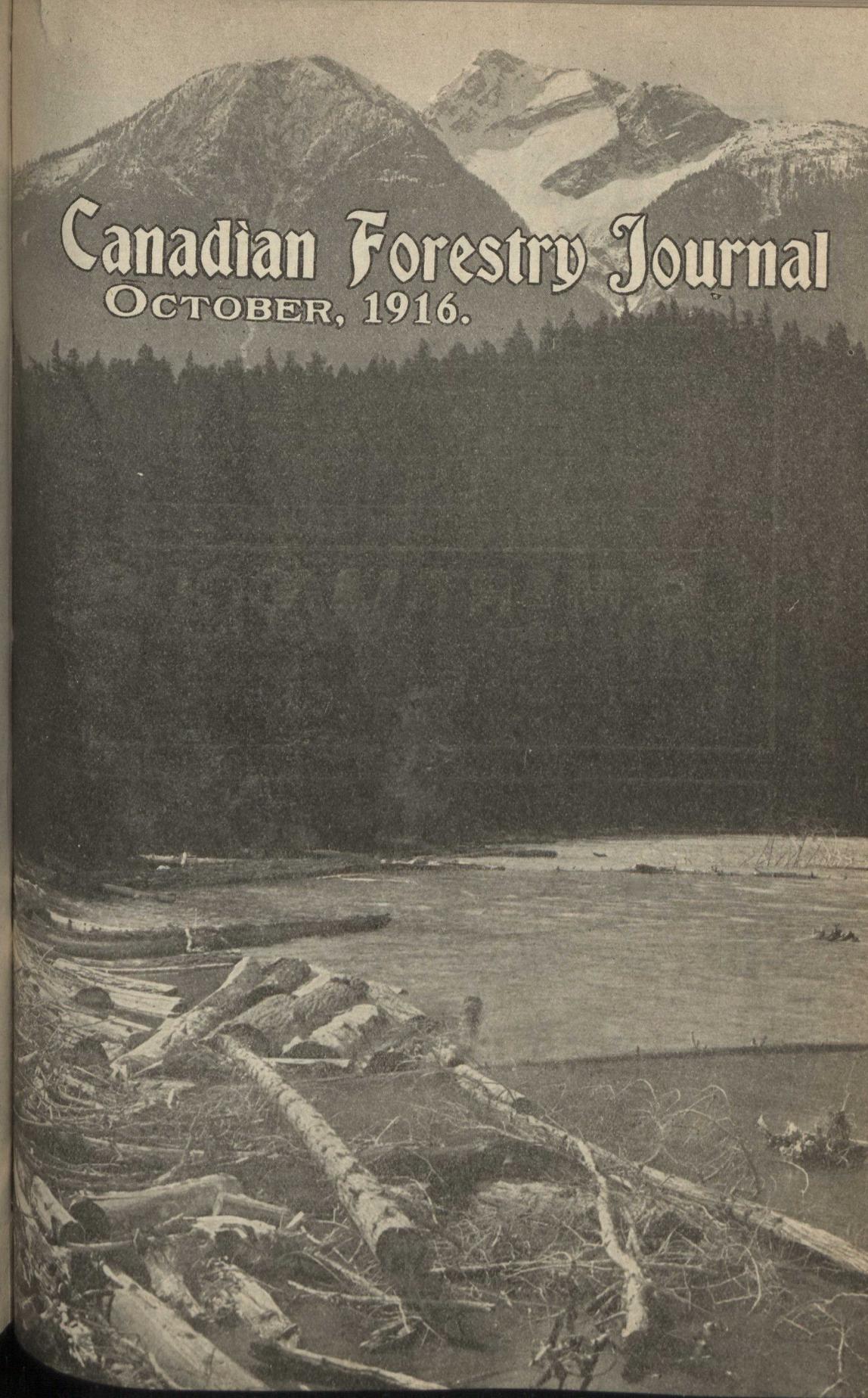


Canadian Forestry Journal

OCTOBER, 1916.



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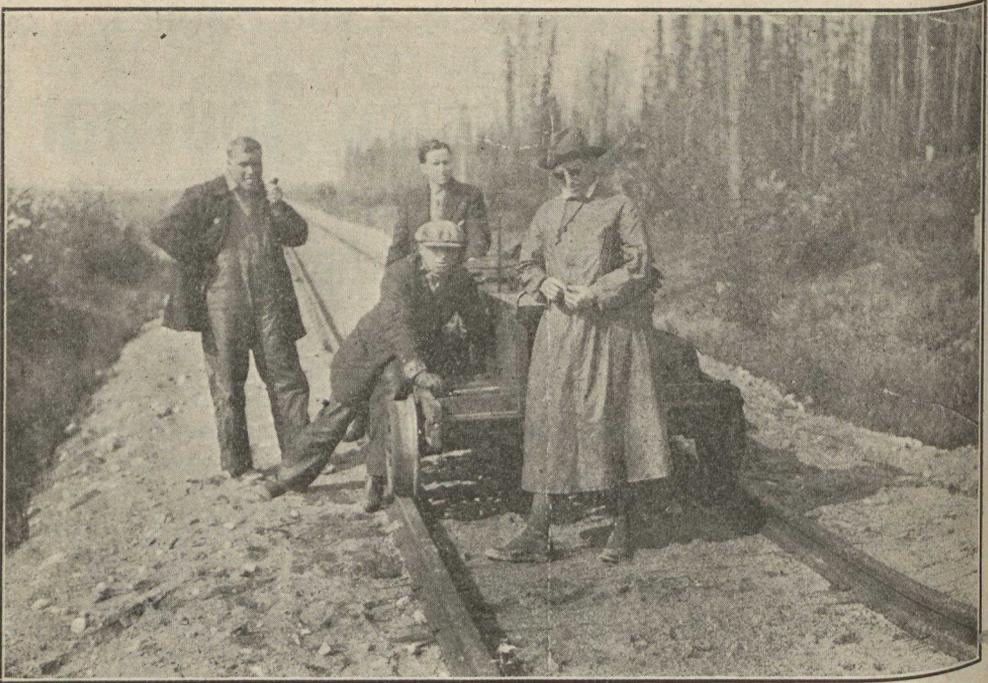
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The picture gives a very good idea of the common method of clearing farm land in the Claybelt region. The photograph was taken in the Abitibi region of Northern Quebec a few weeks ago. A French settler and three sons have been adding to their cleared area by felling the spruce trees and burning the slash, after securing a permit from a local government official. The spruce roots are shallow in this region, and following a fire a horse and stout chain will easily drag the stump free. The stumps are then piled and set afire.



On a 600 mile inspection trip by gasoline speeder through the forest lands of Northern Quebec. From left to right: Henry Sorgius, Manager St. Maurice Forest Protective Association; Inspector Jensen (kneeling on car); Robson Black, Secretary, Canadian Forestry Association; Ellwood Wilson, President St. Maurice Forest Protective Association. Photograph by Clyde Leavitt, Forester, Commission

Through Northern Quebec On a Motor Speeder

A Description of the Country Traversed by the National Transcontinental and the Fire Guarding Problem

By Robson Black.

A trip of investigation through the forested regions of Northern Quebec traversed by the National Transcontinental Railway was made during the week of September 18th by the Secretary of the Canadian Forestry Association, in company with Mr. Clyde Leavitt, Forester, Commission of Conservation; Mr. Ellwood Wilson, President, and Mr. Henry Sorgius, Manager of the St. Maurice Forest Protective Association.

Not only did the journey furnish valuable information as to the character of country, the forest resources and their development, and the settlement policy of the Government, but in addition afforded a first hand acquaintance with the fire protective system maintained by the Province, the railway and the St. Maurice Forest Protective Association in the areas visited. A gasoline speeder carried the party about 300 miles from La Tuque to Amos, the first large agricultural settlement on the edge of the Abitibi country, and in that distance was witnessed the most varied character of topography and soil, from the abrupt hillsides of rock through the Parent-Hervey area, to the fertile clay lands north-west of Nottaway.

Dealing With Fire.

Problems of fire prevention were everywhere recognizable. The railway right-of-way, the operations of the pulp wood jobbers and small sawmills, the great tracts of stripped hillsides and unproductive muskeg, the increase of settlement in the spruce-covered farming sections—each of these factors suggested the need of a resolute and unified policy of protection.

The St. Maurice Forest Protective Association has charge of the railway fire patrol throughout its territory, extending from Parent south-easterly to Hervey. The railway pays one-third of the cost, the balance being divided between the Association and the Provincial Government. The railway recently has given the rangers full co-operation, supplying their speeders with free gasoline and oil, and assisting the work by such means as the officials can control. It was found that the right-of-way, except for sections on the easterly part of the line, has not been cleaned up in harmony with the practice of the Dominion chartered railways, based on instructions of the Railway Board. Over hundreds of miles the fire hazard from profuse growth of grass and weeds is yet to be dealt with. As concerns the effectiveness of the fire protective measures adopted by the Government Railways on the greater part of the right-of-way outside the St. Maurice limits, the instructions to section crews regarding vigilance in fire prevention constitute about all the precaution taken. These instructions are good as far as they go, but experience shows that they have been indifferently observed. A conscientious foreman may carry out orders to the letter, but the average crew are more apt to treat incipient fire with the same sort of carelessness that characterized railway gangs in the construction days.

Using Section Crews.

Far better results would be obtained if the railway placed a few skilled

inspectors on speeders to patrol the country east and west of the St. Maurice territory, giving them enough authority over section gangs to use them in emergencies. With such a patrol, the province would be given as good protection as is now secured on the St. Maurice Association's section, where in four years there has not been a single bad fire; the country is a mass of green, and valuable young growth is everywhere in evidence. This happy condition cannot be said to apply to the country bordering the right-of-way where patrol has been lacking. While on the eastern end of the line visited by the writer, the timber damage has been less, the western section shows in many places the effects of violent fires during the past three years. For twenty miles west of Parent, the country is completely burned and for miles back from the track. This year witnessed many fires, with some severe destruction.

The result of all this forest damage may not be apparent to one unacquainted with the route taken by the railway. From La Tuque to Nottaway, 250 miles, the country is absolutely unfit for settlement. Only here and there in a pocket is a piece of farm land visible. It is claimed that no mineral wealth has yet been discovered. Therefore, the only possible source of local freight traffic for the Government railways are the forest industries. If the lumber and pulpwood are cleaned out at the rate permitted for years past, the La Toque-Nottaway section will be absolutely barren, incapable of producing a ton of goods or a passenger.

The record of freedom from fires established on the St. Maurice Association's section by careful patrol and vigorous control of all outbreaks shames the policy applied to the balance of the line through forested Quebec. It is not too much to expect that General Manager Gutelius and his staff will extend the system which they have endorsed and aided on the St. Maurice Association's territory to cover the entire right-of-way exposed to an equal hazard.

A suggestion of similar character addressed to the Provincial Government is not unreasonable. The country from Quebec to the Ontario boundary, following the line of the Transcontinental, divides itself roughly as follows:

From Quebec to Hervey Junction: fair farming land.

From Hervey to Parent: rocky, becoming mountainous. Black spruce and hardwoods, with some balsam in the lower lands. Non-agricultural, with minor exceptions at the Hervey end. Pretty well lumbered. Protected by the St. Maurice Association.

From Parent to Nottaway: Jack pine and white birch. A great deal of muskeg. Impossible for farming at present.

From Nottaway to the Ontario boundary: Good farm land, increasing in fertility from Amos westward. Settlement growing rapidly. Crop results said to be satisfactory. Large pulp wood production from settlers' lands, which may find a profitable market.

Curbing the Settler.

A thorough railway patrol is needed from La Toque to Nottaway, and this is already accomplished on part of the line by the St. Maurice system. On the balance additional measures are necessary. From Nottaway to the Ontario boundary brings the problem of supervision of settlers, and this is a function of the Provincial Government. At present the bulk of fire prevention is left to local officials called "settlers' guides," who are visited from time to time by provincial inspectors. These "guides" issue permits for clearing fires, and instruct the settler in the necessary precautions. The wide territory which some of them are supposed to cover, and the fact that some are occupied mainly with store-keeping or other employment, makes it difficult to give thorough attention to the settlers' fire problems. Nottaway, for instance, barely managed to save its cluster of houses from the fires of July and August. Indeed, the destruction of property on the Quebec side of the country was needlessly high, despite

the tendency of local residents to point to the terrible contrast in the Ontario Claybelt. It would seem, therefore, that the fire hazard in the Quebec Abitibi district deserves a more adequate offset in rangers giving their exclusive attention to the one job. The means of fire patrol at present do not approximate the minimum requirements of safety.

