoline launch is used, which serves not only to enable the ranger to cover his beat more quickly, but in case of serious fire would prove invaluable in getting men and supplies to the scene of the fire expeditiously. On the forest reserves fire-guards are made

along the boundaries and along the lines of railway passing through the reserves. Some of these guards are made by burning the grass and other herbage at the season when the snow has disappeared from the surrounding cultivated districts and before it has gone from the forest, so that there is no danger to the latter. Ploughed guards are also made. Roads are being constructed in the reserves, which not only make it possible to get men to a fire more quickly in order to fight it, but also serve to stop small fires and in case of larger fires give a base from which to 'backfire.'

Special attention has also been given to the problem presented by fires arising from the construction and operation of railways. The patrol along the route of the G.T.P. during its construction west of Edmonton has been very successful. During the two years of construction work not one serious fire has occurred along the right-of-way.

The prevention of fires along the railway due to sparks from engines is another very serious matter. In some places in the forest reserves the railways have been compelled to make fire-guards along their right-of-way. Efforts are also being made to get the railways to clear up the brush from their lines. One western railway this spring had a fire arising from their neglect to follow the instructions of the branch in this regard and lost several miles of valuable timber through the fire which started from brush along their track having been ignited by fire from an engine.

During the year reported on, a complaint was laid against the Great Northern Railway before the Railway Commission for starting fires along its lines in British Columbia.

The Railway Commission has also been requested to give authority to officers of the fire ranging staff to examine locomotives at divisional points in order to see that they have the equipment required by law in the shape of spark-arresters, etc.

Forest Reserve Extension.

The most striking development in regard to the forest reserves is, of course, the setting aside of the Rocky Mountain forest reserve, a tract of country aggregating some 14,400 square miles, some of which is already reserved as National Parks (i.e., the Rocky Mountains Park, the Kootenay Lakes Park and Jasper Forest Park). The great importance of this reserve is due to the opportunity it affords for the preservation and conservation of the waters of the rivers which rise in the Rockies and traverse the prairie country and whose waters play so important a role in the fertility of the soil of this, one of the richest farming countries of the world. The forest on the tract consists mainly of lodgepole (or black) pine, Engelmann spruce and Douglas fir. Very serious fires have occurred throughout the reserve in time past but the natural reproduction, over the greater part of the reserve at any rate, is abundant.

Further extensions of the reserves are contemplated, in fact, some of the lands have already been reserved from settlement, though not formally set aside as reserves. Among the proposed extensions are:—

To the Sprucewoods reserve, 70,000 acres.

To the Duck Mountain reserve, 136,000 acres.

To the Cypress Hills reserve, 80,000 acres.

To the Beaver Hills reserve, 20,000 acres.

Similar action has been taken in regard to a tract of 5,000 acres near Spirit Lake, Sask. The foregoing extensions total 305,000 acres, or over 475 square miles.

A tract of land which includes Mount Ida and the Fly Hill's (near Salmon Arm, B. C.) was also inspected in the fall of 1909, with a view to its being set aside as a forest reserve.

Tree Distribution.

The work of free tree distribution to homesteaders on the prairies inaugurated in 1901 is still on the increase.

For some years past the number of trees distributed each spring has been in the neighbourhood of two and a half millions. The nursery station at Indian Head, Sask., has reached almost its capacity, and if the distribution is to be enlarged the nursery capacity must be correspondingly increased.

In the spring of 1909, 2,570,000 trees were sent to 2,010 applicants. In the spring of 1910 about the same number of trees was sent to 3,173 applicants.

The increase in the number of applicants is also strikingly shown by the fact that in

1908 the average number sent to each applicant was 1,400 while in 1910 the number had had to be reduced to 800. The number of trees distributed remained practically the same. The number who received trees, however, increased from 1,424 in 1908 to 3,173 in 1910. In 1909, too, the number of new applications for trees was 2,235, in 1910 this number had increased to 3,832.

Farmers are urged to grow their own maple and ash trees from seed. Caution must, however, be exercised as to where this seed comes from, and, if possible, native seed procured. In the summer of 1908 many Manitoba maples were found to have been killed back, either wholly or partially, during the preceding winter. These had been raised from seed obtained from Dakota, and to this fact their inability to resist the weather seems due. The Forestry Branch has previously had similar experiences with seed obtained from Minnesota and from Eastern Canada. Failure of the local supply of seed, however, occasionally makes it necessary to resort to imported seed.

