Canadian Forestry Journal

March 1917.

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Canadian Forestry Journal

Vol. XIII

CONTENTS FOR MARCH

No. 3

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THE CANADIAN FORESTRY JOURNAL
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In the Maple Sugar Season

An Interesting Sketch of the Sugar Maple and the Gathering of Sap Since Indian Times

By Maud Going, Author of "Our Field and Forest Trees", (McLurg & Co., Chicago.

The sugar maple is prized for the richness, as well as for the abundance of its sap. While the snow is still lying on the ground the tree shows that spring has awakened it by the ceaseless drip of its watery blood into a tin pail, hung at its side. When the sun warms the tree, in the middle of the day, so that the sap "runs well," about seventy drops fall into the pail every minute. It is a slow business, but it goes on every day for about three weeks. By that time the tree has parted with twenty-five gallons or so of its life-blood. But this boils down to rather less than five pounds of sugar.

As soon as the maple leaves begin to unfold the sap becomes less sweet, and the sugar made from it is darker and has less of the peculiar maple flavor, while the flow from the birch stops altogether as soon as the flower-chains cast off their winter nightcaps and begin to lengthen. In later spring, the best of the maple sap, and all of the birch sap, is used as fast as it rises, to nourish the waking flower-buds, to start young leaves to life, and to help new shoots to grow.

So the sugar-maker's season is a short one. It begins when spring stirs among the roots, and it ends when buds awaken and unfold.

Maple sap used to be boiled down in a large caldron swung gipsy-fashion over an open-air fire. Warm, flickering lights played over the snow, the lilac-gray trunks of the maple trees, and the busy workers stirring the pot and feeding the flames. But today, on many farms, a patent evaporator takes the place of the gipsy kettle, and a bricked-in oven does the work of the leaping fire. The new way is more economical—and far less picturesque.

Indians Were First

The Indians were the first makers of maple sugar. Indeed, before the white man came, bringing the sugar-cane and the honey-bee, this was the richest sweet the red man knew. It came, too, when the poor Indian had just gone through his hungry time, the scanty fare, or perhaps the starvation, of the cold and cruel winter.

The Iroquois used to hold a public festival every spring to celebrate the tapping of the maples. "It consists," says a Government report, written thirty years ago, "of a war dance which will, it is hoped, bring on warmer weather and cause the sap to flow. At the close of the sugar season, follows the maple-sugar festival, the soups of which are all seasoned with the new-made delicacy. This festival, in which a number of dances are introduced, lasts but one day."

Now that cane sugar can be bought so easily and cheaply, even at traders' stores in the wilderness, the Indians boil less sugar than they did, and some of them are forgetting how to boil it at all. But fifty years ago the Menomini used to make many tons of maple sugar every spring.

Crows Gave Signal

The sugar-boiling season was opened by the arrival of the first crows, flying back from the South. It was eagerly expected, and became a holiday for everybody. Each housemother had her own sugar hut, built

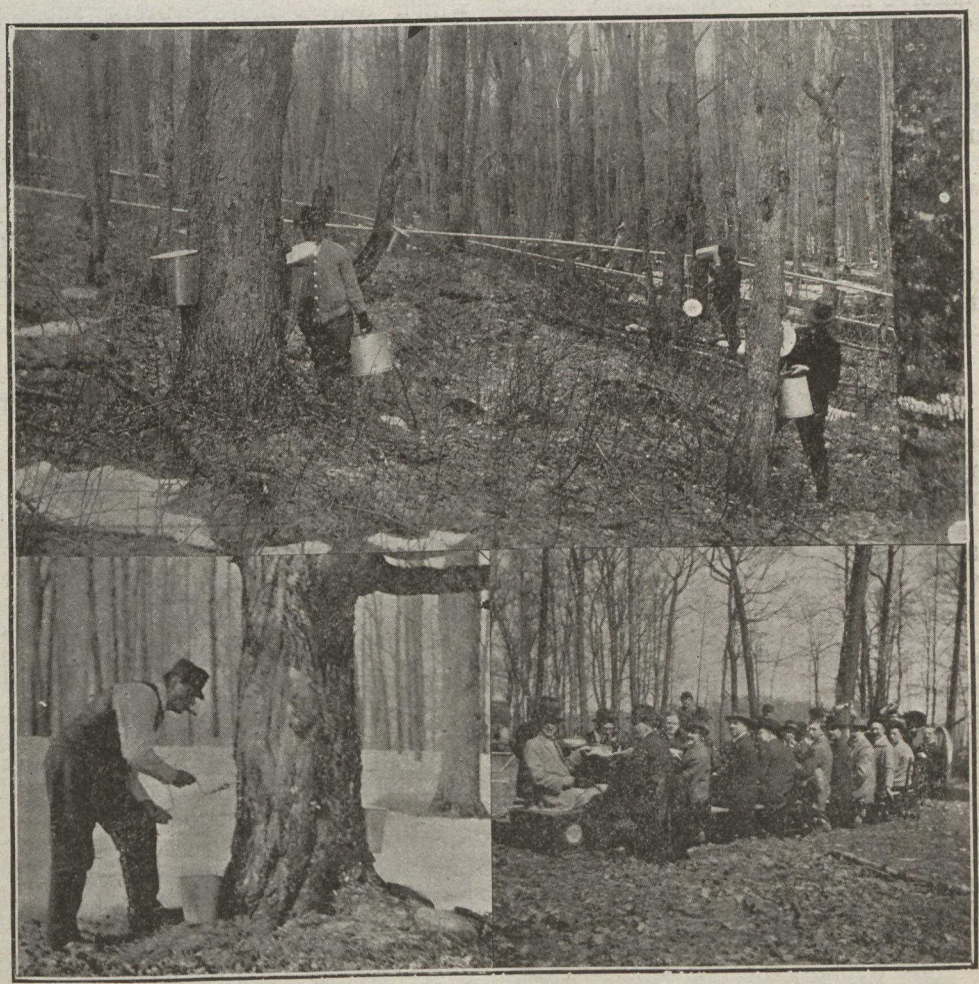
in a grove of maple trees, and she returned to the self-same spot each season. She had provided herself with a number of sap pans and buckets, made of four-cornered sheets of birch-bark, with their edges turned up and their corners folded in. They were tightly stitched into shape with threads of basswood, or with strings obtained by splitting the fine rootlets of the cedar. An Indian woman might have from twelve to fifteen hundred of the birch-bark vessels. Wooden sap-troughs were also at hand, made from time to time in the summer season.

When the crows appeared, everyone was on the lookout. As soon as the necessary camp outfit and sugar-making utensils could be gathered together each family moved to its own sugar grove. There wigwams were put up for sleeping quarters, and a wooden hut, with a roof of bark or mats, to shelter the sugar-makers.

Sometimes we hear the Indians called lazy, but there is a Menomini story of the maple and the sap, which shows how well the red man knows that work is good for the soul.

The Story of the Sap

The first maker of maple-sugar—so runs this story—was Nokomis, the earth, grandmother of Manabush,



THE MAPLE SUGAR SEASON IN QUEBEC

Upper picture illustrates the gathering of the sap and the use of pipe lines. Lower left hand picture, tapping a fresh tree; lower right hand, a 'sugaring off' party, which from earliest pioneer times has been a highly popular festivity, an invitation to which few men can resist.

who was the hero of many Indian fairy tales.

When Nokomis had cut holes in the trees, one for each vessel she had made, Manabush looked into the vessels, and saw that they were filling with thick syrup.

"My grandmother," said he, "it will not do to have these trees produce syrup in this manner. The people will not have any work, if they make sugar so easily; they must cut wood, and boil the syrup for several nights to keep them busy, so that they may not form bad habits."

Manabush climbed to the tip top of a maple and scattered water all over it like rain, so that the sugar should dissolve and flow from the tree in the form of sap.

This is why people always have to work hard when they want to make sugar. Wood must be cut, vessels must be made, and the sap that is collected must be boiled for a long while, otherwise the people would spend too much time in idleness.

So, thanks to Manabush's kind interest in Indian morals, the sap of maples has nowadays less than four per cent. of sugar.

Swaying Pumps the Fluid

The sugar-maker is helped by a series of warm, sunny days, followed by sharp, frosty nights. March gales help him by swaying the tree. Darwin, that great student of life and its laws, caused a twig to drink some water containing a strong dye, and then he could follow the travels of the sap as it mounted through the wood. He found that when he kept bending the twig to and fro with his fingers the sap was forced to rise much faster.

The tree sways with every breath of wind. Every time it bends, the wood-cells are squeezed and the sap is forced out. Everytime it straightens again the little tubes and cells fill with sap from below.

But no one can really understand or fully explain the rise of the sap.

From the lowest root-tip to the topmost twig of a gigantic tree, water may have to travel a distance of three or four hundred feet. For much of this distance it must climb straight up, and all the journey is through tubes as fine as a hair. We must remember, too, that these tubes are not continuous, like the water-pipes of a house. The sap goes up through a long series of wood-cells like little oblong boxes piled end to end.

When the Leaves Breathe

Later in the year, when many leaves are spread wide in the sunshine, water is breathed away from the upper part of the tree. Some of the cells up there part with so much moisture that their sap becomes thickened, and this causes a suction which draws more watery sap up through the wood from below.