Fire supervision in lands bearing a poor tree growth sometimes impresses onlookers as superfluous, unless settlers' lives and property are likely to be in danger. The other side to this objection is that in many parts of the country along the Transcontinental the poor growth in the unpopulated muskegs beside the track leads a few miles back into large-sized timber. While the destruction of the muskeg spruce may be of little account in itself, the fire will pass eventually into the timber adjoining. The point is illustrated by a town fire brigade which recognizes any fire, whether in a shack of a skyscraper, as a serious peril to public property, and takes as prompt precautions in one case as in the other. Whether in Quebec or any province, patchwork in forest protection is a waste of money. Where roads are few and far between and only the waterways intervene, the same fuse of destruction leads through all forest growth. Touch it off at any point and who will prophesy the consequences?

Real Ranging.

The trip disclosed not only the inequalities of forest protection outside the well-organized patrol district of the St. Maurice Association, (in which the Provincial Government is a most helpful partner), but some of the reasons why that Association has built up its record of immunity from timber loss. The valuable weapon of the settlers' permit laws has been applied in a thorough but tactful manner by all the rangers. In 1916, only one damaging fire was set by human hands. Manager Sorgius and his men have accomplished their results in fire prevention and fire quelling by the very antithesis of such time-serving, job-holding practices as usually find their highest ex-

pression in the political patronage plan of fire ranging. The men are engaged on the basis of experience, energy, and intelligence. They are closely inspected. A "camaraderie" is encouraged by providing such comfortable quarters and equipment as the visiting party saw in the cabin at Manouan. There is no imaginable barrier to the duplication of these effective methods in every provincial and federal forest system in Canada,—no barrier at least that will bear public examination or a government's frank discussion.

A trip on a speeder for a total of about six hundred miles is in itself a spicy experience. Rain and cold winds were frequently encountered, but interfered little with the running time or the grim delight of holding fast to a self-propelled packing-case. Tripping along at thirty miles an hour in the pitch dark, seated a few inches above the roadbed, with rain and lightning occasionally putting the joy into life,, was equalled only by a night spent in a freight car from Parent to Doucet, with a bale of hay for a mattress and a lamplight breakfast at four o'clock.

Observations Abroad.

Mr. Roy Campbell, secretary of the Canadian Pulp and Paper Association, Montreal, returned recently from Europe, where he had been engaged as secretary of the special trade commission appointed by the Dominion Government. Mr. Campbell has some interesting observations of the French forestry methods as carried out in the mountainous region inland from Bordeaux and Limoges, a sandy mountainous country with patches of well-managed forest of from one hundred to a thousand acres. Everything in this region was cut from five inches upwards, largely for military purposes. The litter was carefully cleared up and branch material bundled for fuel. Some of the oak floors in French homes were a couple of hundred years old, and still possessed their original beauty. In England, Mr. Campbell made note of the railway ties, which were creosoted and larger in dimensions than Canadian ties.

Nipigon Forest Reserve—Ontario's Oasis of Real Protection

Chief Officer L. E. Bliss and His Men Build Up a Fine Record in Thorough Forest Guarding

The Canadian Forestry Journal has maintained more than once that if the general forest protection work in Ontario were patterned on the achievements of Mr. L. E. Bliss in the Nipigon Forest Reserve, the necessity of a reform agitation would be vastly reduced.

The Nipigon Reserve's scheme of fire prevention forms a happy oasis in the centre of Ontario's ill-conceived and ill-administered forest protection service. The reason reflects some credit on the Department of Lands and Forests in that they have left the chief officer, Mr. Bliss, free to adopt improvements and manage affairs as his own intelligence suggested. Beyond any doubt, the whole province could be raised to an equal level by appointing a "Chief of the Forest Protection Service" and giving him a free hand to operate his machine.

Only in the forest reserves has the Ontario Government encouraged improvement work, such as building trails and telephone lines. In the vast reaches of forest constituting the main portion of the provincial timber, no such essentials to fire guarding have been provided. It will be noted that Mr. Bliss has taken unusual latitude in two other matters, the control of settlers' fires, and the appointment of his own rangers. The reader will no doubt recognize once more the link between conscientious management of rangers and good results in timber saving.

The rangers in the Forest Reserve are under Mr. Bliss' immediate supervision. There are 125 miles of bush telephone line, with some 12 or 14 telephones attached. These telephones are all in the rangers' cabins. In Nipi-

gon, at the end of the telephone line, is an office assistant whose sole duty is to attend to the calls of the telephone. Every morning at 7 o'clock every ranger is called by telephone. They then leave for their patrol work. At the end of their patrol they again report, about noon, to the office, again at 6 p.m. on their return to their own cabins. On all the canoe patrols, the rangers carry fire pails, shovels, mat-tocks and axes in their canoes, so that should a fire be discovered they will have something to fight with.

Towers and Their Use.

In the Reserve are four lookout towers, all placed on high vantage points. These lookouts report to the office every hour, and oftener, of course, if smoke is discovered. They are supplied with powerful glasses so that it is possible for them to cover an immense area. In Nipigon a motor car is provided, and on Lake Nipigon a powerful motor boat. As soon as the lookouts report smoke, men are loaded on the car and taken to the fire at 30 miles per hour, and if by boat at the rate of 10 miles per hour, so that whatever means of locomotion is necessary it is not long before they are at the fire. Every fire that occurred in the reserve this season was first reported to the office by the lookouts. They are, as it were, the eyes of the system, and when they see and report smoke, it is up to the men to put it out, as the lookouts have done their share. A lorry is kept in the car house, on which are piled blankets, tents, cooking utensils, etc., so that when extra men are being taken to a fire this lorry is attached to the motor car, and as it is always ready, not a minute is lost. In



A hundred and twenty-four years old, and still occupied, is indeed a unique record for a Canadian log house. This substantial pioneer house was built at Unionville, Ontario, by Philipp Eckhardt, a progenitor of A. J. H. Eckhardt, a well-known citizen of Toronto, and a life member of the Canadian Forestry Association. It is said to be the oldest log house of similar dimensions in the Dominion. Some of the logs are 30 to 36 inches in diameter, and show few signs of disintegration. The builder, Mr. Philipp Eckhardt, constructed the first saw mills and grist mills in Ontario, 1792, about three miles west of Unionville. It is interesting to note, as a testimony to the comfort of this log home, that its occupants, numbering thirteen, took first prize at a 1912 political picnic as the "heaviest family attending the event."

the Nipigon office there is a list showing all supplies necessary for men at this work, and the amount required per man, so that as soon as fire is reported this list is taken for a guide, and the supplies ordered accordingly. The whole aim is to be ready for action as soon as the lookouts call in. These lookouts have now been working for the past three seasons.

Settlers' Fires.

In Nipigon Township, where there are a lot of settlers just south of the reserve line, Mr. Bliss does not permit any burning whatever from May 1 to Sept. 15. This is a matter of personal arrangement, and not of law.

Mr. Bliss is also in charge of fire protection on the Transcontinental for a distance of 250 miles. On this area

was placed a force of eight rangers under an Assistant Chief Ranger, and all were supplied with speeders, with a daily run of 30 miles. At the end of each patrol are comfortable tents, so that two rangers always camped together.

The speeders carried more than enough equipment for one ranger, so that should a fire be discovered requiring more help, the ranger would be able to furnish the necessary tools. The Assistant Chief in charge of these rangers left with them in the spring and returned with them in the fall, and was continually going along from one gang to another, and in that manner the best results possible were obtained. In 1916, one of the driest seasons on record, no fires left the right-of-way. The rangers on this staff purchase their

supplies in pairs, and have a main, or headquarter, tent, but the partners are only together at their main tent every other night.

Selection of Men.

The men on the staff, as well as the men on the other two staffs under Mr. Bliss' supervision, are selected by him from amongst the guides, trappers, prospectors and lumberjacks. They have the vim necessary for their work, and being experienced bushmen, are quick in an emergency, and resourceful. Knowing the country, should extra help be required, they know exactly where to turn. The majority of these men have been on the same staff for the past six or eight seasons, and are veterans in fire fighting.

Kawkash Mining Division.

In the area are 16 rangers, under an Assistant Chief Ranger, and all are good bush and canoe men. They patrol carefully along the canoe routes used by the prospectors, while others patrol on land over the area that is being prospected. Part of the prospecting, especially around Tashota, was conducted right up to the right-of-way, so that in that part were placed extra patrols on the railway. The rangers in this section did excellent work, as the total acreage burned in this part was only about 800 acres of scrubby spruce.

Mr. Roland D. Craig, who with Dr. H. N. Whitford, have spent several years compiling a report on the forest resources of British Columbia for the Commission of Conservation, have left the province, Mr. Craig returning to Ottawa to complete his report, and Dr. Whitford taking a professorial chair in the Forest School at Yale.

Any Member of the C. F. A.

Can have the Canadian Forestry Journal sent free for three months to any person regarded as a prospective new member.

Please send in names and addresses without delay.

More Reading Matter in the Journal

By an alteration in this issue of the Canadian Forestry Journal, the columns have been widened and lengthened, thereby increasing the amount of reading matter.

The enormous advances in the prices of paper, coupled with a rising scale of wages, have added an unanticipated extra burden to the publishing of the Journal. The paper stock alone has almost doubled in price, and nearly everything entering into the composition of a piece of printed matter is taking the usual upward journey.

The Journal's advertising revenue covers but a small part of the annual cost, the balance being met from the general revenues of the Association.

Pulp Imported From Canada.

Of the billion pounds of pulp imported by the United States for the fiscal year ending June 30, 1916, over two-thirds came from Canada. The pulp importations for 1915-1916 have been 189 million pounds less than for the previous 12 months, yet the amount shipped to us from Canada during the past year was 130 million pounds in excess of her 1914-1915 shipments.

During the year just closed nearly 70 per cent. of our 1,135,000,000 pounds of pulp came from this country, while most of the remaining 30 per cent. came from Norway and Sweden.—U.S. Report.

Fire-proofing Shingles.

A statement is made that a cheap process of fire-proofing shingles has been discovered by an Iowa druggist. Tests made at the University of Iowa show that a block of wood one-half inch thick was saturated with the fire-proofing and then placed in running water for twenty-four hours. After that it was thoroughly dried again and held for one hour over a Bunsen burner, which had a temperature of between 700 and 1,000 degrees Fahrenheit, that being a much greater heat, it is said, than is developed in a conflagration. The wood was not burned, and only charred very slightly at the point of the flame.

Better Forest Protection for N. B.

The New Brunswick Government is preparing plans for the reorganization of the whole forest protection system. That the provincial forest possessions of over 18,000 square miles merit the most modern and effective safeguards against fire goes without saying. The notion that forests can be left to take care of themselves has been abandoned by nearly every government on earth having authority over timber lands. Once the responsibility for forest protection is admitted, it behooves a government to build up the most economical and up-to-date patrol service. The maintenance of New Brunswick's forest industries depends absolutely upon the elimination of destructive fires. In 1912, before the slump in the lumber trade was under way, New Brunswick produced nearly \$7,500,000 of lumber, shingles, pulp wood and lath, not counting fire wood, fence posts, etc. The New Brunswick Government receives an average of about \$500,000 a

year from forest operations and thousands of workmen owe their living to the same source. A very substantial part of the business of our merchants and manufacturers is accounted for by the annual wood harvest.

To those who wonder if New Brunswick can be freed from serious forest fires, it may be pointed out that a private association of Quebec Province, the St. Maurice Forest Protective Association, patrolling two-thirds as much territory as the whole forest area of New Brunswick, have reduced forest fires to an extent hitherto regarded as impossible. This was accomplished by good organization, close inspection of rangers, and authority to regulate the clearing fires of settlers. New Brunswick has done much already in the way of forest protection, and can enjoy similar immunity by taking similar measures. Lacking them, no Government can hope to preserve invaluable timber assets against the ravages of fire.

Another Side to "More Production"

The repeated cries for "more production" in order to enhance the wealth of Canada are apt to cloud the fact that prevention of waste by Governments themselves is the most direct and obvious means of filling the country's purse.