Irrigation.

Administrative work in irrigation occupies an important place in the work of the Forestry Branch, and consequently in its report. The need of careful regulation of the water supply in the prairie region is noted, in view of the many towns and cities requiring water for domestic supply. Moosejaw, for instance, and many smaller towns along the 'Soo' line must use the waters of Moosejaw creek; hence a study of the basin of the creek and the possible supply of water to be got from it is under way. This must be followed by a similar study, which will comprise a topographic and hydrographic survey, of all the basins in the irrigation district.

Notes are given of the progress of the larger irrigation schemes, such as the Southern Alberta Land Company and C. P. Railway undertakings; the activity in developing smaller irrigation schemes, especially in the country in the Wood Mountain district, in that south and east of the Cypress Hills, and in the region between the Red Deer and South Saskatchewan rivers lying north of Medicine Hat and the country north of the Red Deer. The hydrographic survey should be extended into this district also.

The progress of the hydrographic survey* is taken up and the progress of the work on the examination of the Milk and St. Mary's rivers noted. The extension of the work into the Wood Mountain district and the valley of the Frenchman river is also urged.

*Since this report was made there has been published by the Branch the 'Report of Progress of Stream Measurements for the Calendar Year 1909.'

National Parks.

A short descriptive note on the Jasper Forest Park is given. Agriculture has been practised successfully, it is noted, within the Park. The effect of fires has been bad, but the succeeding reproduction is good. A short paragraph is given relative to a visit to the hot springs at Fiddle Creek, in the Park.

At Banff Park the protection afforded to the game has resulted in a considerable increase in the number of the animals. It is hoped shortly to take steps in the direction of making Banff a winter resort as well as a summer resort.

Note is also made of further shipments of buffalo by M. Pablo to Buffalo Park.

Other Work of the Branch.

Reference is made to the beginning of the statistical work of the Branch. In this connection is noted the increasing use of inferior species of wood throughout the Dominion, of which figures are given.

The returns from the sale of timber for

1909 showed a good increase over those of previous years.

Appended to the report of the Superintendent of Forestry are the reports of various other officials of the Branch. Especially interesting to all who keep track of the progress of forestry in the Dominion is that of the Inspector of Forest Reserves. Among the topics taken up therein are the work in the protection of the forest reserves from fire (along the lines of his article in the *CANADIAN FORESTRY JOURNAL* of Dec., 1909, and giving the figures), and the general conditions on which mills should be admitted into the reserves. A tabular statement of all license and permit berths operated in forest reserves and statistics in regard to settlers' permits are given. The Inspector reports improved conditions as the result of permits being granted by forest rangers instead of by the Dominion Land agents. Hay permits, grazing and reforestation (including the establishment of nurseries, sowing and planting on the reserves) are also taken up.

WOMEN AND CONSERVATION.

All over the United States women are taking keen interest in forest conservation. They realize that aside from what conservation on the one hand or reckless waste on the other means to the race, the preservation and right use of the forest means much to them as home makers, in that forest destruction means the increased cost of the home itself, of the furniture, and of the fuel to heat it. The question of water supply, of healthful easily reached holiday places and a hundred other things are bound up in the maintenance of nature's balance.

The forest laws of Pennsylvania are among the best in the United States, and Dr. John T. Rothrock, the veteran advocate of forestry, says that these laws never would have been passed if the women of the State had not turned out and worked for them. Of those who have taken a leading part in this campaign, one is Miss Agnes Laut, the Canadian authoress, who by voice and pen has endeavoured to arrest the spoliation of the continent. One of her striking paragraphs when addressing women's clubs and similar organizations is that relating to the rapid advance in the price of seal coats. That the cause for the advance is both a real and a preventable one is brought out: Twenty-five years ago, states Miss Laut, there were, according to calculations, some five million seals on 'the rookeries'; about five years ago there were one million, and to-day there are less than twenty-five thousand. In less than twenty-five years, unless something is done to prevent the wanton and senseless slaughter, there will not be a seal alive.