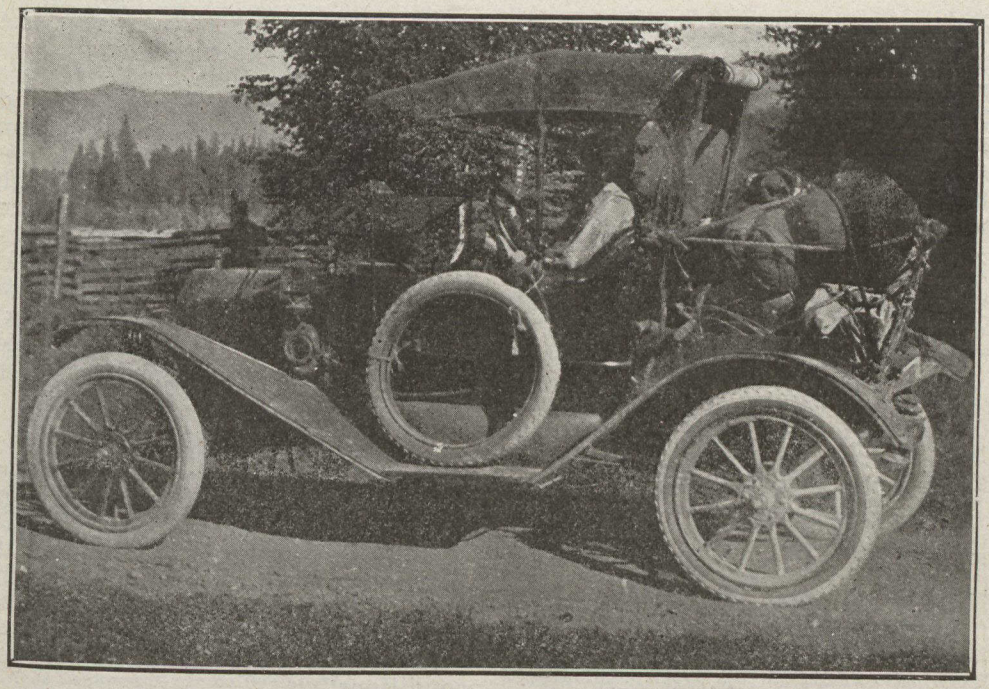
When summer is here, and growth is active, there are, furthermore, little bubbles of gas in the sap, and these, as they rise, help to bring the sap up with them.

But even when all these things are considered, we cannot fully understand how or why the sap rises as it does. Its upward mounting is the greatest wonder of the spring.

COMMENT ON NEW BOOKLET

From Montreal Herald

In order that the French-speaking children of Quebec shall grow up with a patriotic knowledge of their forest resources and what their maintenance means to the future of the country, the Canadian Forestry Association of Ottawa has issued another of its children's series: "Mon Premier Livre Sur La Foret," by Robson Black. It is being distributed free through church and civil agencies. The booklet contains 32 pages and 25 photographic illustrations and acquaints the youthful or adult reader in a most entertaining way with the forests, the forest industries, the work of fire rangers, and the inexcusable havoc of fires. This booklet makes every tree a working partner in the provincial estate and ought to make the forest resources better understood.



HEAVILY LOADED BUT READY FOR ANYTHING. A PATROL CAR IN THE VERNON DISTRICT

The Motor Car in Timber Guarding

Try-out in Vernon District Proves 100 Per Cent. Gain Over Horse Travel.

By Geo. P. Melrose, District Forester, B.C. Forest Branch, Vernon, B. C.

Forest Protection in any country and under any conditions must, if it is going to succeed, make full use of every modern invention possible to insure speed. Once a forest fire starts, the utmost speed is required in every operation affecting it. The man on Lookout must discover it with the least possible delay and locate it properly. He must transmit his discovery to the nearest patrolman with the utmost speed. The patrolman must proceed to the fire and extinguish it just as fast as he can possibly travel.

To obtain this speed we have supplied Lookout with field glasses, accurate maps, and telephones and patrolmen with horses.

Horses, up to a few years ago have proved to be the best and fastest means of travel over the roads, but since the advent of automobiles the days of the horse have been numbered. This is especially the case since cheap autos have come on the market.

That autos are a success and an improvement over horse travel is fully borne out by the number of commercial houses that are using them. Everywhere commercial travellers, agents and all others whose business takes them through the country are using cars, and their increased business is ample proof that they pay.

To fully satisfy the need for speed and make the Forest Protective sys-

tem as efficient as possible, patrolmen, guards etc., should be supplied with cheap, good automobiles in order to get them to fires with the minimum of delay and the maximum of fighting force. This, of course, subject to the presence of the necessary roads.

It goes without saying that in order to use Automobiles effectively there must be a good system of roads covering a large part of the District to be patrolled.

Roads Bring Their Hazards

There is another part that roads play in the scheme. They create hazard. Owing to the extra amount of travel engendered by roads the total danger of fires starting is greatly increased. We find in looking over almost any map of fires that a very large percentage occur along roads and other travelled routes, and travellers are charged up with starting a great many fires.

Outside of the fires actually started along the roads as the result of travel the largest percentage are started in close proximity to roads. This is quite natural as nearly all fires are the direct result of human occupation of the country which naturally presupposes roads.

In the Vernon District, we have a thickly settled country covered by a good system of roads, with over ninety per cent. of the annual fires. occurring in their close proximity We also have at very convenient intervals, towns and villages with garages and fuel supply depots. The main roads can hardly be surpassed in any part of the country, while the lateral roads everywhere are in condition to allow good speed to be made with a car. With such conditions in our favor we started the 1916 season with three automobiles and one motorcycle. The results show that they have more than paid for themselves in the first season of their use.

Only one of these cars was used by a temporary guard, the other two cars and motorcycle were used by the permanent supervisory staff.

Unfortunately, in a way, the season proved so safe from a fire protection standpoint that it was not found necessary to put lookout men on duty at any time, and we were not able to secure figures on and work out a system of co-ordination of Lookout and automobile. I am however, fully convinced, through the speed and efficiency developed in fire prevention, detection and control by the cars in use that that patrol by cheap motor cars is superior to horse patrol, and that the next few years will see a greatly increased use of such cars in fire protection work.

Comparison of Costs

During 1915 the patrol in the Coldstream Guard District was by horse-drawn buggy, while in 1916 it was by a Ford car. We have had, therefore a good opportunity to study the comparative efficiency of the two methods, especially as the two seasons were quite similar in weather conditions.

The Guard with the car travelled in 1916 a total distance of 3496 miles between May 1st and Sept. 30th. Of this, 2321 miles were on straight patrol and 1175 were on improvement work. In 1915 the Guard with a horse and buggy, in the same district patrolled 1898 miles and travelled 74 miles on improvement work.

These mileage figures alone do not show the full saving of the car over the horse drawn vehicle. The Guard with the car took twenty-eight days less time on patrol than the 1915 Guard. Of course the object of patrol is to be always covering as much territory as possible and not a definite task of a certain number of miles. But this year and in 1915 it was not necessary to patrol continuously, and many short periods were open for other work. The 1916 Guard was able to take advantage of these short periods to a far greater extent than the 1915 guard and saved twenty-eight days, for improvement work out of the same period of patrol.

This saving of time means a saving of money to the extent of his salary and expenses for the period and a forwarding of the improvement projects of the District by twenty-eight days' work.

THE MOTOR CAR IN THE FOREST

Manager Sorgius of the St. Maurice Forest Protective Association uses a Ford on any path where the stumps are six feet apart.

The actual saving of patrol by auto over horse vehicle, employing a man with each to patrol the same district is thus rather hard to measure directly in dollars and cents.

So far we have figured only on the basis of using an auto patrolman, instead of a horse patrolman, in the same district. Using these figures, it needs little imagination to see the revolution motor cars will make in Forest Protection work when protection districts are apportioned according to the efficiency of the motor patrol force. If motor patrol alone is used, where roads are good and plentiful enough to allow of such action the ordinary staff of guards can be cut in two, allowing of greater concentration at the times of greater danger. This is one of the very important points in favor of the use of motors.

Taking Care of Permits

The ideal method of using cars for patrol would seem to be to place a small force of patrolmen or guards on duty early in the spring and supply them with light cars. They could take care of all permit issuing and other protection work up till the first dangerous period. More patrolmen could then be added, and at the top of the danger season, the field force, owing to the saving effected in the early part by the smaller staff would be greater than ordinary. This would cut down to a very great extent, the area of each patrol district and reduce the chance of fires getting out of control.

At the start of the 1916 fire season we decided that the best way to figure the saving effected by the motors used by the District Forester and Rangers would be to compare the cost and time taken of each trip made with the motor with the cost and time that would have been taken using the existing means of travel. This system shows clearly, I think, and most conclusively, the tremendous saving in efficiency and actual cash effected by the use of cars by the supervisory staff.

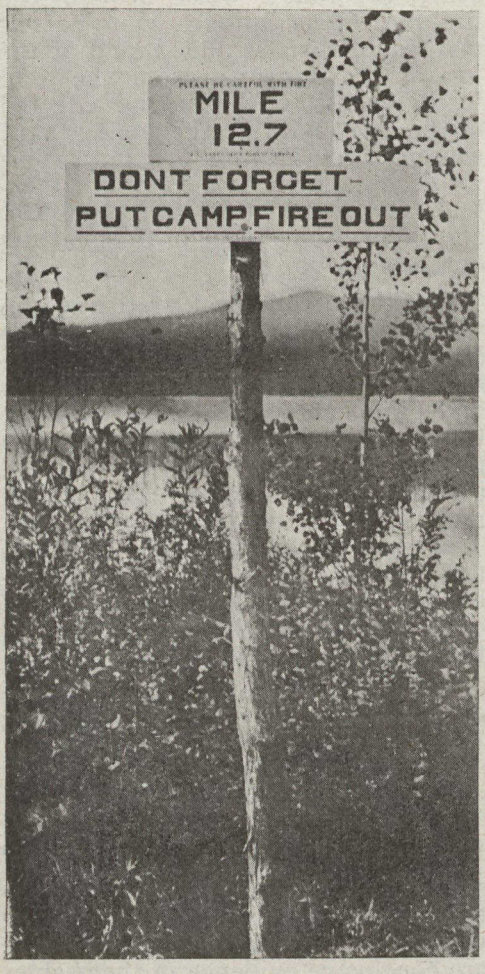
The amounts saved are as follows:

District Forester	45 dys.	$447.78
Ranger (auto)	12 dys.	365.00
Ranger (Motor-cycle)	14 dys.	136.71

Considering the short period of seven months from April 1st to October 31st, during which this saving was effected, the figures quoted above are conclusive evidence in themselves of the superiority of cars for supervisory work.

In 1917 we hope to have at least five cars in use and maybe more. We shall then, in case of a bad fire season occuring, have a control of the situation that under the old conditions would be entirely impossible.

At the direction of the King, Spain has passed a law providing for National Parks. The measure also provides for the better protection of the fauna and the flora, according to an announcement of Consul General Hurst at Barcelona, and for a publicity department to better acquaint the traveling public with the scenery of Spain.