When one knows that the Governments issuing the admonition are themselves fully empowered to eliminate waste in such assets as agricultural and forest lands, the proposition to fill a leaky pail loses some of its reasonableness.

Ontario's forest fires this year represented a straight loss of 3 to 5 million dollars in the Claybelt alone, counting only the immediate property damage. The fires in Quebec certainly will show a substantial financial injury. Were all the provinces and

the federal government to add their forest fire debits, after a complete and frank survey of destroyed areas, the result would illustrate the awkwardness of trying to make an extra million out of wheat and at the same time tossing away its equivalent in preventible forest fires.

The growing forests represent the easiest money Canada ever will lay her hands on. No less than seven and a half millions a year are paid into provincial and federal treasuries each year from timber operations. Five thousand industries look to living forests for their supplies. Our mines, fisheries, agriculture, are helpless without the co-operation of a cheap wood supply. When we abandon the guardianship of this precious pillar of our prosperity to the fire fiend himself, we betray the interests of present and future.

B. C. Rangers Review Their Problems

(From Vancouver "Province.")

New Westminster, Sept. 30.—Dominion fire rangers of the New Westminster district met yesterday afternoon in the Columbian block in this city to review the work of the past season, and lay plans for better protection from bush fires for British Columbia timber. Crown Timber Agent E. W. Beckett, who presided, initiated these meetings of the rangers, one being held just prior to the men going to their duties in the spring, and the other when they return in the autumn. The interchange of ideas has proved most beneficial.

Reeve Loughheed of Maple Ridge, who has long been closely interested in the timber question in this province, in addressing yesterday's meeting, pointed out the urgent need for reforestation in British Columbia. Accessible timber is rapidly being used up, and if something is not done now there will be little doing in the timber business in this province in another fifteen years. He favored experimenting with eastern hardwoods in burned areas as being more practicable than waiting for the slow-growing native fir and cedar. Some of the eastern varieties, he thought, would do well here, and should produce timber of a merchantable size, twelve to sixteen inches in diameter, within ten to fifteen years. He himself, and he believed, other lumbermen would be willing to put up a little more money than they are now assessed if the government would do some experimenting along these lines.

Mr. D. Roy Cameron, district inspector of forest reserves, when dealing with the same subject, predicted that forest reserves would be created, and that in time extensive experiments in reforestation would be carried on.

The meeting was held primarily for the discussion of methods of fighting forest fires. A resolution was passed by the meeting asking for an amendment to the Provincial Bush Act, providing once more for the necessity of

obtaining a permit for setting a fire prior to October 1. For the past two years no permit has been necessary after September 15. The speakers all emphasized the necessity of burning the slashings following the construction of railway rights-of-way, roads and settlers' clearings, so as to prevent the spread of bush fires. That pumps be supplied to water patrols, and the need of more look-out stations were some of the suggestions made. The look-out station established this year on Mount Cheam, near Chilliwack, proved a great success, and gave command of a wide area of timber. From that station on clear days one can see right out to the Gulf of Georgia.

Guides for Excursion Parties.

"I would like to see a law enacted compelling fishing parties always to have a guide accompany them on their excursions and make them pay the expenses of the guide, and I would have wardens appointed to follow small excursion parties into the well-known fishing grounds, and I would make it penal for any one to throw their cigarette or cigar butts or the heel of their pies into the bushes or dry leaves.

"If this course were followed, it would put sportsmen on their guard, and prevent a large number of fires which do such serious damage.

"If possible a fire in the woods should be built on the shore of a river or stream, otherwise a rock fire place should be put up to build a fire on, and white birch should be used, if obtainable, for fuel, as it will not spark and does not produce coals to any amount to retain the fire."—Henry B. Rainsford, Fredericton, N.B.

The Cover Picture.

This month's cover picture shows Gates Lake, in the Lillooet District of British Columbia, Pacific and Great Eastern Railway.



A small plantation made by French peasants in a clearing. Dead branches were stuck into the earth for shading purposes. (Courtesy of "Forest Leaves.")

With the Canadian Wood Cutters in France

*Describing the Detailed Care of French Foresters to Secure
Forest Regeneration and Prevent Fire*

Written by
Captain Frederic C. Curry, Brockville, Can.
Late 2nd Army Wood Cutters

During the months of April and May of this year the writer was attached to the engineers as officer in charge of a party of soldiers engaged in cutting timber for the trenches in one of the French National Forests in rear of the firing line.

Here he had an opportunity of seeing some of the steps taken by our Gallic Allies toward preserving one of the

most valuable of their national assets. Forestry was not a subject that the writer had ever given much consideration to, but the striking difference between the care taken by the French and our criminal carelessness in this respect, especially in Northern Ontario, was enough to impress the most indifferent of citizens.

The forest itself consisted of about

seven square miles, and was divided into six "series," each series being further subdivided into thirty "coupes," the trees in each coupe being of about the same age.

A macadamized road traversed the forest from end to end and from the centre, where the chief forester's hut was situated, well made and drained earth roads ran in stellar fashion through each series.

No Lookout Towers Needed.

The coupes were similarly marked off by boundary stones and a cleared path about six feet wide, often with a bricked centre to give a secure foothold to horse traffic. There were no watch towers or fire guards, a fact that I commented on, and was assured by the old forester were unnecessary.

Each series was under the charge of a separate forester who also acted as gamekeeper in those series in which game was permitted to live. Pheasants were plentiful in every series; rabbits, or rather hares, were only tolerated in the alternate ones, which were carefully fenced with a rabbit-proof netting and gates, a stiff penalty being awarded for leaving the gate open. A small variety of deer was also plentiful, but the writer did not see any at close enough range to identify. They were not much larger than a goat and about the same color as our own deer. One only saw them as a patch moving across the avenues of the trees in the distance.

Engineers at Work.

Our work in the forest consisted of felling small trees, mostly oaks and ashes, up to nine inches across the butt, for use in the trenches as dugout props, etc. Smaller stakes were also cut for use in wire entanglements and in revetting the sandbag walls of the trench. The majority of the actual felling had been done before the writer's arrival, and when he took over command we were merely getting out the logs from some of the inner coupes where work had been stalled by the mud and cleaning up the brushwood and stumps from the other coupes.

Logs were handled on sledges we built for the purpose and skidded quite nicely through the mud, unusually

large ones being hauled singly, butt first.

Road Building.

The brushwood was first thrown into piles and then on the coupe being cleared of logs it was bundled according to its nature into "fascines," or "firewood." The former were bundles ten or twelve feet in length and as many inches in diameter, made by laying the branches alternately "butt and brush," and bound here and there after "choking" with withes or iron wire. They were largely used in road building across swampy ground, and if you ever wish to punish infantry just march them a few miles across a road made of this material. At Valcartier we experienced one road of this sort, through which the horses sank to their flanks when the fascines, which had not been properly tied, started to spread.

They are, of course, only used for temporary roads, filling in shell holes, etc., but in France were employed to form a cushioning layer several feet below the stones of the paved roads.

Brushwood that was too short for fascines was trimmed of its finer branches and cut into four-foot lengths, which were also bundled and ultimately went to the trenches in the form of charcoal.

Even Spread the Ashes

Anything left after the firewood was cleared was burnt and the ashes then had to be spread over a considerable area so that the rain would carry the potash contained in them back into the soil. There is little waste in France.

Even the chips made in felling the trees were not wasted, being gathered up in bags by old women and children who scoured the coupes as soon as they were vacated by the soldiers.

The stumps, too, had to be cut level with the ground, not the easiest method of felling a tree, but saving in the course of a few years many thousand feet of timber.

Branding the Trees.

There is another reason for cutting the stump so close, and that is for the purpose of replanting, the French trusting to the sprouts the stump is bound to send up the following spring to fulfil this important work.

the huge stump roots, trees we had felled only in March had shoots three and four feet in height by the end of April. The healthiest of these shoots would be banked around with a little earth later by the forester, and the remaining shoots trimmed away and gradually the new tree would replace the old. It seemed an ideal system.

When the trees reach a diameter of six or seven inches they are branded with the year the former tree was felled and with a number which is entered on the forest registry, and the history of the new tree begins. It ends when the standing timber is sold and the tree marked with a large "X" scored in the trunk by the forester and the purchaser, whether, as in our case, the British Government or a private individual, fells the tree, cuts the stump level with the ground again, and leaves nature to do the rest.

Quite different is our system of swinging the axe waist high and leaving behind us a mass of stumps surrounded by piles of brush-wood waiting only for the match of a careless smoker to complete the devastation that we have begun.

Think of the saving for Canada if every man cutting a tree could be made to level the stump and protect the young tree during the first few years of its growth.

In France every roadway is outlined with beautiful trees, not for picturesque effect, though the result is artistic in the extreme, but because the roads are the nation's, and the nation knows the value of its standing timber.

We on the other hand seem to fail to realize the value of ours.

FREDERIC C. CURRY, Capt.

Late 2nd Army Wood Cutters.
Brockville, Canada.

The fall meeting of the technical section of the Canadian Pulp and Paper Association will be held in Montreal on November 15 and 16. There will be a paper and discussion on the forestry end of pulp wood production.

Sixty-eight members of the B. C. Forest Branch have enlisted, in addition to 47 forest guards. Messrs. Mitchell and Rees have won the Military Cross.



Ranger Reaches Tree Top With Spiral Ladder.

On the summit of Brush Mountain in the Crater National Forest of southern Oregon, the top of a tall fir tree is used as a lookout station by a ranger who patrols the woods and is on a constant vigil for fires. In establishing his observatory, the man constructed a spiral ladder which winds about the trunk and extends to the uppermost part of the great tree. He did the work unassisted, and in a staunch and durable manner. The rungs of the ladder consist of heavy yew pegs driven into 2-in. auger holes, spaced at regular intervals and bored 1 ft. deep into the tree. After these members had been put in place, their outer ends were connected and reinforced by a log railing, made of partly sawed Douglas fir poles.

Any Member of the C. F. A.

Can have the Canadian Forestry Journal sent free for three months to any person regarded as a prospective new member.

Please send in names and addresses without delay.

How Minnesota Disposes of Logging Debris

Winter Slash Burning is Imposed on All Operations, Whether Lumbering, or Road Building

Note: The Editor of the Journal recently asked the State Forester of Minnesota to outline the methods of slash disposal as practised in that state. His reply follows:

The laws of Minnesota require that logging slash and slash from the rights-of-way of roads and ditches shall be disposed of in accordance with the direction of the forester. Our practice in handling slash from rights-of-way of all kinds has been to have it piled and burned in the centre of the right-of-way at the time of cutting; while for logging operations the practice varies with the character of timber and land involved. In the operations in thick stands of Norway and white pine we are bringing about the practice of burning as cutting proceeds. Where spruce is logged clean, the brush is piled in windrows and burned as soon as the snow is off the ground. Operations by steam skidders on marketable agricultural land permit clean burning as soon as the cutting on each unit is completed. On the rocky non-agricultural lands, where heretofore we have not found it feasible to require winter burning, the slash is cleaned up on strips from one to two hundred feet wide adjoining the logging roads and spurs. Our purpose is then to keep all fires out of the remaining slash.

Before logging operations start in the fall, our rangers ascertain what areas within their districts are likely to be cut, and, after an examination of the lands, a notice is issued to the logger, directing him as to what method he shall follow in disposing of the slash on each and all of the descriptions to be logged over. We have found that

the opposition to winter slash burning has decreased as the loggers have become more familiar with doing the work, and as they understand more of the dangers and damages that result from a postponement of the operations until spring or summer. At this time we are considering the advisability of asking the legislature to declare a closed season for brush disposal, it being understood that such work could be carried on during the closed season only under special permit from the district forest ranger or the state forester. Although burning may be done satisfactorily early in the spring before the frost is out of the ground, the results on the whole have not been a success. The period during which it is dry enough to burn and not too dry for safety is so short and uncertain that a crew might be held in readiness for weeks awaiting the time to burn. On the other hand, one or two men may slip into the woods and set fire to the slash area when it is dangerously dry. The latter action has in many instances destroyed company property and private property ten times more valuable than what it would have cost to burn the slash in the winter time.

DILLON P. TIERNEY,
Acting State Forester.

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Resources of the Upper Ottawa

By R. O. Swezey

This is neither the "boost" of a "spurious optimist" nor the wail of a morbid pessimist (both of which classes we are more or less afflicted with), but is a plain, unvarnished statement of a few facts taken from the writer's field note book.