BRITISH FORESTRY SCHOOLS.

Instruction in forestry is now given in ten institutions in Great Britain. The University of Oxford has taken up the work formerly carried on by the Royal Indian Engineering College at Cooper's Hill, and a School of Forestry has been established in the Forest of Dean by the Commissioners of Woods and Forests. Besides these, systematic courses of forestry are now offered by the following eight institutions: Cambridge University, Edinburgh University, the University College of North Wales, Armstrong College, the Royal Agricultural College at Cirencester, the Glasgow and West of Scotland Agricultural College, the Edinburgh and East of Scotland Agricultural College and the Aberdeen and North of Scotland Agricultural College.

DIFFERENT LUMBERING METHODS.

An interesting comment on the difference between eastern and western logging methods was given by items taken from almost contemporaneous issues of the *Fredericton (N.B.) Gleaner* and the *Vancouver (B.C.) Province*, some time ago. The former noted that the lumber cut of the province for 1909 would be about twenty-five per cent. less than usual, partly owing to the lack of snow; the western daily, under the heading 'Snow Interrupts Logging Operations,' said that recent heavy snowfalls had resulted in nearly all the logging camps on the coast being forced to suspend operations.

Fire Losses in Montana and Idaho.

An Official Estimate of the Amount of Timber Burned Last August.

A rough estimate of the fire loss upon the National Forests in Montana and Northern Idaho, made by forest officers of the U. S. Department of Agriculture, puts the total amount of timber killed or destroyed in this one district at over 6,000,000,000 board feet, while the area burned over is put at over 1¼ million acres.

The heaviest losses were in two Idaho forests, the Coeur d'Alene, where over 3,000,000,000 board feet of timber are reported killed or destroyed and over 450,000 acres burned over, and the Clearwater, where 1,000,000,000 feet of timber were killed or destroyed and 300,000 acres burned over. On the Helena National Forest, in Montana, the loss in timber is believed to have been 500,000,000 feet, on the Cabinet Forest 400,000,000, and on the Lolo Forest 300,000,000.

A large part of the losses on the Coeur d'Alene, Clearwater and Lolo were due to what became practically one great fire. The burn is shown on the Forest Service maps as extending in a northwesterly and southeasterly direction from north of Wallace, Idaho, to a point some 30 miles southwest of Missoula, Mont., or nearly 100 miles. At its widest point this burn has a width of about 40 miles, but its shape is very irregular.

It was really a union of a number of separate fires, driven to fury by the fierce hurricane of August 26. To the west of the Idaho-Montana boundary in the region of this fire lies a very inaccessible mountainous country, into which, on account of the absence of trails and of forage, it was almost impossible for forces of fire-fighters to penetrate. When the hurricane arose it drove the fires upon the parties which were hewing a way towards them,

forced these parties to seek refuge wherever it could be found, and swept down upon the forests where the fires were up to that time generally well in hand. The extensive losses are ascribed to the combination of hurricane and lack of means to get to the fires and put them out before the storm came. On the forests which were best equipped for controlling fires the results achieved are regarded as a demonstration of the efficacy of the fire-fighting methods employed, even under highly adverse natural conditions.

Forester Graves believes that, as usually happens in the case of big fires, there will be found to be considerable areas of living timber within the regions now mapped as entirely burned over. Of necessity the figures given are tentative, for it has been impossible to examine all the burned areas thoroughly. As fast as possible, however, the forest officers are locating and estimating the bodies of timber killed but capable of being lumbered, if taken in time.

How much of the 6,000,000,000 feet which was either killed or burned up in Montana and Northern Idaho can eventually be salvaged it is, of course, impossible to predict. If it were all a total loss, and if its stumpage value were put at the average price at which National Forest timber was sold last year, it would be the equivalent of a money loss of about fifteen million dollars.

It is believed that last summer's fires either burned up or killed between one and two per cent. of the total stand of National Forest timber. At the present rate of cutting from the National Forests, 6,000,000,000 feet is equal to 12 years' supply; but it is less than one-sixth of a single year's cut in the entire country, or enough to keep all lumber mills in the United States busy for something under two months.

THE FRENCH REPORT.