The necessity for protecting the timber areas of northern British Columbia is full realized by the Provincial Forest Service and one district vies with another in initiating new methods of directing the attention of the public to the forest fire danger. The Hazelton Forest District has broken new ground in this respect by erecting sign-posts, which, in addition to indicating the direction and distances, bear also such legends as "Please be careful with fire," and 'Don't forget—Put Camp fire out,' etc.

FROM EDMONTON

Edmonton, Can., Feb. 13, 1917.

Canadian Forestry Association:—

"I am quite interested in the work of the Association and am becoming more so as I get information regarding same." A. S. M.

NEW SPECIES BARK BEETLE DISCOVERED

What is apparently a new species of destructive bark beetle has been brought to light by Mr. Fritz Johansen, now of the Natural History Branch of the Geological Survey, Ottawa, who has spent five years in Entomological investigation in the extreme north, part of the time in Greenland.

Mr. Johansen, in the fall of 1916, found on the Coppermine River a small area of damaged white spruce in which bark beetles had been at work. Three different species were found, one of which is believed to be new to the science of Entomology. The opinion of other entomologists is being sought, but thus far Mr. Johansen's claim is well supported.

FORESTRY JOURNAL ON PULLMAN CARS

By an arrangement in which the Grand Trunk Railway System gave generous co-operation, the Canadian Forestry Journal will henceforth be placed in special binders on fifteen of the company's cars for general reading. The magazines in the Chair and Sleeping Cars are read by many thousands of travellers annually and the opportunity of bringing to their attention the cause of forest conservation is much valued. Negotiations for similar favors from the Canadian Pacific and Canadian Northern railways are under way.

A LUMBERMAN'S VIEW

Ontario, Feb. 14, 1917.

Canadian Forestry Association:—

"In the belief that the work that is being carried on by the Canadian Forestry Association is in the truest sense patriotic we have pleasure in enclosing herewith postal note for five dollars. Permit us to express our best wishes for continued and increasing success in the work."

F. S. P.

Ontario Plans to Stop Fires

Minister of Lands and Forests Gets Legislatiue Approval for Progressive Scheme of Fire Elimination.

Ontario's new plan of Forest Fire Prevention was announced in the Legislature on March 6th by the Minister of Lands and Forests, Hon. G. Howard Ferguson. The Minister stated that the North country would be divided into three districts according to transportation facilities, each under a supervisor who in turn will have charge of five chief rangers and a ranger staff. The entire direction of the forest protection staff will be in the hands of Mr. E. J. Zavitz, Provincial Forester. An interesting detail of the Minister's announcement was that returned soldiers or men who had volunteered for active service would have the preference when appointments in the Department of Lands, Forests and Mines are being considered.

The Provincial Forester is invested with wide powers. To his discretion is left the elimination of all fire hazards in forested districts, such as slash in a logging area or on a settler's clearing. Failure to carry out the orders of the Chief Forester gives him the right to undertake the precautionary measures on behalf of the Department, charging the cost against the holder of the property.

The Bill definitely adopts the principle of a settler's permit provision, making it obligatory for those clearing land in areas (to be specified) to take out a permit from a government officer before starting to burn debris.

The fact that the Bill at the present time leaves much to the discretion of the Minister and the Chief Forester is a strong point in its favor for the reason that it would be impossible to lay out the boundaries of those sections of greatest hazard without several years' experience. The Bill is in an elastic form and depends for its effect upon the good judgment and thoroughness of the new forest protection staff.

The protests of many of the Northern Ontario municipalities respecting the nuisance of uncleared lands, close to the municipal borders, which have been in all too many cases held by speculators with small regard for the safety of surrounding property are effectually met. Henceforth the owner must clear his land at the bidding of the municipality or Provincial Forester or the work can be done without his consent and the charges collected in court.

Mr. Zavitz commenced the organization of his staff several months ago and has made an excellent beginning in the choice of skilled men to fill the posts of supervisors in the three divisions mentioned by the Minister.

It is note-worthy that the Minister of Lands, Forests and Mines told the members of the Canadian Lumbermen's Association in Toronto last month of his intention to take over the entire responsibility for forest protection work in the Province. The Minister made it very clear that he intended to give the Forest Protection Branch charge of the fire ranging system on licensed lands and to meet the cost of this he proposed a fire tax of one cent an acre. This amount, he said, would give the licensed lands a uniform and competent plan of fire patrol with provision for permanent improvements. The Chief Forester would have authority over the rangers on the timber berths and would so organize them as to secure the maximum value from their services to both the licensee and the province.

Mr. Ferguson said that he did not believe the proposed tax would be regarded as excessive, as some of the

limit holders were paying almost as much for "protection" that did not protect.

The question of a new fire tax in Ontario with full government control of the ranger system was taken by many of the licensees with perhaps a smaller degree of joy than Mr. Ferguson's address seemed to predict. It is true that some are paying as much as five dollars a square mile for ranger services. Many others are paying probably not even one dollar a square mile; in other words, are giving their timber lands the minimum of fire ranging service. Several of the largest timber berth owners informed the Canadian Forestry Journal that while the new tax as proposed by the government would run their fire protection costs from $5 to $6.40 per square mile, they would consider the arrangement a profitable one if the Ontario Department sincerely undertook to remodel the present patchwork on licensed lands and give them a well-organized and closely inspected plan of fire protection. Those licensees who have sincerely sought to protect their Ontario lands are often met with a situation where fires have crossed from unprotected territory, taking enormous toll of property in itself well guarded.

Manitoba's Chance for "Thrift" in Fires

The Manitoba Government is now considering specific recommendations for better protection of the forests, submitted by the new Fire Commissioner, Mr. A. E. Ham, who is also Insurance Commissioner, for Manitoba.

Mr. Ham's report, now before the Legislature, contains a highly important reference to fire prevention in the timbered areas of northern Manitoba.

Amendments to Fire Act.

"Some immediate amendments to the Fire Prevention Act are recommended by the Fire Commissioner, among them being the following drafted by the Canadian Forestry Association :

1. Defining the wooded districts of Manitoba and making it compulsory at all times to have a permit to set a fire in same or within six miles of a forest reserve. 2. Such permit to be given by a Dominion forest or fire ranger, or special fire guardian appointed by the minister. 3. Permit to be refused, if on account of conditions, the season is considered specially dangerous. 4. Minister may appoint special fire rangers or any Dominion forest ranger to be authorized to grant permits. 5. Game guardians ex-officio to be fire guardians. 6. Fire guardians to be given power to arrest without warrant any person found violating any provisions of the Act. 7. Burden of proving that the requirements of this Act have been complied with shall be upon the defendant.

The above are in accord with the policy advocated by the Canadian Forestry Association, Commission of Conservation, and other public bodies interested in the maintenance of natural resources for the people of the West. The large Western membership of the Canadian Forestry Association has worked energetically and unselfishly to stir up support for the better control of fires in the forested areas, so that some months ago practically every Member of the Legislature, Cabinet Minister, newspaper, and public body was informed as to the purpose of proposed legislation.

It is believed that the Government of Manitoba will give this measure hearty and prompt support. Meanwhile, no effort should be spared by our Manitoba members to inform members of the Legislature that public sentiment stands behind the amendments as proposed by Mr. Ham.

Returns on Timber Investments

By Wm. B. Greeley, Assistant Forester, U.S. Forest Service.

The "ifs" in timber ownership in the West grow out of the vast extent of its forests, their distance from the large consuming regions, and their abnormal rise in value. Speculation in quantities of public timber, cheaply acquired, and the push of sudden development carried timber values very high. Borrowed money was used freely. Tax burdens rose with the price of stumpage. The interest and taxes paid out on timberlands held over long periods may thus mortgage liberal advances in future worth.

On the other hand market values of stumpage have stood still for eight or nine years, and even declined in 1915. Western timberlands have been overcapitalized more or less, and can hardly earn in the long run the profit expected of them. The large speculative gains in buying stumpage which have tided lumbermen over many tight places are mostly over. The future earnings of the industry probably will have to be made in its milling and merchandising.

Southern pine timberlands have travelled much the same road, but at a slower pace and with less striking results.

One Sunday Edition Eats 15 Acres of Forest

In an address delivered at Vancouver before the first meeting of the Canadian (Pacific) branch of the British Society of Chemical Industry, Dr. R. H. Clark, M.A., Ph.D., of the University of British Columbia, made the following reference to the forest wealth of British Columbia:

"Lumbering is our third greatest industry. The United States forest service has estimated that in from twenty to thirty years their forests will be depleted. In Canada and the United States we use 500 feet per capita per annum against 60 feet per capita in Europe.

A single issue of a New York newspaper's Sunday edition requires fifteen acres of forest.

The waste of our timber resources is due to fire, careless logging, wasteful mill operations, and overproduction. In all, it is claimed 75 per cent. of our forest products are wasted, 20 per cent. of the log (the upper part) is left in the woods to rot or burn, and one-third of the slab residue is consumed in refuse burners. The importance of the forests arises not solely from their being the source of our timbers but, still more important, because of their bearing upon our water supply. In forest cover not only is erosion impossible, but the rains evaporate more slowly, the snows melt less rapidly, the run-off is gradual, floods cease, and streams are available for water power. 'When the forests fail, every man, woman, and child will feel the pinch.' The problem has been solved in Europe. The forests of Germany are 300 per cent. better than seventy years ago, and the yield per acre sevenfold what it was. Let us agitate to have the same problem solved here while there is plenty of time."

How the Forest Animals Are "Snapped"

Photographing by flashlight is one of the more recent advancements in the field of picture-taking which has helped to secure for photography a permanent place among the arts. Paul J. Rainey, the explorer and hunter of wild animals, proved several years ago at the first exhibition of his wild animal flashlight pictures taken in Africa, that this class of photography offered a virgin field to the manufacturer of apparatus and to the man behind the camera. Soon after this there was an awakened interest in animal film shooting in preference to gun or trapshooting.