Great as are the better known resources, in timber and water powers, of the Lower Ottawa region, comprised within the area drained below Lake Temiskaming, they do not excell the 10,000 square miles of undeveloped country in the Upper Ottawa region, extending from Lake Temiskaming to the Grand Lake Victorian Basin.

Whilst the Lower Ottawa has for generations been pouring out its wealth of pine timber to the world's markets the Upper Ottawa has remained untouched because spruce and not white pine has always been the predominant forest there. To-day there remains very little white pine in the Lower Ottawa, or indeed anywhere in Canada. Spruce there remains in

abundance, but in localities where pine has been so plentiful, as in the Lower Ottawa, the spruce is naturally not growing in such pure luxurious stands as in the regions where pine has never predominated.

Rich Virgin Spruce.

Thus we find to-day the Upper Ottawa Valley, which was never much of a pine country, a rich virgin spruce forest abounding in water powers, great and small, and ready to offer up its resources at a time when the pulp and paper industry is preparing to take a world lead in Canada.

To anyone who has not cruised inland from the rivers of the Upper Ottawa the wealth of spruce is unbelievable. Casual observers of the morbid pessimist class have been known here as elsewhere to cry calamitously, like the car window observer, because the whole timber wealth of the region did not roll out to the river banks for in-



(Courtesy Grand Trunk Railway System.)

spection. If the natural resources experts want to see timber, and especially spruce, it is necessary to leave the car window or canoe and get inland, usually a quarter of a mile at least, for the spring floods which overflow the banks of rivers and lakes prevent the maturing of large spruce in any quantity along shore. Besides winds contribute towards restraining a heavy growth to the water's edge. And along railroads the laxity of control in burning right-of-way cuttings, has often been responsible for long strips of burn both sides of the track. Once inland beyond the influence of these agencies the density of growth in the north country becomes evident.

In the Upper Ottawa I have found black spruce in thick growth, in areas of over a hundred square miles, which, when followed in their more or less irregular outlines, will average 10 to 15 cords per acre. Some sections of 10 to 25 square miles will yield 20 cords per acre and many localities of 100 to 600 acres contain 30 cords per acre. Actual measurements have been made showing 45 to 52 cords per acre on small sections, the number of black spruce trees of 7 inches upwards on such sections being as high as 520 to the acre.

Good Navigation.

The operating facilities of this whole region are particularly attractive owing to the possibilities of steamboat navigation in stretches of 50 to 75 miles on lakes and rivers. The whole region of some ten thousand square miles can be reached with comparative ease, and that active operations may soon be looked for in this section is quite probable considering that some thirty million cords of spruce, exclusive of several million cords of poplar, stand ready for the axe.

All this wood may be cut, floated down and delivered, for a cost of \$3.50 to \$5.00 a cord, at the great water power sites of the Quinze River situated near the Temiskaming and Northern Ontario Railway, and one hundred miles nearer markets than pulp and paper mills now operating with eminent success.

In a distance of fifteen miles from Quinze Lake to Lake Temiskaming the Ottawa (or Quinze) River can develop powers aggregating 250,000 up. Besides this several other water powers farther up the main Ottawa can develop 5,000 to 20,000 horse-power each.

Preached Sermon on Fires.

On Sunday, Sept. 8th, the Rev. R. A. Robinson, rector of the Anglican Church, Monteith, and who is in the south undergoing treatment by a specialist for eye-strain, visited the city of St. Thomas, and at the evening service in Trinity Anglican Church spoke on the "Causes, Experiences and Consequences of the Recent Bush Fires in New Ontario."

The St. Thomas Journal has the following report:—

"Speaking of the fire and its cause he said it was not accidental, and while some thought campers were careless with their fires and others blamed the smokers who threw aside cigar stubs, the fact remained that this disaster was caused by the settlers deliberately setting fire to the woods to clear the land, and the usual dry spell of July developed a perfect cyclone of fire beyond all control. The men of the township were called out to fight the flames and in the township of Monteith they were successful, but Cochrane and other townships suffered severely with a loss of life totalling 450. Gruesome facts were touched on, and settlers' efforts to escape were detailed, as well as the ready response by all for relief."

"This is the sixth bad fire in ten years, and many residents can be met who have been burned out two or three times. This last fire has cost \$50,000,000, and unless something is done settlers will leave for the West. What is needed is a good commission to look into the whole question of fire prevention and settlement."

Mr. B. M. Winegar, of the C. P. R. Forest Service, has been adding to his excellent record in fire protection work by undertaking large planting operations on the Eastern lines for snow protection purposes. Next spring the planting work will be greatly extended.

Reforestation for Returned Soldiers

From the Edinburgh Scotsman.

Mr. Tennant had the pleasant task of announcing in Parliament on Wednesday night what he rightly described as a "most patriotic and munificent" action on the part of a great Scottish land-owner.

The Duke of Sutherland, with a generosity and public spirit which will everywhere meet with merited recognition—recognition which will be the more hearty because this is not the first benefaction the nation has owed to the Sutherland family—is making a gift of absolute conveyance to the nation and its soldiers and sailors of an estate of 12,000 acres.

The conditions attached to this gift are that the land is to be used for the settlement of soldiers and sailors who have a good record of service, and entered the Service as volunteers, and half of the holdings to be formed will be allotted to sailors.

While the selection of the settlers is to rest with the Secretary for Scotland, it is a reasonable stipulation on the part of the donor, who is naturally interested in making a success of the scheme, that his wishes should be consulted in the first selection.

The settlement is not to be on a purely agricultural basis. Part of the land is to be set apart for reforestation by the State; and this part of the scheme will provide an object lesson in State forestry and a subsidiary means of employment to the small holders on the land.

The scheme will start under the most fortunate auspices. The land is given free; the settlers will have that combination of employments which is recognized as the ideal, and indeed the only practicable, condition in the case of small holdings; and the financial prospects of well-directed forestry enterprises are at the present time as favourable as their inauguration is necessary in the national interest.

Purchase of Stock.

In the course of his statement Mr. Tennant said: The Duke was prepared

to remove the sheep stock from the farm, but it was agreed, upon his (Mr. Tennant's) recommendation, that the sheep stock should remain, and that the State should purchase it. The purchase of the sheep stock, cattle, and horses, together with the furniture and shooting lodge, would be on terms to be mutually settled. The conveyance of the property and the delivery of the stock and equipment was to take place at Martinmas, 1916. The Duke had agreed that the State might make a light railway on the estate. He should like to be allowed to convey to the Duke the warm thanks of the House for his most patriotic and munificent gift.

Prospect of Returns.

The capital expenditure of the first two years for stocking and afforestation would come to about £20,000, including the equipment of twenty holdings, and thereafter about £1,400 a year. After fifteen or sixteen years the returns from the woodland would begin, and, of course, there would be returns from small holders.

From that time onwards there would be a re-payment of the capital invested, which would be ultimately repaid in full with the addition of compound interest at the rate of at least 4 per cent. If the present price of timber was maintained, the return would be much larger. That was very promising for the future of forestry and of putting soldiers on the land.

There need be little doubt that under good management Mr. Tennant's optimistic forecast of the profit to the State will be justified, and that any outlays incurred will be made good with adequate interest. It may be hoped also that his association with this scheme will stimulate the new Secretary for Scotland to more energetic action than has hitherto characterized his Department and its branches in this important question.

An Effort to Compile Losses on Licensed Lands

Limit Holders Co-operating With Canadian Forestry Association to Secure Statistics of Forest Fires

A hearty response from timber limit licensees in Ontario has resulted from the efforts of the Canadian Forestry Association to obtain a definite estimate of losses by fire on licensed forest lands of Ontario in 1914, 1915, 1916.

There is at present no official means of obtaining such information. The Ontario Government has no data on fire damage beyond some returns as to the number of fires reported by rangers, probably the least important item of all. As long as the Governments are themselves ignorant of the annual fire damage how many anyone expect a protective policy patterned upon actual needs? Why expect the public, lulled by promises of generalization, to initiate any movement calling for reform?

Purpose of the Forms.

The Canadian Forestry Association scarcely hopes to secure this year sufficient statistical information on the losses sustained by limit holders to justify a general estimate. The chief object is to place the questions before all timber licensees in at least one of the provinces as a means of suggestion to them, and particularly to the provincial government, that such evidence should be carefully compiled and turned to public account. It is indeed an amazing thought that the annual damage on 10,000,000 acres of Ontario's best forest lands, under license, should not be known promptly to the Government and people. The lack of such public knowledge of the frittering away of the common assets certainly serves a purpose in hiding an inefficient state of forest protection work, although it is not to be assumed that

successive governments have any hoodwinking tactics in mind. They continued inefficient systems because forest protection has been allowed to take its little corner as a purely departmental item, without any live relation to those public policies that win or lose votes. It is but fair to acknowledge that forest guarding, as far as Ontario is concerned, has quit its cubby-hole and is to-day a matter of intelligent public discussion and vigorous agitation.

The replies of the Ontario licensees will be dealt with more fully in the November issue. A few of the comments are as follows:

Licensees' Remarks.

"We lost \$11,000 in one township in 1913. It is most disheartening trying to do anything towards protection on our own holdings when contiguous government-owned territory is left unprotected."

"The fire was started on abandoned timber berths, and we understand and believe that these lands were left entirely unprotected.

"Our last large fire was in 1911. During that year we had some 15 or 20 miles of timber berths burnt over at points very far removed from each other. Most of the territory had been cut over, but was coming along well to young pine. This was mostly killed by the fires. During that year we lost in camps, outfits, etc., destroyed by fire \$10,000."

"For the most part the appointees as rangers (on certain limits) consist of young college men who are utterly incompetent to perform the duties, being neither bushmen of experience nor

qualified in any other way to perform the duties expected of them. These men do not take the position of fire ranging with the intention of safeguarding the limits against fire. Some of them could not locate a fire and fight it, even if they were willing."

"During the past three years large areas on the Montreal River pulp con-

cession have been destroyed, the result of prospectors and mine owners being practically allowed a free hand in that valuable timber. All protests lodged with the Department have been of no avail."

A copy of the report form is given below:

Total area of our limits in Ontario is:—

	Location and <i>origin</i> of main fires.	
Area burned in 1916	acres	1916
Area burned in 1915	acres	1915
Area burned in 1914	acres	1914

Kind of tree growth and estimate of quantity destroyed (board measure):
 1916
 1915
 1914

Estimated value of burned timber. (Basis of valuation to be stated):
 1916
 1915
 1914

Estimated value of equipment lost by fire, such as: caches, supplies, tools, machinery, logging gear, etc.:
 1916
 1915
 1914

Total loss from forest fires in Ontario, including all items and allowing for timber salvaged or to be salvaged:
 1916
 1915
 1914

How many guards employed?

REMARKS:



(Forestry Notes of Department of Forestry, University of New Brunswick.)

According to the Yale Forest School News of October 1st Harold C. Belyea, who has been in charge of the examination of the Crown Land in Madawaska County, N.B., will return to New Haven about November 1st to assist Prof. Record with a study of tropical woods, going in as laboratory assistant.

All the foresters will regret to hear of the death of Captain Robert K. Shives, of the Royal Flying Corps, in London, on September 29th, in a Lewis machine gun accident. Shives made an enviable record as an aviator, having been recommended for the D.C.M. for gallant conduct. He had spent about six weeks at his home in Campbellton, and had just returned to England, and was expecting to go to the front again when the unfortunate accident occurred. His loyalty to the forestry camp will always be remembered, as he was one of the prime movers in building it.

Kenneth R. Vavasour, of the class of 1914, recently resigned his position with the Dominion Forestry Branch, and has enlisted with the 226th Forestry Battalion.

The spruce bud worm, whose work was noticed during the summer by several of the Crown Land survey parties, promises to be a serious pest in New Brunswick unless some of its natural enemies come to the front to hold it in check. It is especially bad on balsam fir, and returning from a re-

cent trip on the Maguadavic river to investigate the damage done, Provincial Forester Caverhill believes that in certain infested areas clear cuttings of balsam may have to be made this summer. Other species of beetles are already at work in dying trees, so that this step may be necessary if timber of commercial value is to be saved.