Various causes have combined to delay the issue of the report in French of the convention of the Canadian Forestry Association at Fredericton in February, 1910. The report is now being hurried, however, and will be ready for distribution soon after this issue of the Journal reaches its readers.

TREES FOR THE LAWN

Weeping birch, mulberry, ash, willow and elms. All kinds of shrubs, fruit and ornamental trees, hedge plants, roses, vines, evergreens, from 10c up.

CHAS. BAKER,
London Nursery, Ridout Street,
Phone 2222. London, Ont., Can.

National Irrigation Congress.

Eighteenth Annual Session at Pueblo, Col., in September, 1910.

The National Irrigation Congress of the United States held its eighteenth annual session at Pueblo, Col., U.S.A., Sept. 26 to 30, 1910. About eight hundred accredited delegates were present. An exposition was conducted in connection with the congress, at which products of various irrigated districts, special machinery for irrigation farming, pumping machinery, etc., were shown.

The question of federal vs. state control of interstate streams was brought up, and as at the Conservation Congress at St. Paul, Minn., the advocates of federal control were again victorious.

Resolutions were passed affirming the primary uses of water to be for drinking and domestic purposes and for agriculture, the uses for navigation and power being secondary; deprecating the granting of perpetual licenses for water; affirming the necessity of the control of interstate streams by the federal authority and urging the creation of a federal bureau for stream regulation; commending the Reclamation Service, and also the Census Bureau in its collection of irrigation statistics; urging the reclamation of swamp lands by federal authority in co-operation with states and individuals; approving the project of a deep waterway from the Great Lakes to the Gulf of Mexico; commending the federal forest policy and repeating the declarations of former Irrigation Congresses in favor of the establishment of the Appalachian and White Mountain na-

tional forests, and favoring the passage of laws to regulate the cutting of timber and the reformation of the present schemes of taxation of forest lands.

The officers elected were as follows:—

- President, B. A. Fowler, Phoenix, Ariz.
- 1st Vice-president, F. W. Fleming, Kansas City, Mo.
- 2nd Vice-president, L. Newman, Havre, Montana.
- 3rd Vice-president, A. G. Watson, Pueblo, Col.
- 4th Vice-president, John Fairweather, Fresno, Cal.
- 5th Vice-president, B. C. Buffum, Worland, Wyoming.
- Secretary, Arthur Hooker, Spokane, Wash.
- Foreign Sec., Dr. E. McQueen Gray, Albuquerque, N.M.
- Chairman Exec. Com., R. Insigner, Spokane, Wash.

Chicago was selected as the place of the next meeting of the congress.

Messrs. R. H. Campbell, Superintendent of Forestry, and Ralph J. Burley represented the Dominion Government of Canada; J. A. McKelvie, of Vernon, B.C., the British Columbia Government, and R. H. Agur, Summeland, B.C., and W. H. Fairfield, Lethbridge, Alta., the Western Canada Irrigation Association. Representatives were also present from Australia, India, Russia, Austria-Hungary, Chile and Cuba.

STUDYING FOREST INSECTS.

The fortieth (1909) report of the Ontario Entomological Society is one of unusual interest to students of forestry. Separate papers are given on the Large Larch Sawfly (*Nematus Erichsonii*) by Dr. C. Gordon Hewitt, Dominion Entomologist; the Spruce Budworm (*Tortrix fumiferana*) by Mr. Arthur Gibson, Chief Assistant Entomologist, Experimental Farm, Ottawa; and the Snow-white Linden Moth (*Ennomos subsignarius*) by A. F. Winn, of Westmount, P.Q. Other insects mentioned as attacking the forests are the Spiny Elm Caterpillar (*Euvanessa antiopa*) and the Bronze Birch Borer (*Agrilus anxius*) in Mr. Gibson's report on insects in the Ottawa district, and the Tussock Moth by Mr. J. B. Williams in his report on insects in the Toronto district. Mr. L. Caesar, of the Ontario Agricultural College, has notes on an occurrence of the Terrapin

Scale (*Eulecanium nigrofasciatum*) and an unidentified species of *Pityophthorus*.