At the present time photographic flashlight apparatus has been developed to a point where guesswork is eliminated and where it is possible to photograph any object in motion. To do this it is necessary for the camera to catch the object in motion just at the instant when the flash powder is giving forth its brightest light. This requirement calls for a high-speed shutter to stop the motion on the plate of the object being photographed. With a flashlamp recently perfected by William Nesbit, the shutter is automatically snapped at exactly the moment when the light from the flash powder is most intense. His apparatus has been widely used to take flashlights of wild animals in their haunts and has given uniformly good results.

Must Act Quickly

When flash powder is ignited it does not burn up or explode instantly, as might be supposed. It burns more and more brightly until it reaches its point of greatest brightness, from which point on it dies down until it goes out. This whole operation takes at the most one-fifth of a second. However, good pictures will be obtained only if the camera is snapped during this fifth of a second, when the flash powder burns the brightest.

On the other hand, this point can never be definitely determined before taking the picture. It changes for different powders and also varies for the same powder, since the powder may become slightly damp and will not burn in the same way. It is evident, then, that to snap the camera at precisely the right moment is not so easy as it might appear.

The flash lamp devised by Mr. Nesbit consists of an aluminum container to hold the flash powder, a cover for this container, a mechanism to fire the powder, and an attachment which will automatically snap the shutter of the camera at the moment when the flash powder is burning brightest. The unit is waterproof and so compact that it can be readily attached to a tree or other convenient support.

Tie Wire to Bait

The flash powder is placed in a box made waterproof by a coat of paraffin and is then placed in the space provided for it in the flashlamp. The powder is fired either by a blank cartridge or by an electric spark furnished by a dry battery. A firing-pin, controlled by a spring and a trigger, simi ar to those used in a rifle or revolver sets off the cartridge.

When taking a flashlight of an animal, a wire is attached to the trigger and then tied to bait of some sort. The animal is attracted by the bait, and if it touches it, the wire is pulled, which, in turn, pulls the trigger, releases the firing-pin and ignites the powder by exploding the blank cartridge. When the powder is to be ignited electrically, a wire is stretched from a switch to the bait. Once the bait is touched a circuit is closed and an electric spark sets off the powder.

"VALUABLE PUBLIC SERVICE"

Regina, Sask.

Canadian Forestry Association:—

Enclosed is my annual fee. The Association is doing valuable public service in pressing campaigns for safety in the forested parts of Canada.

N. F. B.

Slash Disposal as a Commercial Proposition

The Actual Working Out of Debris Destruction on Crookston Lumber Company's Extensive Limits.

By B. W. Lakin, Sup't. Crookston Lumber Company, Bemidji, Minnesota

Editor's Note. — The following paper was prepared by Mr. Lakin, with a view to placing matter-of-fact evidence before the lumber firms of Eastern Canada.

I was asked to tell you how we burn our brush or slashing, in Northern Minnesota. All I can tell you is that it has been the policy of the Crookston Lumber Company at Bemidji, Minnesota, for the past 10 years to burn the slashings in the spring on the lands we were logging.

In doing this we endeavor to do it in as economical and efficient way as possible, and it has become such a system with us that we consider the benefits more than overcome the expense. Our brush, or slash burning, is all done in the spring, and early before the fire is liable to spread to adjoining lands, as early spring fires will not run in standing timber.

Our country is rolling with practically no stones. We are logging white and Norway pine, spruce, tamarac and balsam; about 75 per cent. white pine, 10 per cent. Norway, 10 per cent. spruce and 5 per cent. tamarac and balsam, with an average of about eight thousand feet to the acre.

Future Values

We take of the above mentioned timber everything that will make a log 6 inches at the top end and 10 feet long. There is still left on the land a great deal of other kinds of timber, such as white birch, poplar, maple and elm, and in burning we are anxious to save all the timber left standing to be sold later with the land.

We own nearly all the lands from which we are cutting timber, and after the pine timber has been removed our land is valuable for agricultural purposes and we are careful to preserve the timber left, as well as do away with a serious fire risk.

Now we start out logging with the *IDEA* in mind that the *brush is to be burned.*

In sawing the timber we use a crew of four men—two for the saw, one to undercut and mark the log lengths, and one to trim off limbs and pile them. Then in the spring, as soon as the snow is off, we send our men in to burn the slashing. They, as a rule, do not have to do any more piling of the brush, and we are careful not to wait until it gets too dry. If there is any danger of the fire leaving the land we are operating on, we first burn around the outside of the slashing. We find that by burning early and with care, that the fire does not injure the standing timber, nor does it materially affect the small undergrowth. Where a tree has been felled off by itself, we do not attempt to burn the brush, for it alone constitutes no fire risk.

Burn Before May First

We have a State law that requires that the brush be burned before May 1st, and we find, from experience, that unless it is a very late spring, that it is unsafe to burn after that, and if we do burn after that it is done under the supervision of the Forest Ranger, and special care is given that the fire is not allowed to get beyond control.

The manner in which the burning is done all depends on the instructions sent out from the main office. if you instruct your men to be careful they will, no doubt, do it, but if you issue

instructions that the brush be burned as cheaply as possible, you will have some big fires that will do a lot of damage—that we know from experience, for, even in the fall of 1909, when we had such disastrous fires in Northern Minnesota, there was no trouble, or damage, at any of our operations, though we log over 10,000 acres each year.

Our law has worked out very satisfactorily to us. Our men are all instructed to co-operate with the Forestry Officials, and we have had a great deal of help and advice from them, and never any trouble. But, to do right, you must give it considerable supervision, and have it in mind during all your logging operations, and do not wait until too late in the spring to do your burning, or you are liable to have a fire you cannot control.

We use Lidgerwood cable-way steam skidders in most of our operations, and horses and Logging RR in the balance. We are doing no hauling with logging sleighs. We use the same brush burning methods at all our operations.

The Expense

The expense is not great. It need not cost to exceed 50 cents per acre, and the average need not be over 10 to 20 cents per acre to do the burning in the spring.

Our men use a kerosene torch made out of 1½ inch gas pipe, with a cap on one end and a reducer from 1½ to ½ inch with a piece of ½ inch pipe, about 10 inches long in it on the other end, filled with wicking. The large pipe filled with kerosene will make a torch that will last two or three hours, and is easily handled.

In conclusion, would suggest, that to do the burning successfully and cheaply, that you must arrange your work with the idea in mind of burning that slash *right*. Co-operate with your Forestry Officials. They will always have some good ideas that you can use to advantage, and after you have burned the slash successfully for a season, you will not care to go back to the old system of leaving the slash as a fire trap.

The new Chief Forester of British Columbia: Mr. M. A. Grainger.

HOW N.B. TIMBER SELLS

A sale of New Brunswick Crown lands was recently held at the Department of Lands and Mines and some spirited bidding resulted when five lots were offered for sale. Each lot brought more than the upset price. A. R. Slipp, of Fredericton, N.B., purchased a timber berth of two square miles on the east of the Penniac River, York County, for $40 per mile. A lot of two square miles, situated east of MagaguadavicRiver, was sold to Mr. Robert H. Little for $150 per mile, and two lots, one of three square miles, and situated east of Queens—Westmoreland County line, and another of four and a half square miles, situated west of Queens–Westmoreland County line, were sold to Mr. W. G. Fenwick, who at present holds the lease. The first of these lots was bid in at $180 per square mile and the second at $295 per square mile, after some strong bidding. The last lot sold produced some of the most spirited bidding of the sale and was bid in by Sayre & Holly for $301 per square mile. This lot is situated at the head of Borth Forks, Canaan River, and was formerly leased to Mr. W. G. Fenwick.

Upper Ottawa Adopts Modern Protection

After negotiations covering two years, the territory known as the Upper Ottawa has been organized for fire protection purposes. Instead of a distinct association being formed, the 15,000 square miles have been added to the territory, nearly as large, hitherto patrolled so successfully by the Lower Ottawa Forest Protective Association of which Mr. Arthur Graham is Chief Inspector. The enlarged area will be under "The Ottawa River Forest Protective Association" in which licensees of both regions will be represented. Mr, Graham continues as Chief Inspector, Mr. Frank Hawkins being Secretary. The territory will have two main divisions "Eastern" and "Western". the former representing the old Lower Ottawa region. There will be five territorial divisions each with an inspector, with one or two supervisors looking after them.

As the Upper Ottawa presents some special problems, motor boat patrols will be used on the Quinze, Kippewa, and Hurricanaw districts. The same general scheme of organization as applied to the Lower Ottawa Association will extend to the new territory, which runs as far north as the boundary of licensed Crown lands, and has its western limit at the Quebec-Ontario border.

The Upper Ottawa contains probably the most valuable white pine stands in Canada. Sections of it have suffered severely by fire from lack of a uniform protective system.

New Protective Association

Another forward step was registered on March 6th, when the Southern St. Lawrence Forest Protective Association was formed. A meeting of the interested limit holders was held at Quebec City, with Hon. Jules Allard, Minister of Lands and Forests, present to assure the members of the Government's desire to give thorough co-operation. Mr. Gerald Powell was elected president of the new association and the directors are as follows: Simmons Brown, E. A. Rockett, J. Tobin, Angus McLean, David Champoux, Major Lyons, Charles McClay and R. L. Montgomery. Mr. Ellwood Wilson, President of the St. Maurice Forest Protective Association, was in attendance.

"HIGH COST OF LUMBER"

"Personally, I believe the high cost of lumber is here to stay. The present prices may seem high, but in a good many instances I am inclined to think they will go higher. Taken as a whole, the lumber manufacturer for the past ten years has been conducting his business on a narrow margin of profit, and in some cases at a considerable loss."

The foregoing forecast was made by Mr. A. C. Manbert, responding to the toast of the "Manufacturers" at the first annual dinner of the lumbermen's section of the Toronto Board of Trade, held in the assembly room of the Board of Trade. Mr. Manbert said that at present the stocks were too scanty to meet the increased demand, with the result that some manufacturers preferred to be out of the business, rather than in it.

Two boys recently convicted in a Los Angeles court of leaving a campfire burning in the Angeles National Forest, were sentenced to visit the scene of a forest fire near Newhall, Cal., where 400 acres were burned over and property to the value of $100,000 was destroyed, and to make a study of the damage, done. Six months later they are to report to the judge and tell him whether they have done so and what lessons they have learned.