There are about fourteen men registered in the Forestry course in the University of New Brunswick, which is considered very good for this year. Freshman, Sophomore and Senior classes are the only ones represented by full courses, many students having enlisted. Among those who have returned to resume their studies are George Miller and Leo Kelly, who have been engaged with the Dominion Forestry Branch; Kilburn and Crandall, who have been engaged in G. H. Prince's party in the survey of lands between the Miramichi and Bartholomew rivers; Roy Christie, who has had a very successful summer with Mr. Gareau, of the J. B. Snowball Company, Chatham, N.B.; Mr. Taylor, who was incapacitated for overseas by appendicitis. Among the others are Mowat, transferring from Arts to Forestry; and of Freshmen entering are Webb, Betts, Seely, Stevens, Wheeler, Sutherland, and Adams.

Among the U. N. B. men still engaged on Crown Land survey work after changes in parties due to the return of several students to college are: G. H. Prince, in charge near Boisetown, N.B.; Belyea, in charge in Madawaska county, under whom are Williams and Jago; Burns and Young, near Anderson, N.B., and Brewer and Melrose,

near Boisetown. The work will proceed until heavy snows come.

With the B. C. Men.

Victoria, B.C., Sept. 26, 1916.

M. A. Grainger, Acting Chief Forester, who outlined briefly the scope of the B. C. Forest Branch and its relation to the lumber industry, and H. R. MacMillan, who tendered evidence concerning the export position as affecting the B. C. lumber industry, were among the witnesses examined by the Dominion Royal Commission during its sittings at Victoria, September 20-22.

Mr. H. R. MacMillan, who for the last year and a half has been engaged in a study of the lumber export markets of the world, for the Dominion Department of Trade and Commerce, has tendered his resignation as Chief Forester to the Hon. W. R. Ross, Minister of Lands, in order to accept a position with the Victoria Lumber and Manufacturing Co. of Chemainus, B.C. Mr. MacMillan was one of the first Canadians to take up Forestry as a profession, and has been prominently identified with the forestry movement in Canada for almost ten years, first in the Dominion Forestry Branch, and since 1912 with the British Columbia Forest Service.

His former and present associates will keenly regret Mr. MacMillan's decision to sever his connection with governmental forestry work, but wish him all success in his new position.

Mr. Louis B. Beale, Lumber Commissioner for British Columbia, stationed at Toronto, has returned to Victoria for consultation with the Forest Branch, and the lumber manufacturers, concerning the future development of that important work. The B. C. lumber exhibit under Mr. Beale's management at the recent Canadian National Exhibition, attracted notable attention, and as evidence of the growing interest in the Eastern market for British Columbia woods, it may be mentioned that during the first two or three days over 3,000 samples of woods were taken away by persons interested,

and hundreds entered their names to receive further information, etc.

The active service list of members of the B. C. Forest Branch continues to grow, and to date 68 have enlisted, in addition to 47 forest guards. Messrs. Mitchell and Rees have won the Military Cross.

Lieut. H. K. Robinson, chief of surveys, wrote recently to the Forest Branch from the doubtful security of a dug-out in one of the front line trenches.

Personal Items.

(Notes of enlisted members from Forest Laboratories, Montreal.)

Lieut. L. L. Brown went overseas as a private in No. 2 Sanitary Section, but early in the summer was transferred to No. 1 Canadian Tunnelling Company, and received commission. He has been ill for some time, and is in hospital in England.

Sergt. F. W. Fraser, 14th Battalion, is in hospital in England, having been badly wounded in June when a high explosive shell injured his left thigh.

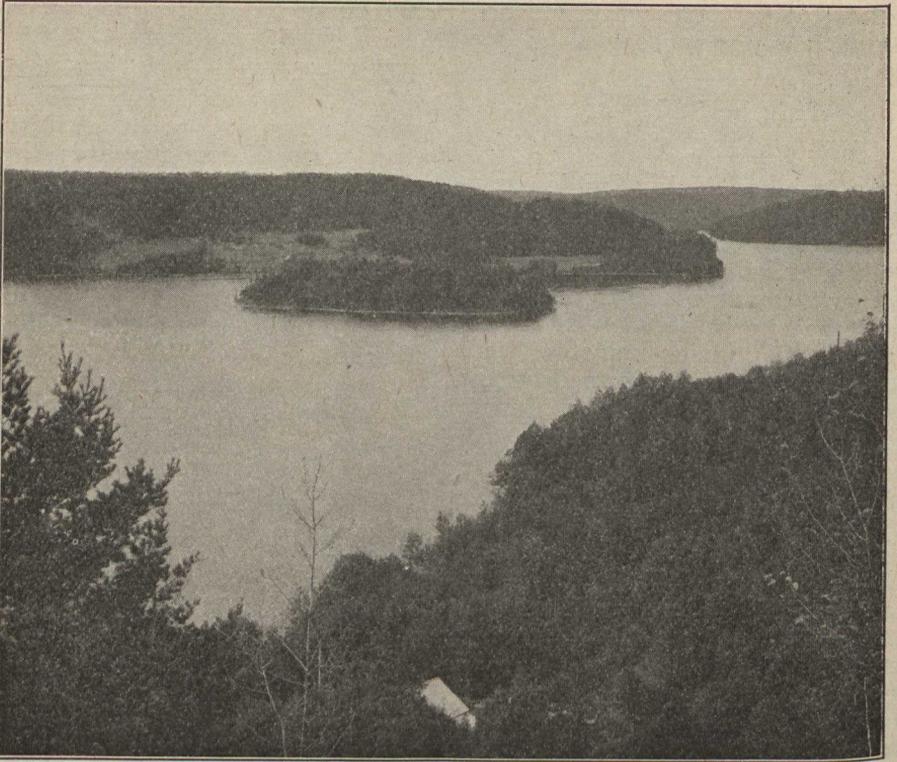
Captain M. W. Maxwell, No. 1 Canadian Tunnelling Co., went over as lieutenant last January, and was recently promoted to a captaincy.

Capt. L. N. Seaman, Adjutant, Canadian Brigade Siege Artillery, went across to England with the Siege Artillery last winter, and has been prevented from getting to the front on account of two injuries, the first on June 3, right arm broken cranking a motor car, the second on August 5, right leg broken near the ankle by driving a motorcycle into a ditch.

Capt. R. A. Spencer, No. 1 Canadian Tunnelling Co. Recently awarded the Military Cross for distinguished services. He was also promoted to captain. There have been numerous reports of his good work at the front.

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(Courtesy Grand Trunk Railway System.)

VISTA ON LAKE OF BAYS, ONTARIO.

Future of the B. C. Forest Service

The resignation of Mr. H. R. MacMillan as Chief Forester of British Columbia to become Assistant Manager of the Victoria Lumber and Manufacturing Company, leaves a blank in the forest service of the province which will require the utmost care in filling. Mr. MacMillan's qualifications embraced thorough technical training, a varied practical experience, good judgment, and unquenchable enthusiasm. If the British Columbia Forest Service is to continue to have as skilled direction as Mr. MacMillan was able to give to it, the selection of a successor must be patterned upon qualifications of an equally high order. The Forest Service has not been in operation so long as to run automatically or to disregard

for a moment the personal capability of its director. It is precisely at the stage where, having fixed itself as an essential in the provincial machinery, skilful and determined guidance is required to adjust it to the special problems of the future. There is reason to believe that the new Premier will find no difficulty in appointing a Chief Forester without violating the Civil Service principle to which he has committed his Government.

At the present time the Forest Service of British Columbia has special claims upon the new government for the most generous consideration. The large number of enlistments depleted the forest guarding forces so that the excellent record of the past two years

has been achieved by a reduced staff working under abnormal pressure. It would seem a mistake from every point of view to allow the common practice of a "clean up" at the change of governments to take from the Forest Branch any serious percentage of those holding records as efficient and experienced rangers. Such men cannot easily be replaced, and none of the tri-

pling considerations of patronage should deprive British Columbia of their future services.

Hon. Mr. Brewster has plainly pledged his Government to a disregard of the patronage system, and if this pledge is carried out to the full, no alarm need be felt for the maintenance of efficiency in the Forest Branch.

A Forecast of Post-bellum Demands

United States lumbermen seem to be keenly alive to the unparalleled opportunity for business which will come after the war. At a meeting held in Chicago on August 21 a plan for a survey of the export markets was approved, and the statement was made—based on reports already in hand—that the demand for lumber after the war will be "almost beyond belief." Secretary J. E. Rhodes, of the National Lumbermen's Association, in speaking of these reports, said:

"France as well as other foreign powers has shown a strong prejudice in favor of American lumber. Tentative plans have been made by France and England to rebuild the devastated portion of Belgium. The northern part of France will necessarily be rebuilt, and from the present outlook it appears that the French Government will undertake the rebuilding. Already the French Government is considering the practicability of rebuilding towns and villages on a community basis, with model farms on the American plan. It is said that this action has been largely influenced by the activities of the Southern Pine Association in demonstrating the qualities of southern yellow pine and its adaptation to the needs of the country."

Almost unanimously the lumbermen agreed that the proposed study should be undertaken, that the markets may be entered intelligently, and as soon as possible. The necessity of shipping the proper grades of lumber for certain

uses was emphasized, and it was urged that the men making the survey should be practical lumbermen, with a knowledge of the manufacture and marketing end of the business. It was pointed out that the indiscriminate making up of cargoes of any class of lumber, whether suited to the needs of the rebuilding of Europe or not, and the dumping of these cargoes upon the market, would prove very harmful to the permanent export of American lumber, and the investigation is to be undertaken largely to determine the different grades and classes of lumber for the different uses, and to inform the European governments of this as well as the American shippers. If possible the investigation will include other countries than those at war.

A summary of the conditions in belligerent countries—as presented to the meeting—shows the following:

Belgium.—The forests have been entirely destroyed and the nation so wrecked physically and financially that it will have to be entirely rebuilt, and this rebuilding will have to be financed by the Allied powers.

Northern France.—Northern France will have to be entirely rebuilt. A great deal of railroad construction will have to be undertaken; so much indeed that it is said the number of ties, sleepers and timbers is beyond estimate at the present time. This same condition holds true with regard to the farm buildings, villages and cities of the section. This need will be defi-

nite, regardless of the outcome of the war.

England.—The forests of England and those of Scotland have been almost entirely cut in an endeavor to secure material needed at the front and for building construction brought on by the war. Lumber will have to be imported for practically all future building until new forests grow to take the place of this timber.

Italy.—The supply of Italian timber has been almost entirely used either in Italy's war operations or exported for the benefit of the allies. It is said that great quantities of lumber are in immediate demand.

Spain.—Because of the geographical situation Spain has been called upon to supply lumber to the warring nations, with the result that all marketable timber has been cut.

Germany.—So far it has been impossible to secure any estimate upon the conditions of Germany's timber, but it is known that it has cut as much timber as possible from the invaded portions of France, Belgium and Russia, and has conserved home resources as much as possible. However, it is expected the demand from Germany for foreign lumber will also be very great.

Russia.—The supply of standing timber in Russia is very great, both in the Baltic Provinces and in southern Siberia, but owing to the lack of development of the timbered sections and poor transportation facilities the timber will not be available to the Allies for some time after peace is declared. Much development work will have to be done before Russia takes a dominating position in the lumber world.

What Forest Fires Cost Canada in 1916

Canada has lost through forest fires in 1916 fully seven to nine million dollars. This equals more than six times what has been spent on forest protection work from coast to coast.

The enormous sum wasted through this year's fires, most of which were preventible, would add another \$480 to the first year's pension allowances of nearly 19,000 Canadian soldiers.

It is noteworthy that while some parts of the Dominion owe to rainy weather their immunity from fire damage, the season's record proves beyond gainsay that in areas where first rate fire protection systems were in operation, losses of life and property were held down to a remarkable minimum.

Strong Delegation to Meet Ontario Cabinet

A deputation representing the leading commercial interests of Canada will wait upon the Minister of Lands and Forests of Ontario and his cabinet colleagues in November to urge their views regarding the necessity for immediate reorganization of the Ontario system of forest protection.

The deputation, which has been organized by the Canadian Forestry Association, will include representatives of the Canadian Bankers' Association, Canadian Manufacturers' Association, Canadian Lumbermen's Association, Canadian Press Association, Canadian Mining Institute, Canadian pulp and

Paper Association, as well as the powerful labor union of International Woodworkers.

A memorandum containing evidence regarding the inadequacy of the Ontario forest service, and the records of up-to-date protective systems in other provinces and the states of the American Union will be laid before the Cabinet, with suggestions for a plan of im-

proved procedure which Ontario might follow.