Work with the Brown Tail Moth is reported on by Mr. Gibson. The Shot-hole Borer (*Xyleborus dispar*) is treated by Mr. J. M. Swaine, of Macdonald College, P.Q., and Dr. C. J. S. Bethune, of the O. A. College, besides notes on the different forms of aphids, treats of the Cottony Maple Scale (*Pulvinaria innumerabilis*) and the Senatorial Moth (*Anisota senatoria*). Prof. Lochhead, of Macdonald College, P.Q., notes the occurrence of the American Tent Caterpillar and the Fall Webworm. The president of the society, Mr. T. D. Jarvis, of the O. A. College, has an exhaustive paper on the mite family, which includes the insects causing galls on forest and other trees; a list of host-plants is given, and the article is illustrated by several plates showing galls on the leaves of forest trees and shrubs.

INDIANS AS FIRE RANGERS.

'Should Indians be employed as fire rangers?' is a question which has been more discussed than most people think.

Recently two citizens well acquainted with New Ontario have discussed the subject. The first is Mr. J. H. McKinley, of Belleville, Ont., a well-known mining man in Northern Ontario, and the second, Ven. Archdeacon Renison, of the Church of England mission at Moose Factory on James Bay. Mr. McKinley in a letter to the Canadian Forestry Journal urges the protection of the forests we have rather than letting these be destroyed in the belief that new forests may readily be grown. As to forest protection up to the present he believes a great deal has been due to leading lumbermen like Mr. J. R. Booth, Gillies Bros., and Senator Edwards, who make a point of sending their most trustworthy men for this work. His observation leads him to believe it would be of great advantage to organize the Indians and to pay them for fire ranging. They would take a pride in their work. They do not go out for a season, but live all the year around in the unexplored or partly explored sections of the country, and by making the Indians responsible the timber in these parts would be protected until the country was ready to be opened up.

Archdeacon Renison, whose district, speaking roughly, covers the country from the Canadian Pacific Railway main line to James Bay, is a great believer in the future of this part of Canada. He wants to see the resources saved for those who will shortly live there, and in a recently published letter he says:

'The wave of conservation which is passing over America is visible in Ontario in the game laws recently passed and the fire protection which is being more or less wisely conducted by the Provincial Government. But it does seem that more wisdom might be shown in the method if not in the matter of this necessary legislation.

'Fire ranging (sic) is now in the hands of men who in many cases do not know a paddle from an oar or a birch from a poplar. The heavy blanket of smoke over this lake for the past few days witnesses the inefficiency of the present service.

'The Indians, whose future has troubled many of our economists, are ideal fire rangers. They may be ignorant of algebra and Demosthenes, but they could teach the tyros who are now playing with a great national institution many things.

'The Indian knows his country, its forests, its rivers and lakes, and their mysteries are an open book to him. Many of our industrial schools are teaching these children of nature to be third-class farmers and fourth-class clerks, and thus wasting specialized knowledge and hereditary instinct of the very first quality.

'The white man only goes into the bush

to save enough money to get out again. The Indian is at home here. I can imagine no more potent service to the cause of conservation than the establishment of a Government bush ranger corps, directed by forestry experts, the rank and file of which would be made up of Indians. Encouraged to preserve the game and forest, which they do naturally, an Indian for one-quarter the salary of a white man would thrive in a district of 100 square miles and be a valuable servant of the country.'

Others who have given attention to the matter are not at all sure of the success of such a plan. It depends, they think, on the Indian. It would be all right if the right Indian could be got, but many have so little idea of the value of time, or duty or responsibility, and such a marked dislike of regularity or routine of any kind, that they would be useless. The subject is open for discussion in the Canadian Forestry Journal by those who have had experience in the matter.



JASPER PARK.

Mr. D. J. Benham, of Winnipeg, writes in the Toronto Globe of Jasper Park and Forest Reserve on the eastern slope of the Rocky Mountains, which he visited in company with Mr. R. H. Campbell, Dominion Superintendent of Forestry, and Mr. Howard Douglas, Commissioner of Dominion Parks. The trip was made upon horseback, the party sleeping out at night, and occupied five weeks.

Mr. Benham describes the park as admirably suited for the purpose of a forest and game reserve. The animals which range in the park are mountain sheep (Rocky Mountain Big Horn), mountain goats, moose, elk, red deer, caribou, grizzly, black and brown bears and marmots. The park gets its name from Jasper House, a famous establishment of the Hudson's Bay Company in the early days, but now deserted. The Grand Trunk Pacific and Canadian Northern Railways will pass through the Park, the beauties and advantages of which will thus be thrown open to tourists.