New Brunswick's Future Policy

The defeat of the Murray-Government in New Brunswick and the success of the Opposition under W. E. Foster will probably have no unfavorable effect upon the important forest conservation projects in which the province engaged under the late Hon. Geo. J. Clarke. The forest survey and land classification schemes now so far advanced are too strongly entrenched in public approval to permit of interference from any quarter. It is believed that the new premier is well acquainted with the valuable features of the progressive forestry policy which waited so many

Mrs. Tim-Ber: "I'm hoping they'll let the Forest Family help along this 'Thrift' campaign that's advertised."

Mr. Tim-Ber: "Good idea! We've been giving the Fire Fiend more than six million dollars a year. The Governments can bank that money if they say the word."

years to get a start, and will gladly give it approval and support.

With the forest survey and land classification completed, New Brunswick will have a first-rate inventory of its two main resources. The real task of building a forestry policy will then require the utmost care, if the timber assets are to be administered on the basis of permanent yield. No consideration, however, should be allowed at this time to place the slightest obstacle in the way of the survey, which Mr. P. Z. Caverhill is directing. To do so would be to throw the province back into the dark ages of forest administration.

The completion of the forest survey, however, need not hold back a modern fire prevention policy, which New Brunswick imperatively needs. The late Government was definitely committed to a reorganized fire protection plan in the timbered areas. The new government can place before the Legislature no more statesmanlike undertaking than to erect a barrier against needless fire losses in much the same way as Ontario is now doing. Elimination of fire is surely non-controversial. There can be no 'Opposition criticism' in the New Brunswick Legislature to a sensible and thorough scheme to overcome the annual havoc of flames.

The Canadian Forestry Association will probably hold a Maritime Province Convention shortly after the conclusion of the war. It is earnestly hoped that the assembly will be able to speak of New Brunswick forestry conditions as comparing creditably with those of any other Province in the Dominion.

How to Plant on the Prairies

"Farm Forestry" was the subject of an interesting address by Norman M. Ross, chief of the tree-planting division at the Dominion government forestry farm at Indian Head before the Manitoba Horticultural and Forestry Association at Winnipeg.

Mr. Ross said that the three motives which prompted a farmer to plant trees are (1) for windbreaks; (2) for ornamental purposes; (3) for woodlots where trees are grown for the material they may produce.

"Everywhere we go," said Mr. Ross, "in the country we see the results of haphazard tree planting. In summer the garden plots so overshaded with trees that no vegetables or small fruit will grow, and in the winter, lanes so drifted with snow between the trees as to make them almost impassable." He urged that careful thought and preparation as to location and arrangement of the trees was the first step in tree planting; if possible a plan should be drawn to scale to embrace all the grounds to be set aside for buildings, gardens, ornamental grounds, roads, tree belts, etc., and this plan adhered to.

Tree Belts

The tree belts, Mr. Ross said, should not be more than 10 to 15 feet wide, for unless they are protected with snow breaks they are liable to be broken down in the centre with the heavy snow; for the same reason it is not well to plant trees very close around buildings as the snow has a tendency to drift up in the middle.

The tree planting should be done gradually, too much should not be attempted at once, every year a piece of land should be thoroughly summer-fallowed for planting the following spring and no more than can be comfortably handled should be planted each year. If this method is followed, in the course of a few years the original plan will be completed and the disappointments and discouragements which inevitably follow rash and haphazard planting, will be avoided.

Mr. Ross said that he had no hesitation in advising deep summer fallow in every case, and while in a few in-

stances plantations have been known to thrive when planted on stubble, it was the exception and not the rule; and to plant trees on either breaking or backsetting invariably proved to be disastrous.

Varieties

For the purpose of shelter, the prairie farmer is limited practically to a choice of maple, ash, elm, birch, cottonwood, Russian poplar, willows, Carragana and certain evergreens, as white spruce, jack pine and Scotch pine. It is always advisable to mix several kinds of trees in belts where a number of rows are being planted, for instance the poplars and cottonwoods should be mixed with some slow growing variety of tree, to form a sort of undergrowth, as the poplars grow so rapidly that they soon become open at the bottom and would not throw sufficient shade to kill our grasses and weeds. Again, less damage is liable from insects or disease in a mixed belt; this was illustrated last summer when every poplar and willow was stripped by the poplar leaf beetle, but the insects did not bother the maple, ash nor elm. The same thing happened two years ago when the green aphis was so bad, the maples were absolutely denuded, but very little damage was done to other varieties of trees, and in the mixed belts it was noticed that the maples suffered less than they did in the belts entirely ofmaples.

Spacing

On the question of spacing there are varied opinions. The forestry branch at Indian Head requires a uniform spacing of 4 by 5 feet, this distance appearing to give the best results under average conditions. This matter, however, is of secondary importance to that of keeping the surface soil beneath the trees well cultivated, and free from grass which is the worst enemy of our tree plantations. Even after the trees are well grown and the foliage dense enough to choke out all such weeds and grasses, it is an excellent practice to keep a strip of from 5 to 8 feet thoroughly cultivated all around the outside edge. Thus, if the trees are kept in a strong, healthy condition, they will be better able to withstand the ravages of insects, rabbits, fungus growths, disease and winter killing. A year ago when the aphis caused the death of so many maples, Mr. Ross said that he himself did not see a single example of trees being entirely killed where the surface ground around them had been properly cultivated.

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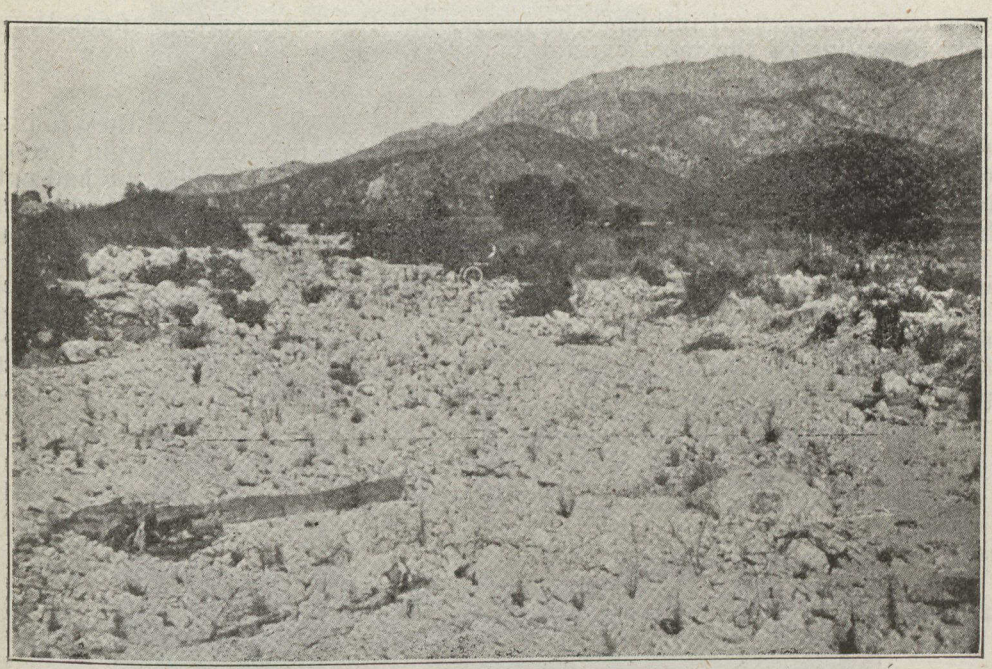
PROBLEMS IN QUEBEC

Mr. W. C. J. Hall, superintendent of the forest protection branch, Quebec, speaking at the Forest Conservation Conference at Montreal, on February 2nd, gave a very interesting discussion of the forest guarding problem in the province. There was, he said, a large strip of land, consisting of many million acres, over which the department had a certain amount of influence. In the rear of that was 70,000 square miles of crown lands, on which they concentrated their efforts, while in the rear of that area again were 100,000 square miles of territory which was difficult to deal with. Of the 70,000 square miles there were 25,000 under the co-operative system. They had now obtained the united assistance of the government, limit holders, and the public. Forty-five thousand square miles were under the individual system, and this included some notable examples of efficiency—Mr. J. R. Booth, who looked after his limits as well as any association; the River Ouelle Pulp and Lumber Company, and the James Fenderson Company. There were, however, some slackers. During the fiscal year 21,000 acres were affected by fires; since then there had been some large fires, but not so extensive as had been reported. There was only one railway line which was not under the control of the department. A great improvement was shown in railway matters, the companies meeting the department more than half way; no one could say that the railways in Quebec were now a menace to the timber lands. He believed that the debris on colonization roads could be burned without danger to the forests.



FARMING NO LONGER POSSIBLE
Land which formerly sold for $600 an acre has been rendered worthless by the deposit of sand, gravel, and bowlders brought down the year after a severe fire in the mountains shown in the background. Previous to the fire the stream bed had been an inconspicuous wash carrying only a small amount of water even in the rainy season.

Farms, Forests, and Erosion

A Lucid Explanation of the Costly Consequences to Farming of Ignorant Forest Stripping.

By Samuel T. Dana Assistant Chief of Forest Investigations, U.S. Forest Service.

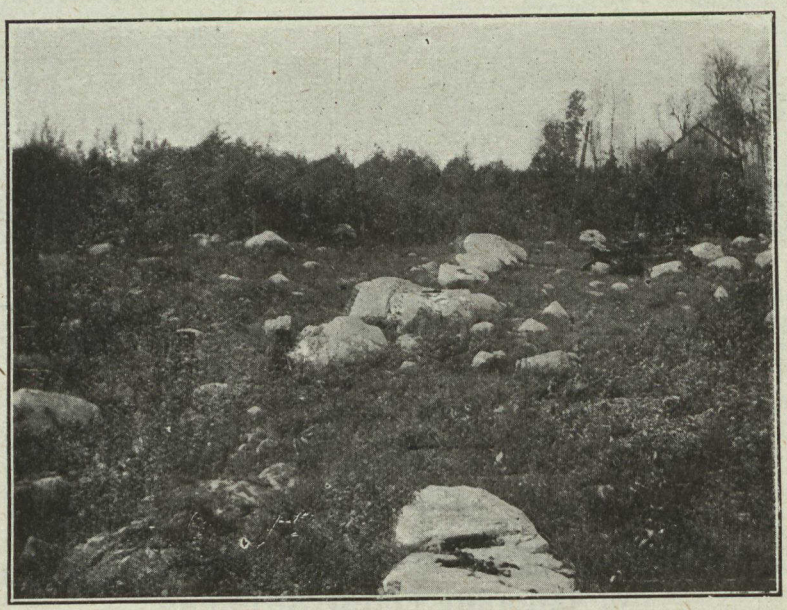
"Farms, forests, and erosion" may sound like a queer combination, but as a matter of fact the three are closely connected. Erosion is one of the most serious dangers that threaten our farms, and forests are one of the most effective means of preventing erosion. How true this is would be most startlingly demonstrated if all the forests of the country were to be wiped out overnight. Imagine how the water would pour off the mountains, cutting to pieces and washing away the land and destroying other property in its path.