"The Curse of the Forest."

"The Curse of the Forest," a motion picture of a real forest fire, showing methods of fighting and the destruction which follows in the wake of a forest fire, have been completed by the Vitagraph Company in co-operation with the Pennsylvania Department of Forestry.

Building a Telephone Line

The Forestry Branch has planned to extend the forest telephone system as rapidly as proper experience and skill are secured in the work and as funds permit. Four meetings were held this summer by the Branch for purposes of instruction in certain phases of telephone work, and were attended by sixty rangers and supervisors of the permanent field staff in Alberta and Saskatchewan. Each meeting lasted from six to eight days, and the entire time was devoted to lectures on the special types of telephone equipment used on forest protection lines, and to the practical work of line construction and operation of equipment. This work was under the charge of Prof. W. N. Millar, of Toronto University Forest School, who, in addition to a theoretical knowledge of telephony has had eight years of practical experience in the construction of hundreds of miles of forest telephone lines, beginning with the first lines of this character built by the United States Forest Service in Northern Idaho in 1908.

Special Construction.

It is not, perhaps, generally realized that the type of line construction adapted to forest protection purposes has, in the past five years, become very thoroughly specialized and that it differs materially from the ordinary methods of rural and commercial construction. This specialization is rendered

necessary by the fact that many forest protection lines must, for reasons of economy, be built through heavy timber without clearing the wide right-of-way demanded in commercial construction. Of course, where a suitable open right-of-way is available construction methods and specifications are similar to those employed on ordinary rural lines, but this is the exception rather than the rule.

Briefly described, forest protection telephone systems consist of grounded lines built of number 9 B.W.G. galvanized iron wire hung on trees instead of poles, and using a special split tree insulator instead of the usual well-known type of glass insulator employed on poles. To prevent damage from falling timber and swaying trees, certain rules of construction must be very carefully observed. These provide for a careful equalization of spans, for the leaving of a very large amount of slack, for the placing of ties on the concave side of all curves, for the staggering of supports out of a straight line, and for the employment of special methods of attaching the insulators to the trees so devised that when an excessive strain comes on the line wire, as through the fall of a tree, the wire will be detached from the support and carried to the ground, but will not break. The whole construction aims to produce a line that, while resisting all ordinary strains, yields at once to exces-

sive strain in such a way as to insure absolutely against line breakage. In this it differs radically from the well-known methods employed in ordinary commercial practice, which produces a line of extreme rigidity because the open right-of-way insures against the danger of falling timber to which the forest line is constantly exposed.

The Cost of Building.

Given normal prices for material, a line starting at a railroad, standing green timber through which to build, and proper skill in construction and supervision, a first class tree line can be built as low as \$25 per mile, but will usually run from \$35 to \$45 per mile. Where the haul is longer or where supplies must be packed on horses, and especially where dead timber or heavy underbrush is encountered, this cost may be increased to from \$50 to \$65 per mile. Station equipment and line construction tools are, of course, additional. The latter cost about \$100 for a crew and last for many years.

Maintenance on a properly constructed tree line is very low unless the line runs for a long distance through standing dead timber. Ordinarily an an-

nual or semi-annual overhauling at a cost of not more than \$1 per mile is sufficient, in addition to requiring patrolmen to repair all injuries to the line in their district as they occur. In green timber these are inconsiderable, but in dead timber where trees are constantly falling, at least one man day per month to each 15 miles of line for maintenance work should be planned for. Of course, nearly all forest telephone line maintenance is carried on in connection with fire patrol, from which it is difficult to separate it in a cost record. Such lines have a life of from fifteen to twenty years.

About 710 miles of telephone lines have been constructed by the Dominion Forestry Branch during the past four years in the 25,000,000 acres of reserves in the four western provinces. The mileage is distributed as follows:

Alberta Reserves	75 miles
Alberta Reserves.....	265 miles
Saskatchewan Reserves	50 miles
Manitoba Reserves	320 miles
Total	710 miles

Ready-Prepared Lectures

For the use of clergymen, teachers, and others desiring to present an illustrated lecture on the forests of Canada, the Secretary of the Canadian Forestry Association has completed the manuscript of a new "forest travelogue," entitled

"Guarding the Forests."

Fifty-six photographic lantern slides are supplied with the manuscript, and will fit any standard make of stereopticon.

The manuscript, to be read by the lecturer, contains a general introductory talk, together with running comment on each of the 56 slides, so arranged as to make public presentation as interesting and effective as possible.

Conditions.

Applicants are required to pay express charges both ways (usually from 50 cents to \$1.00), and to return slides and manuscript in good condition on the day following the lecture.

As the Canadian Forestry Association is able to provide a very limited number of these free Lecture equipments, it is necessary that applicants inform the Secretary where the lecture will be held, under what auspices, and the date best adapted to local conditions.

The offer of the Association applies only where the applicant is able to state that at least fifty adults will be

present at the lecture. . . Exceptions will be made in the cases of High Schools and Colleges.

Other ready-prepared lectures in course of preparation are "The Abandoned Farm" and "Putting the Forest to Work."

Canadian Forestry Association,
119 Booth Building, Ottawa.

Largest Sassafras.

The largest sassafras tree in America is growing in an old burying ground at Horsham, Penna., and is 15 feet 10 inches in circumference at four feet from the ground. Unfortunately nothing remains of the tree but the

trunk with one fair-sized branch, still in vigorous growth. The trunk is hollow, and shows signs of great age.

Politics and Fire Ranging.

From an old Ontario guide, Sept. 15, 1916: "There is one thing I would like to see done, and that is to appoint fire rangers regardless of the political party that they were attached to.

"It is just that kind of work that makes a woodsman sick of the whole thing, for to think that they have to support a government paying salaries to such men as these, just because he took an active part in politics at the last election."

The Forests of Alaska

R. S. Kellog, Assistant Forester, U. S. Forest Service.

The ordinary resident of the United States has no conception of what Alaska really is. He has heard of the "Klondike" for the last fourteen years, and he wrongly thinks it is in Alaska. He has heard of great glaciers and high mountains, and that somewhere the thermometer occasionally registers 80 degrees below zero. Beyond this his knowledge is likely to be even more fragmentary and unreliable. In reality, Alaska is of continental dimensions, and one can no more state briefly what its characteristics are than he can similarly describe those of the entire United States; yet a few words concerning its most salient features will not be amiss.

Alaska was purchased from Russia in 1867 for \$7,200,000. The value of all its products since that date has been nearly \$350,000,000. It has an area of 586,000 square miles, or 375,000,000,000 acres, or more than ten times that of the State of Illinois. From southeastern Alaska to the end of the Aleutian Islands is as far as from Savannah, Ga., to Los Angeles, Cal. Its northernmost and southernmost points are as widely separated as Canada and

Mexico. Its range of temperature is greater than that between Florida and Maine.

Transportation in summer is by steamboats on the larger streams and by poling boats on the smaller ones; in winter, by stages where the roads are good enough, and more generally by dog teams. Alaska has 4,000 miles of navigable streams. It does not have even a territorial form of government, though during the past few years it has had a delegate in Congress. Called a territory by courtesy, its anomalous standing for years was that of a customs district. It has executive and judicial officers appointed by the President and the Senate, but no legislation; all legislation is by Congress.

Forest Types.

The differentiations between forest types are as sharp as those between the topographic and climatic, and, of course, depend upon them. The coast forests of southern Alaska are the northernmost extension of the coast type in Washington and British Columbia. The interior forests are an extension of the interior Canadiana for-

ests. The forests of the Susitna and Copper river basins are somewhat intermediate in character, since these rivers rise in the interior and break through the mountain barrier to the southern coast.

On the coast of south-eastern Alaska trees grow to large size; in the interior the timber is much smaller. The higher mountain areas are completely above timber line. Climatic conditions in the region adjacent to Bering Sea and on the Arctic slope make forest growth altogether impossible, so there are great stretches of tundra whose vegetation consists chiefly of moss, sedges, and a few small shrubs. Moss may be said to be the garment of Alaska, and layers of it 12 to 18 inches thick are not at all uncommon either on the coast or in the interior.

It is estimated that the total forest and woodland area of Alaska is approximately 100 million acres, or about 27 per cent. of the land surface of the territory. Of these, about 20 million acres may possibly bear timber of sufficient size and density to be considered forest in the sense that much of it can be used for saw timber, while the balance, or 80 million acres, is woodland which bears some saw timber, but on which the forest is of a smaller and more scattered character and valuable chiefly for fuel.

Timber Contents.

There is not sufficient information upon which to base any satisfactory estimate of the total stand of timber in Alaska. It has been estimated, for instance, that the coast forests contain 75 billion feet of merchantable saw timber, but this estimate might be much exceeded were both the spruce and hemlock closely utilized. More than twenty cords per acre have been cut in good stands of birch and aspen in the interior, but, on the other hand, there are large areas of black spruce that is too small to use for any purpose; so that it is still impossible to give a satisfactory estimate of the total stand.

The Coast Forests.

The coast forests or south-eastern Alaska are nearly all included in the

Tongass and Chugach National Forests, which comprise 26,761,626 acres; and a large proportion of this area is forested. The species are chiefly western hemlock, Sitka spruce, western red cedar, and yellow cedar, with occasional specimens of lodgepole, or shore pine, black hemlock, Alpine fir, black and white spruce, balm of Gilead, locally known as balsam poplar, black cottonwood, Oregon alder, and several birches and willows. Sitka spruce and hemlock grow almost everywhere in this region, though in Kenai Peninsula the spruce extends farther westward than the hemlock and grows also on Kodiak Island. The cedars grow in commercial quantities only in the extreme south-eastern part, though yellow cedar is occasionally found in the Chugach Forest. Lodgepole pine grows as far north as Skagway, but is of no commercial importance.

Growth and Stand.

In the coast region the stand is generally dense, and as much as 25,000 feet per acre has been estimated for considerable tracts. Sitka spruce probably averages 20 per cent. of the stand, and western hemlock about 75 per cent. The spruce reaches a large size, and occasionally attains diameters of more than six feet and heights of 150 feet. Diameters of three to four feet are attained by western red cedar. While by far the most abundant species, western hemlock does not produce as large individual trees as the spruce or the cedar. The heavy rainfall causes an undergrowth of moss and brush which completely covers the surface except where it is too rocky or too steep. So dense is this surface covering that one may walk long distances without touching bare soil. Water exudes from the moss when it is stepped upon, as from a sponge, and consequently there is little or no damage by fire in the coast forests.

Practically the entire forest of the coast region is over mature. It has been accumulating for ages uninjured by fire or cutting. Shallow, rock soil, steep mountain slopes, or poor drainage often prevent sturdy growth, and on such sites "stagheadedness" and decay are common. In favourable situ-

tions the rate of growth of the coast trees is fairly rapid. The following examples are typical:

A western red-cedar stump in good soil on the south slope of a gorge above Ketchikan showed 235 rings. The diameter of this stump outside the bark was 38 inches. A 40-inch Sitka spruce stump in the same locality had 230 rings. This tree had been 125 feet high. Near Wrangell three Sitka spruce logs averaged 32 inches in diameter at the butt inside the bark, with 262 annual rings.

Local Wood Prices.

Wood is sold by the dealers in Fairbanks at from \$9 to \$10 a cord, with an added charge of \$2.50 for cutting to stove lengths. Slab wood can be purchased for \$2 a cord at the sawmills, but for heating in the winter it is not as satisfactory as round wood. The river steamers pay \$6 and \$8 per cord for 4-foot wood, ricked up on the bank. Wood choppers are paid \$3.50 to \$4 per cord. Both spruce and birch are used, though birch is preferred. Poplar and aspen are generally left uncut. Aside from this the wood choppers make clean cuttings and utilize the timber closely, often taking the limbs and tops down to 3 inches in diameter, cutting the stumps close to the ground, and piling the brush well to get it out of the way of the haulers.

Forest Fires.