Since the article was written the whole eastern slope of the Rockies has been made a forest reserve, but this will enhance the advantages of the park as it will make the area throughout which there will be additional protection for game so much larger.



AFRICAN FORESTS.

The report of the Chief Conservator of Forests of Cape Colony for 1909 shows an increase in revenue of nearly \$40,000 over the preceding year. The total revenue for 1909 was \$188,050, which was just about double that for 1899.

ONTARIO'S 'BEAVER FARM.'

The Ontario government this spring realized the sum of \$2,714.83 from the sale of beaver and other furs from Algonquin Park. There were in the lot 361 beaver skins, 9 otter and 14 muskrat pelts. Six hundred more beaver skins may be placed on sale soon. Under the policy of strictly protecting the beavers, the animals, from being almost extinct, have become so numerous as to be troublesome. The annual increase is estimated at five to ten thousand.

The first sale of beaver skins by the Ontario Government has taken place in consequence of an order of Hon. Frank Cochrane, Minister of Lands, Forests and Mines of Ontario, that the forest rangers in Algonquin Provincial Park and Game Reserve trap five hundred beaver per year.

Seventeen years ago, when the park was set aside as a game preserve, it was feared the beaver was extinct; but these animals have increased so rapidly in the interval that they now have become a nuisance to those in charge of certain parts of the park and also to settlers in the district adjoining. They cut down trees that it is desired should live and their dams cause the overflow of farming lands. Even railway tracks have been flooded by reason of the beavers stopping up the drainage culverts in order to make a pond.

After consultation with those in charge of the Park the Minister decided that, in the section where the beavers were most troublesome, five hundred per year might be killed without reducing the number below the safety limit. About two hundred were trapped last season after the order went into effect, and the skins were sold by public tender. Beaver skins are reported worth from \$8 to \$12 each, according to quality.

About a year ago Mr. Thomas Southworth, during his term as President of the Canadian Forestry Association, publicly advocated making Algonquin Park a 'fur farm,' and he estimated that without injury to the Park as a game refuge furs to the value of \$40,000 per year might be taken, which would go to defray the upkeep of the Park. A good many people (who, unlike Mr. Southworth, had not had ten years' experience in forestry) thought his ideas were impracticable, but events proved that the officers of the Provincial Crown Lands Department were thinking in the same direction, and the order of Mr. Cochrane and sale of furs shows that they have put the matter to the test.

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'Conservation is not a fad, but a fight for the rights of future generations against the attacks of predatory wealth in the present.'—
Dr. B. E. Fernow.

INVESTIGATION NEEDED.

(Engineering News, New York, Sept. 1, '10.)

The great western forest fires of the past two weeks seem like grim irony of fate. Hardly has the plea for careful husbanding of our timber resources won a country-wide hearing, when the destruction of the elements threatens to clear the problem off the boards by wiping out the chief remaining stands. This month's fires are the worst for many years, if present reports may be credited in full. In loss of life they make a new record, indeed, but this is in the main because such desperate attempts were made to fight the flames hand to hand. But while the casualties make the disaster so much worse, they are hardly a gauge of its importance in the records of forest fires. The significant point is that this month's fires, as well as those of a year ago, come upon the nation just at a time when the governmental forest administration has attained to an elaborate working organization, when virtually for the first time the chief areas of extensive forest are under thorough-going supervision and management.

* * *

And one thing before all should be gleaned from the forest ruins: more positive knowledge of the causes of origin of fires, so that efforts at prevention may become more effective. That prevention is the only cure in this matter needs no words, especially after the spectacle of the agonized waiting for rains as the only possible check to the fire advance in the Northwest last week. It has been stated often enough that negligence, wanton disregard of proper care, the ejection of fiery cinders along railways, etc., are partners in blame. But which were the causes in the present instance? Which are the most threatening? Where must the main efforts for reform be applied? Let these things be learned and the resultant facts spread wide and repeated among all the people; then we may have a chance for improvement. The officials are already at work, it seems, for it is reported that several persons are under arrest for criminal action in setting fires. Let the investigations be continued to bring out all attainable facts, so that the prospect of prevention may be brought within tangible distance.