The forest is, in fact, one of the best friends of the farmer in protecting his land from erosion and consequent damage. Just what this means, not only to the farmer, but to the Nation as a whole, becomes clearer when we remember that over half of the population of the country is rural; that there are more than 6,300,000 farms; that there are nearly 897,000,000 acres of farm land with a value of approximately $28,500,000,000; and that the annual production of farm crops is valued at some $5,500,000,000. Anything that

exercises an important influence on interests of this magnitude is unquestionably deserving of the most careful consideration.

What Becomes of The Rainfall?

When the Pilgrim fathers landed at Plymouth Rock in 1620 they found the new continent clothed with an almost unbroken expanse of virgin forest. Cool springs were abundant, streams ran clear, and excessive erosion had not left its mark upon the land. The geologic processes of land sculpture which have been going on since time immemorial were of course at work carving out the hills and valleys. Every year the soil on the steeper slopes was creeping a little farther on its way to the sea; every year there was some change, however imperceptible, in the appearance of mother earth. At the same time another process was going on. Rocks were being decomposed and transformed into soil. This second process, though it, too, was slow, was in most places proceeding faster than the other. Soils were being formed more rap-

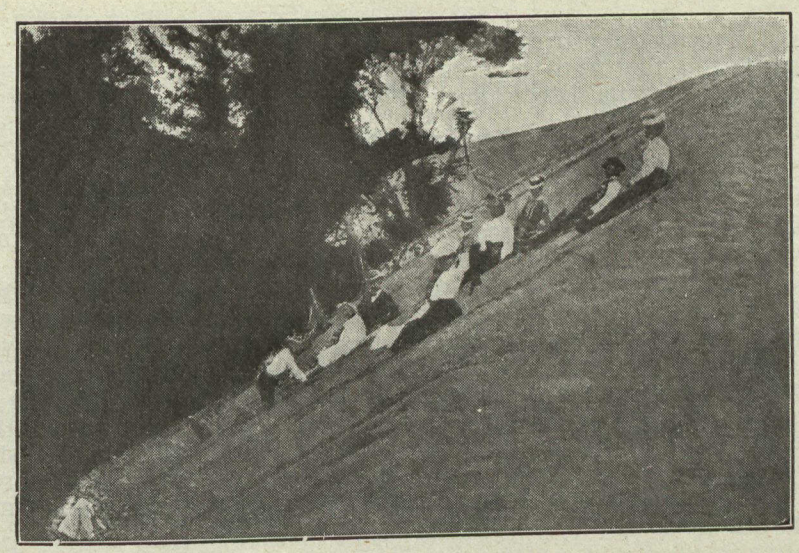


"KILLING TWO BIRDS WITH ONE STONE"
A piece of 'agricultural land' in Quebec which the settler abandoned after destroying the only natural crop—timber.

idly than they were removed, and the basis for the future farms of the country was gradually being built up. Such soil as was washed away consisted of the lighter particles, much of which, being deposited farther down in the more level portions of the streams, helped to build up the fertile alluvial plains. The entire action of nature was beneficial, rather than destructive.

An Enormous Vegetable Sponge

Everyone who has been in a dense forest during a heavy storm knows how thoroughly it protects the soil and stores the water. The force of the rain is broken by the trees, the underbrush, and the litter on the ground, so that it does not beat upon the soil. Much of the precipitation reaches the earth by running down the twigs and branches. In a light shower nearly all of the rain may be intercepted by the leaves of the trees, so that one can stand in the forest without getting wet. Even in a heavy rain the water drips down so quietly as to have practically no beating effect upon the soil. There is no perceptible surface run-off until great quantities of rain have fallen. Instead, the water is soaked up by the organic matter, or humus, in the upper layers of the soil. This is really an enormous vegetable sponge



TOBOGGANING IN SAND
A scene in Prince Edward County, Ontario, where the stripping of tree life created a costly problem in the creating of sand dunes.

capable of holding several times its own weight of water. As the rain falls it is absorbed by this sponge, then passed on to the reservoir of mineral soil beneath, and finally fed out gradually to the springs and streams. Then, too, surface run-off is checked by the mechanical obstruction offered by stumps, fallen twigs, branches, and even whole trees; and percolation of the water into the soil is made easier by the network of small roots and the channels left by the decay of large roots. Even when the rain is so heavy that the soil is unable to absorb all of the water at once, the excess flows off with no erosion. Streams coming from virgin forests are seldom muddy and are subject to comparatively small variations in flow.

When Rain Falls on Exposed Soil

The effect of heavy rains on the exposed soil of cleared fields is very different. There the rain beats upon the bare ground like millions of little hammers. The soil is compacted, its absorbing capacity is reduced, and first the finer and then the coarser, infertile particles are washed away. The water quickly gathers into little rivulets, then into streams, and finally into roaring torrents, all carrying with them ever-increasing quantities of soil and often stones and bowlders. Myriads of tiny channels appear as if by magic. These run together into small gullies, and the small gullies grow into larger ones. The whole area is cut up by erosion and the eroded materials carried away to cause trouble at lower elevations.

The Causes of Erosion

Injudicious clearing for cultivation of land on which a forest cover should always have been maintained has been one of the main causes of unnecessary erosion. Thousands of acres on slopes too steep for successful farming have been ruined in this way. Such land has been cheap and the settler frequently has been only too ready to cultivate it for a few years until it was worn-out and then complacently move on to repeat the process elsewhere. Improper methods of agriculture have often hastened the devastation. Unfortunately, this has not been confined to the area itself. Once started, erosion has progressed in both directions, washing out and burying fertile lands below and eating back into forested lands above.

Complete clearing of lands that should have been only partially cleared has had the same result. Not infrequently it happens that part of an area

can safely be cleared for farming if the rest of the area is left in forest. Failure to recognize this fact and to retain the forest where its protective influence is needed has been the direct cause of much unnecessary wasting of the soil.

Far-reaching Evils of Fire

Among the many evils chargeable to forest fires, their effect on the character of the run-off is by no means the least. Their tendency is in the same direction as clearing—to decrease the amount of water absorbed and consequently to increase surface run-off and soil washing.

From the standpoint of erosion every fire on hilly land is a menace—the steeper the slope the more serious the menace. Conflagrations which completely destroy the cover are, of course, most dangerous. Even light surface fires, however, are not to be disregarded. By destroying the humus and the carpet of weeds and other plants, these tend to harden the soil and to reduce materially its absorptive capacity. Repeated fires on the same area are particularly dangerous, since they gradually open up the stand, remove all trace of vegetable matter, and may cause the soil to harden and pack so as to be almost impervious. One or two specific examples may help to make clear the damage that may be done by even a single fire.

Two Graphic Examples of Erosion

On the north side of the Soleduck Valley, in western Washington, some 12,000 acres were severely burned in 1907. All vegetable growth was destroyed and all soil cover removed. Very little vegetation started in the first four years following the fire, and during these years the slopes were subjected to considerable erosion. Soil and fragments of stone were carried in great quantities to the many gulches and water courses. In November, 1910, a combination of heavy snow, followed by a chinook wind and a warm rain, caused an enormous run-off of water, carrying with it great quantities of soil and rock. This shifting mass was so great that most of the creek channels, where they struck the flat, became choked with it and built up fan-shaped deltas, in some cases several acres being covered with debris from 1 to 6 feet deep. Even now erosion on these areas is considerable, although not nearly so great as during the first few years after the fire.

In the brush-covered foothills of southern California, near the town of Piru, is a small watershed of perhaps 1 square mile known as "Nigger Canyon." In October, 1912, approximately 100 acres of this were burned over and the cover completely destroyed. The following January a series of heavy rains caused unprecedented erosion on the area. Rocks from 2 to 2½ feet in diameter, so large that they could hardly be moved by a team, were brought down by the flood. Ten acres of orange orchard near the mouth of the canyon were covered with a deposit of gravel from 6 inches to 5 feet in depth,

REPAIRING EARLY MISTAKES

Drifting sand in Norfolk County, Ontario, planted up with evergreens from the Ontario forest nursery. This land ought to have been retained permanently under forest.

so that in many places the lower branches of the trees rested directly on the ground. Though the orchard was not destroyed it was so injured that it will be necessary to reset the buried area. Four acres of bottom land which had been cleared the year previous to the fire for planting to lemons were so covered with gravel and bowlders as to be completely ruined. Local residents state that while the precipitation that winter was heavy, they do not believe it was worse than in many other years. One owner expresses the opinion that there has been more damage from erosion in the 3 years since the fire than in the 22 years before.

Effects of Destructive Lumbering

All cutting, of course, changes to some extent the character and amount of the soil cover and therefore disturbs more or less the natural balance between rainfall and run-off. If the cutting is properly regulated, however, this effect may be so slight as to be practically negligible. It is nearly always possible to leave sufficient cover on the ground to prevent any ill effects from the opening up of the stand, and if fire is kept out this is soon supplemented by other vegetation which effectively protects the soil from erosion.

Unfortunately, past cuttings have not in all cases been properly regulated. Considerable unnecessary erosion may be laid to destructive lumbering carried on without regard to the future welfare of the forest itself or of the interests dependent on its protective cover. Clear cutting has been practiced on steep slopes where at least a part of the stand should have been left. Roads have been so located as to be subject to serious erosion. Deeply gouged skid trails, formed by dragging many logs down the same rut, have been left unprotected to wash out after every heavy rain. Worst of all, fires have been allowed to burn uncontrolled on the cut-over areas. The dry mass of twigs, branches, and other inflammable material left after all lumbering operations adds to the fury of the flames and enables them to expose the bare soil to the mercy of the other elements.