Unlike the coast forests of Alaska, the interior forests have suffered much from fire. Except on limited areas the cutting which has so far taken place in the interior is not serious, but the fire damage has been great. It probably would not be far from the truth to say that in the Fairbanks district ten times as much timber has been killed by fire as has been cut for either fuel or lumber. Fire follows the prospector and the settler, and everywhere that a mining camp develops under present conditions it is to be expected that fire will kill much of the timber. There are several causes for this. Miners and hunters are careless. Camp fires are neither properly guarded nor extinguished. A fire gets out and no one pays any attention to it

unless it threatens his camp. Fires, too, may be set to clear off the ground so that prospecting is easier. Fires have been purposely set to secure dry timber, and the slashings along the telegraph lines have been another source of danger. Smudges are built to keep away the mosquitoes; in fact it is commonly said by the residents that mosquitoes cause more fires than any other one thing. The rainfall is light during the summer, and it does not take a long period of drought to make the forest burn rapidly. In the Klondike region, and on the upper Yukon, in Canada, fires have done even much more damage than in Alaska. During the entire trip of 460 miles down the river from Whitehorse to Dawson, one is almost constantly in sight of fire-killed forests. Much fire-killed timber is also seen along the Yukon in Alaska from Eagle to the mouth of the Tanana, but from that point to the beginning of the tundra the forest, though small, is, for the most part, as yet undamaged by fire.

The danger season is short, with extreme limits approximately from May 15 to September 15. During 1909 there was a bad fire near Fairbanks early in the season, but none during July or August. On the other hand, there were fires along the Yukon in both the latter months. No measure but the posting of notices are taken to prevent forest fires in the interior of Alaska, and little is done to control them, except as they immediately threatened some one's property.

Coming Demand for Timber.

Alaska has a permanent future. For the southern and south-eastern coast its chief potentialities lie in fishing and in lode mining of gold and copper; for the interior there is the mining of gold, copper and coal, and in certain localities there are opportunities for agriculture. Fairbanks and Nome have passed their palmiest days as placer camps. With crude equipment and high-priced labor, the placer miner can work only the richest ground. His time is soon over. The low-grade ground, which is always the most extensive, can be worked profitably only by large capital and the most economi-

cal methods. This stage has already been reached in the Klondike. It is coming in Alaska. This will mean long-time operations. Then, too there is the probable development of lode mining for gold, which also requires large investments and long-time operations. There are agricultural possibilities in the Tanana and some other valleys. Nearly every cabin in Fairbanks has a fine vegetable garden. Large quantities of potatoes are already raised, and occasional fields of oats and barley. The government has experiment stations at Rampart and Fairbanks, which are growing both grain and vegetables. Agriculture in the interior of Alaska should eventually be sufficient to supply at least the local needs for vegetables, and for horse and cattle feed. Enthusiasts predict a large population for the Tanana Valley within the next twenty-five years. Transportation at present is slow, expensive, and uncertain by means of river boats, which operate only a few months of the year. The building of one or more trunk lines of railway would greatly accelerate the development of the country.

These resources already hold great promise, and doubtless there are others which cannot now be anticipated.

The present sparse population will undoubtedly be greatly augmented before many years. Alaska is almost a continent by itself, and so far removed from the rest of the United States that it should eventually depend as much as possible upon its own resources. This makes it particularly necessary that the timber should be conserved. The present population is made up largely of miners and others whose only purpose is to make a stake and leave as quickly as possible thereafter. They are only too willing to skin the country for their own benefit, without thought for the future. This will change as soon as people go to Alaska expecting to make their home there for at least a considerable period of years, and there are already some families of this sort in the Tanana Valley.

New Brunswick's Good Work.

About 200,000 acres of New Brunswick's forested lands have thus far been covered by the forest survey parties under the able direction of Mr. P. Z. Caverhill. Some of the maps are nearly completed.

A development of special interest to readers of the Journal has been the extermination of areas for settlement purposes. The Premier and his colleagues were so pleased with the progress made and the promise of great results from classification of lands that orders were given for a soil type map covering the whole forest area of the province. This will be taken as a guide in the opening up of lands for settlement. The question of improved fire protection is under consideration, and this will be pressed forward with the least possible delay. New Brunswick has already made a good start in experimenting with burning permits for settlers' fires. The forest and soil survey, with modern fire guarding, will place New Brunswick in a proud position.

British Columbia Lumber Trade.

In a recent communication to the Department of Trade and Commerce, Mr. H. R. McMillan, Special Trade Commissioner of the Dominion Government, says that he regards the condition underlying the future trade in Canadian lumber as very greatly improved. With special reference to British Columbia, he says that in regard to the supply of bottoms, work is now actually going forward on nine ships, which when completed will carry about 40,000,000 feet per year, worth with outward freight earnings about \$1,000,000. Three of these ships are being built in Victoria and six are being built in North Vancouver, all of which are being financed by Pacific Coast lumber companies. Already the cargoes have been sold in Australia for loading in early 1917. These ships are being built under the British Columbia Act upon terms of which the outward bound cargoes must be Canadian. Eight of these ships will be launched and outfitted with three hundred and twenty horse-power Diesel engines. The ninth will be prepared

for engines, but will be operated under sail until the engines, which now cost double the normal prices, can be purchased advantageously. There is a likelihood that other companies now investigating the question will build ships. The markets for which these boats are being built are Australasia, China and Africa.

Mr. McMillan says that oversea buyers have always advanced as one argument in favour of buying in the United States the more extended lumber manufacturing facilities existing on the Pacific coast of that country as compared with Canada, but upon having discussed this point recently with the leading operators of mills and several of the leading owners of stumpage, a conclusion that a betterment of Canadian conditions is now in sight was reached.

"Farm Forestry,"

(By John Arden Ferguson, A.M., M.F., Professor of Forestry at the Pennsylvania State College.)

This book, just received by the Canadian Forestry Journal, covers the subject of forestry as applied to the farm woodlot, and is especially intend-

ed for text-book use in agricultural colleges and high schools. It is the outgrowth of lectures delivered to agricultural students throughout several years.

The author's aim has been to treat the subject from the broad standpoint of the woodlots in the great plains and prairie regions as well as in more eastern regions.

The subjects included are those of essential interest to the agriculturist. The establishment of the woodlot; both by seeding or planting and by natural methods, is discussed with hints as to the best trees to plant in different sections. The care and protection of the woodlot is treated and also the very important subject of woodlot management. A conception of the woodlot as forest capital is given, with suggestions as to the amount of wood to remove annually and the methods of securing a sustained annual yield. Chapters are also devoted to the harvesting and marketing of woodlot products and to wood preservation. In the appendix there is included a suggested list of practicum exercises for a course in farm forestry.—Book Department Canadian Forestry Journal (\$1.25).

Severe Forest Laws of Plymouth Fathers

In a recent issue of the Journal, an article told of the strict laws for prevention of forest fires instituted by Governor Simpson and Council of the Hudson Bay Company in the early years of Canadian history.

Even more interesting reminders of the austere regard of our great grandfathers for forest preservation are contained in a publication written by J. P. Kinney of Cornell University, entitled "Forest Legislation in America Prior to March 4, 1789." It will be a revelation to most readers of the Journal to learn that forest preservation and extension in America did not have their real beginnings in the nineteenth

century, but "that forestry and timber problems had claimed the attention of colonial legislative bodies on many occasions during the seventeenth century, and that hundreds of such laws had been enacted previous to the establishment of the national government."

Timber "Famine" in 1626.

Many years previous to the adoption of the Federal Constitution on March 4, 1789, many of the colonies, as was natural, had been brought to realize the ill effects of forest fires, attempting, as they were, to wrest a livelihood from what then was in reality an

impenetrable forest. Even as far back as March 29, 1626, Plymouth Colony began to cry the wolf of timber famine, which to us of this day seems almost amusing. The Plymouth ordinance of 1626 recited the inconveniences that were likely to arise in any community from the lack of timber, and declared that no man should sell or ship any timber whatever out of the colony except with the Governor's or Council's approval. Was this the original seed of conservation, or was it due to a realization that here were illimitable quantities of fine timber at their very doors, and with the proverbial New England thrift and foresight they desired this resource to remain forever within their little colony?

"Only Upon Warning."

As early as 1633, in the Plymouth Colony, the setting of fires in the woods was forbidden during the fall and winter months, and the firing of woods during the remainder of the year was allowed only upon warning to one's neighbors. The stern and grim penalty for breaking this law was a fine of 10 shillings or a whipping. The restriction regarding the setting of fires in Massachusetts Bay Colony antedated the Plymouth law, being passed in July, 1631. Here also a whipping was the wholesome penalty, to be administered to either man or woman breaking the law. Other New England colonies very early passing some form of forest or fire legislation were New Hampshire, Connecticut, and Rhode Island, most of the laws providing for an open season for setting fires. Rhode Island prohibited the setting of fires in the woods except from March 10 to May 10, and on Saturdays and Sundays within this period.

Damages or Stripes.

New York, under the Duke's Laws, published in 1665, likewise forbade setting fires out in the woods or commons or on one's own lands, and the person so doing should be liable for one and a half times the damage, and in default should receive stripes. New Jersey and Pennsylvania passed forest fire laws in 1683, and Delaware, as a separate colony, in 1739; North Carolina, in the acts of 1777, went on record

against fires, stating that forest fires were "destructive to cattle and hogs, extremely prejudicial to soil, and oftentimes of fatal consequence to planters and farmers by destroying their fences and other improvements." Here we get a new point of view—that forest fires were injurious to the soil, and therefore to planters and farmers—but nothing was said of the destruction of the timber. The North Carolina laws went more into the details of the penalties, stating that any vagrant, slave, free negro, or mulatto unable to pay the fine, should "receive on his bare back 39 lashes, well laid on." Would that such a Federal law existed today! Our fire organizations and plans would be useless.

Laws Far Afield.

Not only did the early colonies realize the disadvantages of fires in the forests, but provided restrictions on shipping lumber, the felling and not using of timber, restrictions in the cutting of timber for one's personal use, prevention of timber trespass, cutting of timber on another's land, etc.

Typical of the name which he gave to the State, William Penn published a document in England which, among other wise things, declared that care must be taken to leave one acre of trees for every five acres cleared; whether the selection, clear-cutting, or strip-system, was to be followed record sayeth not.

Maryland, in 1692, granted certain free use of timber to any one who would build a mill. The General Assembly of Virginia, in a letter dated March 28, 1628, to the King, advised him that pipestaves, barrel boards, and clapboards, as well as pitch and tar, could be procured in great abundance, but that the freight was too high! Not until 1752 did Virginia recognize the need for timber inspection, although Massachusetts Colony had provided for, for barrel staves for export from Virginia to Madeira and the West Indies, the Virginians probably being brought to realize the importance of having good, solid barrel-stave material from having suffered a loss of many gallons of good old Madeira in its long journey across the Spanish Main.

The bulletin tells us that the standard cord measure, as used to-day, was fixed by the Massachusetts Bay Colony in 1647, being adopted later by practically all the other colonies.

Tar Manufacture.

The British Crown early manifested an interest in the timber and timber-product resources of the colonies. Connecticut in 1644 granted two men the privilege of making tar under certain restrictions in the colony, although later some of the inhabitants made a complaint on account of the disagreeable smell of the tar near their homes. Thus in 1644 began the American naval stores industry. In 1671, Massachusetts Bay Colony granted a company a ten-year monopoly "to make for sale pitch, rozin, turpentine, oyle of turpentine of the pine or cedar trees."

"With a view to establishing a permanent source of naval stores within its own dominions, the British Parliament in 1704 passed an act which placed bounties on tar, pitch, rozin, turpentine, hemp, masts, yards, and bowsprits imported from the American colonies into Great Britain. For the preservation of trees fit for the production of naval stores, this act imposed a fine of five pounds for the offence of cutting or destroying a pitch

pine tree or a tar tree, under 12 inches in diameter, 3 feet from the ground, not within a fence or an actual inclosure, within the colonies of New Hampshire, Massachusetts Bay, Rhode Island, Connecticut, New York, and New Jersey, and fixed a fine of ten pounds for the offence of wittingly or willingly firing any woods or forest in which there were trees prepared for the making of pitch or tar, without first giving notice to the person who had prepared the trees for the making of pitch or tar, in any of the said colonies."

Regulate Grazing.

Nor were the interests of the colonies confined to forest fires, timber inspection, and barrel staves, for as early as 1739 the Massachusetts General Court declared that great harm had been done to the beech grass on the shores of Cape Cod by cattle and horses, and that as a result the sands were drifting inland, causing great destruction, and thereupon prescribed a fine of 40 shillings per head for each neat cattle, horse, or mare that was turned loose upon the meadows and beaches of Truro. Thus we get the first record of an attempt in America to regulate grazing. And a stiff trespass fee was wisely imposed!