FOREST FIRE INSURANCE.

In some provinces of Sweden mutual insurance companies have been formed for assuming risks against forest fires. Forest owners can now take out policies for the insurance of growing as well as mature trees, including indemnities against loss of timber kept in stock within a radius of half a mile from actual woodlands.

GROWTH OF POPLAR.

When the Secretary was in Newmarket, Ontario, he was shown by Mr. H. S. Cane, of the Wm. Cane & Sons Woodenware Co., the stumps of some trees that had made remarkable growth. These were silver poplars which had been planted seventeen years and which, when cut, had attained a diameter three inches above the grass roots of 22 inches. Mr. Cane managed to secure a section of the stump and sent it to Toronto. Owing to its having been cut so low and having been covered with snow all winter for several years and grass-shaded in summer, the stump was somewhat decayed, but a careful examination showed that the total age of the tree was about thirty years, it having evidently been a good-sized sapling when planted. The subsequent growth had been very rapid, in some years being over an inch. These poplars were planted in the open as shade trees, and thus branched out low and did not make a clean log. Mr. Cane, however, made part of the bole of one of them up into pails, a sample of which was placed in the Forestry Faculty Museum at Toronto University.

FOREST FIRES AT CLOSE HAND.

How bad the forest fires of this year have been in the Rainy River district is shown by a few extracts from a letter of Dr. Lofthouse, Anglican Bishop of Keewatin, to the Canadian Churchman, regarding a trip to that part of his diocese. 'We drove six miles through a burnt country, with nothing but corduroy roads, which had nearly all been burned,' Dr. Lofthouse writes. 'The six miles drive took us over two hours, and when we arrived (at Cook's Mills) fires were raging all around us; most of the people were fighting them for their lives. . . . We had to take another road back and passed over about three miles of bad corduroy with fires burning all around.' On going into Rainy River by train, Dr. Lofthouse states that high speed had to be put on to escape the fires, and he adds: 'Fierce forest fires were burning all around the town; many of the people had all their things packed ready to flee for their lives, and it did seem as if the whole town must be destroyed, but fortunately the men, who were all out fighting fire, were able to keep it in check.'

MELTING WOOD.

By excluding oxygen, under the pressure of two atmospheres and a temperature of 800 to 900 degrees (C.) wood can be melted, making a compact amorphous mass which can be cast into forms. By adding preservatives it can be made indestructible.—Bulletin de la Société Centrale Forestiere.

THE SILVER BIRCH.

Jean Blewett.

Back from the highway, my lady of dreams
Murmurs a roundelay tender:
Silence and fragrance, and flowers and
streams,
These do you sing of, my lady of dreams,
Standing so stately and slender.

Silvery white where the lone shadows brood,
White where the starlight is streaming,
Silvery white through your virginal snood,
Silvery white through your veil and your
hood—
You, with your singing and dreaming.

You, with a cloak of the loveliest green
Draping your warm whiteness over;
You, with the breath of the forest, I ween,
Mosses and briers with lilies between—
Haunts of the poet and lover.

Back from the highway, my lady of dreams
Murmurs a roundelay tender:
Silence and fragrance, and flowers and
streams,
These do you sing of, my lady of dreams,
Standing so white and so slender.

ENFORCING ONTARIO'S FIRE LAWS.

One Northern Ontario guide was summarily punished a few weeks ago for carelessness in not extinguishing a camp fire. While Hon. Frank Cochrane was, during the course of his tour in Northern Ontario, proceeding along the Nipigon River, he met a party of American tourists, and shortly afterwards landed at their last previous camp-site. Here, in spite of the fact that one of the provincial fire notices was near at hand, the camp fire was found still smouldering. The chief ranger accompanying the ministerial party was at once sent back after the party of campers, with instructions to cancel the license of the chief guide of the party and warn the other members of the party that the offence, if repeated, would mean the cancelling of the licenses of the other guides and the permit of the tourists.

The town of Minnedosa, Man., is making good progress with its power plant. The power is developed from the Little Saskatchewan river, whose headwaters, it will be remembered, are in the Riding Mountain Forest Reserve.