About Saskatchewan

Saskatchewan covers some one hundred and sixty-one million acres of territory, one-fifth of which is water and two-fifths available for cultivation. About one-half of the Province is now surveyed, the remainder of the area is mostly unagricultural. The forest area covers some six million acres equal to the area of wheat crop in the Province during the year 1915. Therefore, the forest reserves and their resources are not a small factor in influencing the prosperity of the people. With proper protection and management their products can be made just as valuable to the community as the farmers' wheat. Excellent forage and hay are also available and several stock associations are being organized for the purpose of utilizing the grazing. Numerous timber and cordwood operations are being carried on throughout the district this winter.

A shortage of labour has been evident all season with a heavy snow fall and a considerable spell of 30 to 50 degrees below zero weather, during January and February.

Acting Supervisor Geo. S. Smith of the Big River Forest Reserve recently visited this office and reports considerable activity by the Ladder Lake Lumber Company who are running seven camps this winter logging timber on their limits in the vicinity of Big River and cutting small timber sales on the Forest Reserve. One operator is cutting cordwood on an extensive scale, some burned timber on the limits.

A. B. Connell, Supervisor, Pasquia

Forest Reserve, has been in the East for several weeks undergoing an operation.

$1.75 for Cutting Cordwooa

Student Assistant Snow who has been assigned to the Pasquia Forest Reserve for the past year reports considerable cordwood activity this winter on account of the high price being paid. Men are receiving $1.75 per cord for cutting in the bush.

Mr. D. N. McDonald is having a successful winter, logging operation on his timber sale.

Mr. E. L. Olsen of Weldon, Saskatchewan has been awarded a timber sale for a million feet of jack pine on the Fort a la Corne Forest Reserve and Ranger A. Vandine reports that most of material will be disposed of to the settlers to the south and west of the Reserve.

Ranger Badly Hurt

Ranger in Charge John McBride of the Sturgeon Forest Reserve was badly injured, having a log fall on him during the construction of a barn. Several ribs were fractured and he was injured on one side of the head. He has recovered however, and is now back at work.

The Prince Albert Lumber Company are cutting some thirty million feet of spruce on their limits in this Reserve and have four steam haulers landing the timber on the Little Red River.

Several timber sales have been awarded on the Porcupine Forest Reserve but owing to the depth of the snow, their operations have been considerably hindered.

Chief Fire Ranger Thompson of the District Office spent the month of January on the Porcupine Reserve inspecting timber sales and improvements and reports very severe weather and much activity at Headquarters in the cordwood line "Keeping the home fires burning."

Chief Fire Ranger H. Lockhart of the Battleford Fire Ranging District resigned his position recently.

The Saskatchewan motto and byword for 1917 is "Have you burned your brush?" The infection is spreading.

CEDAR SUPPLIES IN B. C.

"It is the consensus of opinion among those who are well acquainted with the timber resources of British Columbia that the extent of the standing timber is not nearly so great as might be first supposed. The handy cedar to Vancouver is pretty well exhausted and the manufacturers of cedar shingles on either side of the line who are being carried away with the idea that there are inexhaustible quantities of red cedar in British Columbia may probably wake up some morning to find that their estimates have been too great."—News note in "The Timberman," Portland, Ore.

TREES

(*By Stephen Henry Thayer*).

What is the wisdom taught of the trees?
Something of energy, something of ease;
Steadfastness rooted in passionless peace.
Life-giving verdure to upland and glen;
Graces—compelling the praises of men;
Freedom that bends to the eagle and wren.
Largess—expanding in ripeness and size;
Shadow that shelters the foolish and wise;
Patience that bows 'neath all winds of the skies.
Uprightness—standing for truth like a tower;
Dignity—symbol of honor and power;
Beauty that blooms in the ultimate flower!

AN ALBERTA MESSAGE

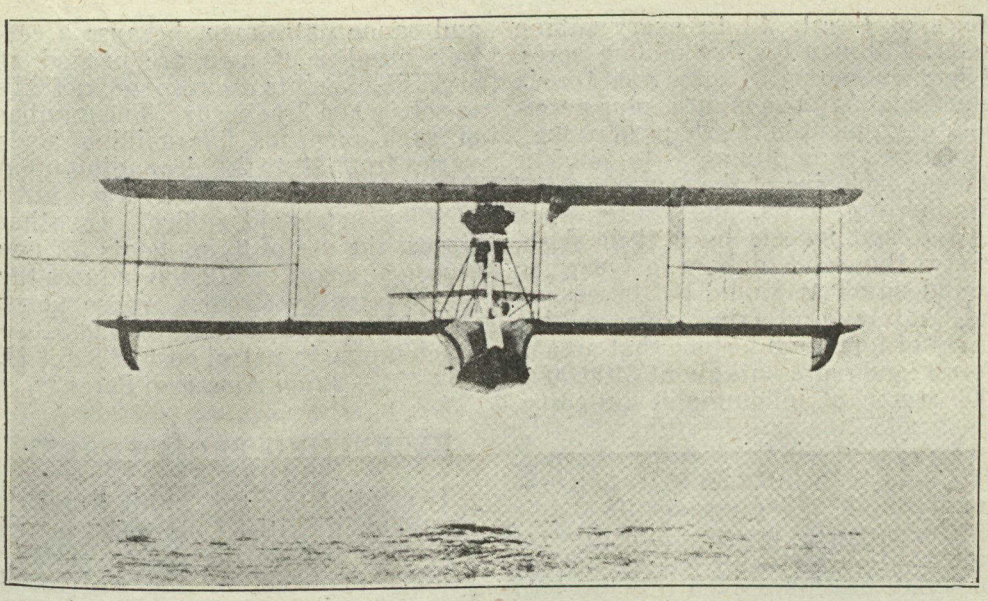
Coleman, Feb. 13, 1917.

Canadian Forestry Association:—

"Enclosed is my subscription for 1917. I wish the Association every success in the work it is doing"

T. H. Y.

Mr. Henry Sorgius, Manager of the St. Maurice Forest Protective Association, will be sent on a tour of the Province, by the Department of Lands and Forests, to try to get the limit holders who are not already members of the Cooperative Associations to form new ones in their respective districts.



A FOREST PATROL AVIATOR IN WINSCONSIN CROSSING A LAKE

The Cost of Aerial Patrol

By Wm. T. Cox, State Forester of Minnesota

The time has passed when flying machines should be looked upon as toys or experiments. They have been developed to the point where they are being used daily and with comparative safety. Within the past five years thousands of men have been trained to guide aeroplanes and hydroaeroplanes among the clouds with a greater degree of safety than any other kind of machine or conveyance can be driven at the same speed on the ground.

The European War is calling for aeronauts in increasing number. They are wanted to carry dispatches, to observe movements of enemy forces, and even to carry on offensive movements against the enemy. They are not only practicable and reliable as machines go, but are now considered almost indispensable for the armies.

Some years ago, when I watched the Wright brothers make the first successful flight for the Government prize at Fort Meyer, Virginia, it occurred to me that aeroplanes were certain to find a field of usefulness in forest patrol. In what other way could a large tract of forest be so quickly seen and fires detected? Since the winning of that prize at Fort Meyer, the Wright brothers and many others interested in aeronautics have been steadily and rapidly perfecting the different types of flying machines. To-day they are almost as practical as the automobile.

Promptness Pays

To appreciate what the advent of the aeroplane means in patrol work, it is necessary to know what constitutes adequate forest patrol and what it costs. Let us figure a little. Ninety-nine forest fires out of every hundred can be extinguished in a few hours by one or two men if the fire is reached within half a day after it starts. That is why the rangers and their patrolmen are effective. But it costs money to maintain the right kind of a patrol force. There should be at least one man to every 72 square

miles of forest, 22 to every million acres, 110 men for five million acres. The maintenance of these men for six months at $70 per month, plus necessary equipment in the shape of canoes, tents, etc., would amount to $49,500. This is exclusive of the cost of special fire-fighting crews, and winter work to see that loggers burn their slash. Sixty thousand dollars a year, in round numbers, would be the cost of adequately protecting five million acres of forest; and, since that area of forest land represents about $100,000,000 worth of inflammable property, the protection cost—six hundredths of 1 per cent—is fairly low insurance. It would be a fortunate city government that could maintain its public fire department at anything like so low a rate. Nevertheless, by the use of flying machines even this low cost of protecting the forest can be reduced particularly in a country like northeastern Minnesota, where there are so many lakes.

Flying Boats

Five million acres represents one-quarter of the forest region needing patrol in Minnesota; it represents also the lake-dotted area of Northeastern Minnesota, which is peculiarly adapted to patrol by the use of hydroaeroplanes or flying boats. An aeroplane, it may be stated, starts from a fairly smooth spot of ground and must alight upon a similar clear space of ground. A hydroaeroplane, as the name signifies, starts from a water surface and alights upon water. Northeastern Minnesota, with its thousands of lakes and numerous streams, is the place above all others on the continent where flying boats can be used to advantage in forest patrol. Three hydroaeroplanes and four officers are required. The machines, allowing for a life of three years, cost $7750 a year; repairs and supplies $100 a month, or $600; two aviators, at $200 per month; two observers, at $100 per month; and a mechanic at $80 per month, cost $4080 for the six months' annual service. This brings the total expense for six months aerial patrol for five million acres to $12,430. The aerial patrol cannot entirely replace the foot and canoe patrolmen, because a certain number of men are needed at accessible points to respond quickly to calls when fires occur. The number of such men for five million acres varies from 20 to 30, depending upon the kind of season; an average force of 25 men should suffice. In other words, the use of flying boats for one season at a cost of $12,430 reduces the patrol force by 85 men, whose wages would have amounted to $38,310—a net saving in patrol cost of $25,880.