The Paper Making Art in Egypt

(The Egyptian Gazette.)

Egypt once kept the greater part of Europe supplied with paper. At first, it was made of the cellular pith of the papyrus laid in strips side by side and a further layer laid above the first crosswise; the whole was then damped with Nile water and pressed. Later the Arabs made paper from rags, and among other names given to it was "charta cattunea," because it had a cottony appearance, which gave rise to the idea that at one time paper pulp was made here from cotton wool. So

much paper was made and exported from Alexandria at one time that the Emperor Hadrian was particularly impressed when he visited the city with the great and flourishing trade in this article.

It is strange to reflect that after having been, as it were, the home of paper, Egypt is to-day absolutely dependent on her imports of this material. The question naturally arises, Is it possible for Egypt once more to make herself at least partially independent in this direction?

Competition Keen.

Paper making is a highly specialized industry, specialized in that every maker keeps to certain lines, and develops his plant to produce out of the material at hand certain quantities at the cheapest rate. He is unable to compete if he tries to produce too many kinds at his mill. This is particularly noticeable in the enormous development in the last twenty years of the news mills, where every detail of the huge modern plants is arranged for making one quality of paper only. In such a mill there would be, perhaps, five or six machines, each turning out every minute of the twenty-four hours of the day 750 feet of paper in a width on each machine of 150 to 180 inches.

From forest to breakfast table, the production of the newspaper is a romance of the highest order. Yet these same specialist mills would be all at sea if they were expected to produce a sheet of, say, ledger or tissue paper. The result of such an attempt, even if the managers knew the requirements of the market, would be to turn the whole mill in about five minutes into a huge waste paper basket.

Experiments Unavailing.

If, as was remarked above, the paper makers endeavor to produce out of the material nearest at hand, what material is there in Egypt to induce the manufacture of this necessary article in the country? Cannot such material as rice, straw, sugar cane stalks, banana leaves, etc., be used?

Experts have, for many years, experimented with all classes of plants

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in order to test their value as a paper making material, and much valuable information has been gathered from these experiments. But after a certain stage of experiment has been reached the same impasse is always arrived at. The fibre of a plant may, under treatment, yield a beautiful cellulose pulp desirable in every way, but further investigations prove that the amount procurable is too small and uncertain, and the difficulties of collection and transport prevent the develop-

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ment of the scheme into a commercial success. Furthermore, the competition of the wood pulp mills is always in the way.

Municipal Forestry.

Forestry can never appeal to individual enterprise on a large scale, says the Toronto "Globe" in a recent article. Returns are too slow. As a national enterprise of the highest importance it is gaining recognition, and there is a tendency among some American cities to take advantage of its many possibilities. With the exception of the vicinity of the Great Lakes, the world's largest reservoir of pure fresh water, cities must have water supplies from available drainage or watershed areas. These can be devoted to forestry with advantage from a sanitary point of view, and also with profit when the trees begin to mature. Where convenient, the forested area can also be made to serve as public parks. The city of Fall River, Mass., began in 1909 to plant trees in Watuppa Pond Reservation. There are 3,232 acres of land belonging to the municipality in a natural forest condition, and 1,552 acres suitable for reforesting. The trees are supplied by the State Forestry Bureau. The Metropolitan Water Board, which represents Boston and other cities in this matter, has planted, chiefly in the Wachusett Reservation, about 1,800 acres with forest trees. In six years the State forestry service has furnished to the cities of the State a sufficient number of trees to cover 1,481 acres, and it is estimated that 15,000 acres in city reservoir tracts have been put under some kind of forest treatment. Massachusetts has gone beyond the use of watershed

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reservations for this purpose. An Act was passed by the Legislature three years ago permitting cities to buy land to be kept distinctly as forests, quite aside from water purposes. There are now several of these city forests in existence.

Elsewhere in the United States the same tendency exists. In ten large and middling-sized cities forest domains aggregating over 150,000 acres are maintained, and it is probable that municipal forests comprise 250,000 acres. Newark, N.J., has a forest of 22,000 acres, and in time the whole of it may be scientifically forested. Hartford, Conn., has a forest property of 4,000 acres, which is being developed for timber production. Here are examples for Canadian cities. Winnipeg's water development may be made to serve a double purpose. Even Toronto's suburban ravines, though unsuited and unnecessary for water supply, might serve the dual purpose of timber production and park systems. Municipal trading has many critics, often unreasonable, but municipal reforestation should be made a possibility where Provincial authority is neglecting its duty in that regard and falling behind in the march of progress."

Editor's Note: The laws of Ontario permit the establishing of municipal forests, but no municipality has seen fit to take advantage of the privilege, common as are the examples in Europe and the United States.

Game Sanctuaries.

By E. R. Kerr.

The system of Game Sanctuaries for the bringing back of wild life is badly needed and desired because it will bring back some of the vanished game.

This system would take nothing from the public domain. It would not change the legal status of one acre of public land, except by protecting the game upon it from being killed.

It would sequester no agricultural lands and no grazing lands. The areas in view for these sanctuaries are the wild, remote, rugged and now useless regions, utterly useless for agriculture and for grazing. Any settler

who goes into such a region to live is doomed to perpetual poverty because he cannot conquer steep mountain-sides and V-shaped valleys.

It is not the part of wisdom to let those now desolate regions forever remain desolate. Even the sheepmen and cattlemen admit this,—so far as heard from.

If the people, during our last campaign, had not said that they desired these sanctuaries and all that they will do for Ontario, we would not now be working on the establishment of Game sanctuaries and the organizing of protective societies or bodies throughout the Province. No one has been asked to try and "rush" legislation through the House.

This whole matter is proposed to the Legislature on a basis of absolute good faith. It is not intended as an "entering wedge" for big appropriations and a lot of new high-salaried positions; but eventually it will cost a very small sum of money per year. If the plan is not worth a small sum of money each year, it is not worth considering. We call it real, "constructive conservation," on a large scale, at practically no extra cost.

If at any time the people of Ontario decide that the public welfare demands the breaking up of sanctuary areas, and their opening to settlement and land speculation, then "let the tail go with the hide," and deconsecrate and break up the game sanctuaries at the same time. I can stand it if all the other sportsmen can.

Many men and boys in Ontario will be affected by the proposed sanctuary plan of bringing back wild life. Many men and boys go hunting each year, and kill game—if they can find any. To them this sanctuary plan means a continuation of legitimate sport.—Reproduced from "Rod and Gun."

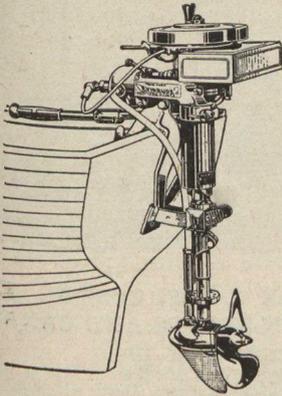
Against Xmas Tree Export.

The following letter reached the Journal from a prominent Ontario lumberman:

"So many millions of young evergreens are cut each fall, and sections of the north country are devastated,

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that I feel action should be taken to stop it.

"Not only are small trees taken in tens of thousands, but quite nice sized young trees are cut down for their tops and the body left for a fire trap.

"The Government does not reap any reward either for the trees taken off the public domain, nor from an export duty, but a lot of swipers reap a rich harvest. Many hundreds of cars are shipped each year. I think it should be stopped.

M. C."

Substitutes For Wood Pulp.

According to press despatches the Germans are substituting paper made from nettles for the ordinary paper made from wood-pulp. This is nothing new, says Pulp and Paper Magazine. From all parts of the world, almost from the time when paper was first made, there have come reports regarding substitutes for wood. In turn, announcements have been made that paper made from straw would replace wood; paper from corn stalks; from cotton hulls and from various kinds of grasses.



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It is quite true that paper can be made from these various commodities, but the cost of providing it in commercial quantities is so great as to prohibit the development of any such industry. Doubtless, the Germans are hard put to and will be forced to substitute many inferior commodities for the materials they formerly used. This will be true not only of paper making, but in connection with munitions and all kinds of industry.

The Pulp and Paper Magazine has no great fears that a substitute will be found for wood pulp, so in our opinion possessors of valuable timber and pulp forests can go to sleep at nights without worrying. Wood is still supreme for paper making.

Approximately 330,000 cords of wood waste with a value of \$1,400,000, were utilized by 35 of the 200 pulp and paper mills of the United States. It is thought that as the price of cord wood goes up, the amount of wood waste used will become greater.

2,000,000 envelopes and 5,000,000 letterheads have been sent to the Mexican border for use of United States troops.

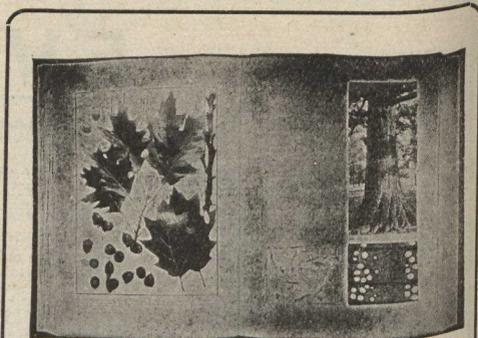
One ton of coniferous wood waste will produce from fifteen to twenty-five gallons of 190-proof alcohol.

The farm woodlots of the United States contain about 10 per cent. of the total standing timber in the country.

The bark of black oak, or "yellow oak" as it is often called on account of the color of the inner bark, is now used for dye-making.

From Toronto "Globe."

"It is most deplorable that the lesson of the recent fire disaster is passing unheeded by the Ontario Government. That the clay-belt fire in July last was the third most serious fire catastrophe in the history of the continent is pointed out by the Canadian Forestry Association in a circular appealing for the adoption of efficient protective measures. Ontario has made no such move toward the adoption of effective measures, although she has suffered the greatest of recent disasters. Such neglect is simply intolerable."



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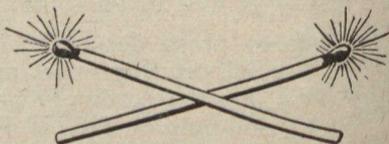
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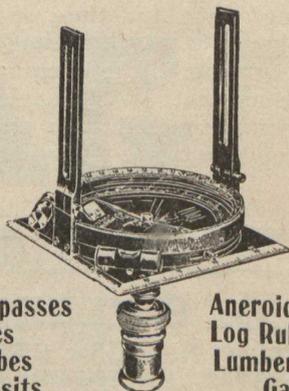
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A Newsy Issue.

In "The Outlaw" in the October number of Rod and Gun Magazine, which is now on the news-stands, H. C. Haddon gives some intimate details in the life of a family of wolves, which the writer observed at first hand, from the birth of the cubs up till the time when one of their number became a famous hunter and a destroyer of cattle on the ranch of a Western farmer. In "A Bull of Triple Creek" A. Ray Giddings gives a dramatic account of a fight between two bull moose, the human element being supplied by the two trappers and a woman, the wife of one of the trappers, who witnessed the encounter between the two rival bulls, and one of whom is narrowly rescued from death. The Light That Saved, Camp Magis, On the Trail of the Wounded Bull Moose, A Story of Eggs and Skins, and other articles besides the regular departments, constitute an interesting issue for the sportsman whose thoughts at this time of the year are turning to the opening of the big game season. W. J. Taylor, Limited, Woodstock, Ont., are publishers of this representative Canadian publication.

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"It is noteworthy that Wisconsin, Minnesota, Maine, and New Brunswick have taken comprehensive measures to prevent further disasters by organizing their forest patrol systems on modern lines, building trails, lookout towers, telephones, etc., as well as carefully supervising settlers' clearing fires, one of the worst sources of danger. Ontario, which has given the continent its two most recent fire catastrophes, has made no such move to modernize her forest-guarding system."—Toronto Star.

White pine blister rust, which has been engaging the attention of Provincial Forester E. J. Zavitz in Ontario most of the summer, has appeared near Montreal, and Mr. G. C. Piche, Chief Forester of Quebec, is ascertaining its extent.

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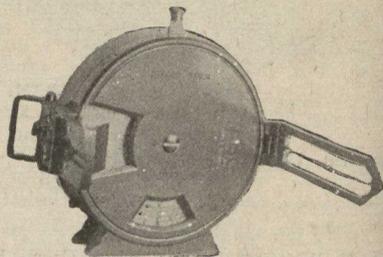
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