* * *

Several timber licenses in B.C. have been cancelled because the holder exported logs to the U.S. contrary to the provisions of the Timber Act.

The Quebec Convention Programme.

The following is the programme for the Forestry Convention at Quebec, Jan. 18 to 20, 1911, as far as it can be formulated at present:—

WEDNESDAY, JAN. 18, 10 A.M.

Sir Wilfrid Laurier, Prime Minister of Canada, will take the Chair and the Convention will be opened by His Excellency the Governor-General. Addresses of welcome will be delivered by Sir Lomer Gouin, Premier of Quebec, and His Worship the Mayor of Quebec. Short addresses expressive of co-operation in the movement by Mgr. Roy, representing His Grace the Archbishop of Quebec, Right Rev. Hunter Dunn, Bishop of Quebec, Hon. Clifford Sifton, Mr. R. L. Borden, M.P., and the official representatives of the various provinces, the United States, Universities, Finance, Commerce, etc.

WEDNESDAY, JAN. 18, 2 P.M.

In the absence of the Premier at any time during the Convention the Chair will be taken by Hon. W. C. Edwards, President of the Canadian Forestry Association.

Appointment of Resolutions Committee.

Address by Hon. Clifford Sifton, Chairman of the Commission of Conservation.

FOREST ADMINISTRATION.

Addresses by

Hon. Jules Allard, Minister of Lands and Forests, Quebec.

Mr. R. H. Campbell, Dominion Superintendent of Forestry.

Mr. H. S. Graves, United States Forester, Washington.

Hon. F. Cochrane, Minister of Lands, Forests and Mines, Ontario.

Hon. A. K. Maclean, Commissioner of Lands, Nova Scotia.

Hon. W. C. H. Grimmer, Surveyor General, New Brunswick, and others.

WEDNESDAY, JAN. 18, 7.30 P.M.

Banquet tendered visiting dele-

gates by the Premier and Government of Quebec.

THURSDAY, JAN. 19, 10 A.M.

Address by Hon. Sydney Fisher, Minister of Agriculture for the Dominion of Canada.

PROTECTION AGAINST FIRE.

Papers by

Mr. W. C. J. Hall, Supt. of Bureau of Forestry, Quebec.

Mr. E. E. Ring, Forest Commissioner, Maine.

Railway Representatives.

Mr. E. G. Joly de Lotbinière.

Report of Committee on Fire Laws.

THURSDAY, JAN. 19, 2 P.M.

LUMBERING REGULATIONS.

Addresses by several lumbermen and limit-holders; also by Mr. G. C. Piché, Chief Forestry Engineer, Quebec.

THURSDAY, JAN. 19, 8 P.M.

FORESTRY EDUCATION.

The Rector of Laval University.

Dr. B. E. Fernow, Dean of Faculty of Forestry, University of Toronto.

Dr. C. C. Jones, Chancellor of the University of N. B.

Mr. Avila Bedard, Prof. of Silviculture, Forest School of Laval University, Quebec.

INJURIOUS INSECTS.

Illustrated lecture by Dr. C. Gordon Hewitt, Dominion Entomologist.

FRIDAY, JAN. 20, 10 A.M.

Waterpowers of Quebec, Arthur Amos, C.E., Provincial Hydraulic Engineer, Quebec.

Waste Land Planting. Paper by Mr. E. J. Zavitz, Forester to the Ontario Dept. of Agriculture.

Report of the Resolutions Committee.

FRIDAY, JAN. 20, 2.30 P.M.

Trip to Montmorency Falls.

University of New Brunswick

FREDERICTON, N. B.

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University Calendar furnished on application. — — —

C. C. JONES, Chancellor

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Graduates of collegiate institutions of high standing who have pursued in their undergraduate work courses in elementary Botany, General Geology, Inorganic Chemistry, Physics, Mathematics through Trigonometry, Economics, French, German, Advanced Botany, including General Morphology of Plants, Plant Histology, and Plant Physiology; Mechanical Drawing and Elementary Zoology are admitted upon certificate. The school year begins in 1911 on July 5th. The first term is conducted in the field at MILFORD, PENNSYLVANIA.

For further information address

JAMES W. TOUNEY, Acting Director
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