—*From American Forestry.*

RECRUITING FROM FOREST SERVICE

Recruiting for the 230th Forestry Battalion in British Columbia exacted a further toll of the ranks, already heavily depleted, of the Provincial Forest Service. W. F. Loveland, who has been Acting District Forester in the Island Division, has received a commission as Lieutenant and is now engaged in recruiting work on Vancouver Island. He is a South African War Veteran.

E. P. Fox, of the Management Section of the Provincial Forest Service, who has thrown in his lot with the 230th Battalion, joined the service in 1913, and has had ten years of varied military experience including the Natal Rebellion of 1906.

Ranger J. E. Stillwell of Duncan, and a number of Forest Guards have joined the Forester's ranks, and rumour says that the Battalion will conduct lumbering operations on the slopes of the Pyrenees.

SELLING LUMBER WITH A CAMERA

One of the most modern methods of selling an article is by means of the camera. To further the sale of agricultural implements, the International Harvester Company of America employs competent lecturers who travel throughout the country illustrating the development of farm machinery.

In a modest way the lumber industry of the Pacific Coast has sought to follow the successful methods of the major industries of the United States.

Forestry Keystone of Wood Industries

Efficiency Demands Application of Highest Economics in Handling the Raw Materials.

By Ellwood Wilson, Forester of the Laurentide Co., before Canadian Pulp and Paper Association, Montreal.

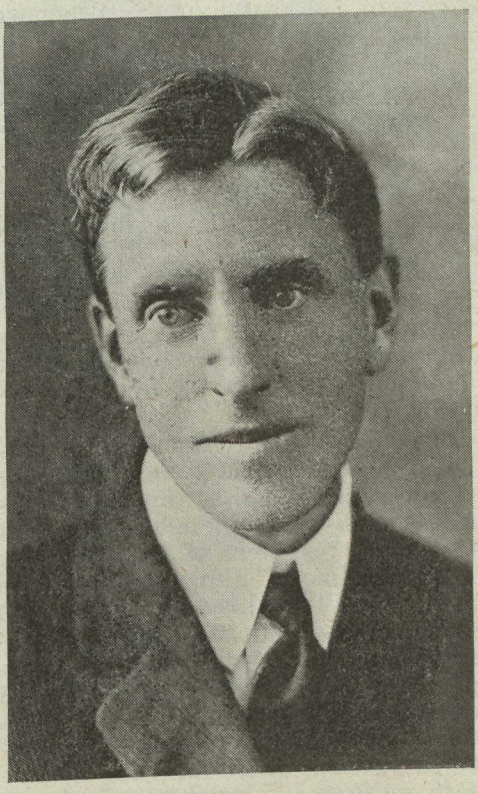
The question of inventories of timber resources is a very important one, for no company which is ignorant of the amount of timber it possesses can be said to be well managed or in sound condition and cannot lay out its work for the future in a business like way.

The utilization of our timber resources is still, with three or four exceptions, carried on in an old fashioned and wasteful manner to the detriment of the forest; and the logging costs of the future will be greatly raised by such methods.

As cheap wood and cheap power are vital to our industry it may not be amiss to call the attention of our members to the close connection between the removal of the timber and the impairment of the water powers. The forests undoubtedly regulate the run-off, distributing it throughout the year and decreasing the difference between extreme high and extreme low water and they probably increase the total run-off by preventing evaporation. It is said too that they increase precipitation. Therefore the removal of forests by fires and by over cutting is a great menace to the future of our industry and should be made a matter of study by a committee of this Association and recommendations made to our members.

Our members should be urged to join and form well managed Co-operative Associations for protection from forest fires.

As several of our members have begun to plant trees on a large scale the question of taxation where they are planting on their own lands should be studied. Also the question of guarantee by the government that those who plant on licensed lands will cut the trees they plant and will be properly reimbursed for their investment by reduction of stumpage dues at the time of cutting must be taken up.



MR. ELLWOOD WILSON

The government of Quebec should be urged to compel all licensees to take better measures for protection of the forests against fire. During the past season the territories patrolled by the Co-operative Associations were in great danger from fires originating on lands adjacent.

The Right Use of Land

Also the question of opening up lands for settlement in timber limits should receive attention and laws be passed forbidding this on lands which are unfit for agriculture. The interests of the settler and the licensee are not antagonistic as the latter needs the settlers to furnish labor for his woods operations and the former needs such work to tide him over the winter. But the settler who is permitted to take up land too poor to give him a decent living is a menace to the community; he steals timber and must trap and hunt out of season for a living and is not able to properly educate and rear his children. This is a matter which calls only for a little common sense, and new townships and parishes should not be opened until they have been examined and laid out by experts. At present settlers have only to ask for lands in certain sections to have them granted and experience shows that very often such lands must be abandoned after cropping for a few years.

The Government should also publish the work done by its Forestry Branch and should as rapidly as possible make a complete inventory of the forest resources of the Province.

A standing Committee should be appointed by this Association to study the questions of better preservation, closer utilization and perpetuation of our resources and should make recommendations to this Association for the guidance of its members. These questions which concern our raw material are vital and fundamental to our industry and have been too long neglected.

* * *

Mr. Wilson continued: The most important thing in regard to the pulp and paper industry is most certainly the raw material, and the progress which has been made in taking care of this raw material—or the source of this raw material—is lagging far behind the rest of the work that is being done. You have a good Technical Section which is discussing the chemical side of the question, but you have nobody whatever who is showing any care of your woodlands.

Information Meagre

Now, the woodlands of the Canadian manufacturers are only just beginning to be taken care of at this late date, as they should be taken care of. The waste in the woods is certainly very large, and the knowledge which the manufacturers in Quebec and Ontario have of their resources is, with a very few exceptions, almost nil. You have relied for years upon the reports of men, who are supposed to know the conditions. The Governments are taking certain steps which they hope will conserve the forests, but they are putting all the burden of the expense of the work on you. You are required to pay for fire protection; you are required to pay for your own maps, and are required to do some other things which, licenses and renters of lands, you should not be required to do, but on the other hand, these things are absolutely necessary and until such time as the Governments are willing to take their share of responsibility, it will have to be borne by the paper manufacturers.

I have been asked to say a few words in regard to the forest lands at the present time. This is a question which certainly demands attention, and I would suggest that a committee be appointed by this Association along the line of your other technical committees, to examine into all the things which refer to the products and protection of your raw material. This is a very important thing and such a committee could be of very great assistance and use to you.

Careless Cutting

In regard to the devastation of the forest lands: the cutting which has been carried on in the sections with which I am familiar, has caused a great deal of devastation, and I think we should take some action before it is too late. The indiscriminate cutting of the forests and the taking of the raw material which was the handiest and cheapest to log at the time, has certainly contributed to the low prices which you have been able to charge for your paper, but

In the North of France, fuel gathering is now done by Women and Boys chiefly. Note how carefully branches are being utilized.

the taking of this easily accessible supply is now practically at an end. You will be forced from this time on to go much further for your timber, and to cut it from places very inaccessible, and your logging costs are bound to increase, not gradually, but with a jump. The way in which the forests have been cut over, and the carelessness in regard to fire, which existed up to five years ago, have left waste many large districts which should have been useful to you for many years to come.

The way in which the cutting has been carried on, taking the timber from the borders of lakes and running streams has practically come to an end, and the method of cutting by which choppers have been allowed to go into the woods and practically select the timber which they were cutting and leave the rest, has left it so scattered that it will be very expensive and very difficult to cut up.

Competition Valueless

The time has come when this question should be taken up and examined carefully. In the woods there is no reason whatever for competition, but as a matter of fact should only compete with each other in trying to get your logs out as cheaply as possible. This can be done more efficiently by co-operation. There is no reason why you should compete in the question of labor or provisions, but by getting together and planning your operations together, and planning them with some idea of the preservation of the forests, and you can certainly have some great economics and economies which will preserve the forests over the greatest term of years.

The scarcity of pulp wood is an important factor in the high price of paper, and these will increase from time to time, and some steps or measures must be taken to prepare the forests for the future, and also the question of the waste of material in the woods should be taken up, as the way the waste is allowed to accumulate now is one of the most serious fire hazards that we have; makes easy the starting of the fires, and the extinguishing of them much more difficult, and destroys the reforestation which you should be getting.

I would suggest that you appoint a committee to look into all these questions and take concerted action to end a condition which prevails at the present time in the woods—the logging end of your business. (Applause).

Western Organizations Ask Better Fire Laws

The eagerness of wide-awake Western associations to co-operate in all reasonable movements to protect the forest wealth of Western Canada was shown by the action of the Western Retail Lumbermen's Association, the Canadian Credit Men's Trust Association, and the Association of Manitoba Land Surveyors at their recent annual meetings at Winnipeg.

The Canadian Forestry Association brought before these bodies the situation in which the timber assets of the prairie provinces were placed owing to lack of protection against settlers fires. The legislative suggestions offered by the Forestry Association to the three provincial governments were discussed and heartily endorsed. Resolutions were passed by each of the organizations calling upon the Manitoba and other governments to take proper means to preserve the forests of the provinces from fire ravage.

"Twenty-Seven"—One Man's Record

In the 1916 campaigns for new members for the Canadian Forestry Association, the member rendering the most effective service was Mr. W. J. MacBeth, Lumber Manufacturers' Agent, Toronto, whose generous interest in our work prompted him to secure no less than 27 new adherents.

In order to raise our total to 6000 in 1917, it will be necessary for every member to make a vigorous personal effort. Do not postpone it until December. Start a new member on the conservation path this month.

Send us three or four names of those who might be interested in the Association, its work, and its publications. You will not be bothered further. But we do want the names. And you, knowing your locality well, are in a position to send them in.

Canadian Forestry Assoc.

Future of Northern Manitoba

Vast resources of varied character and wide range make northern Manitoba a rich field for development according to the report of J. A. Campbell, Commissioner for Northern Manitoba, lately tabled at the legislature. Rivers and lakes abound with fish—sturgeon, whitefish, pike and trout. The water powers are enormous and widely distributed so as to be available at practicable distance from points where required for industrial development. Gold and copper ore are already being produced north of Le Pas, and further immense deposits of these minerals and zinc sulphide ore are known to exist. The fur trade of the town of Le Pas last year is estimated at a quarter million dollars. It is expected that the early future will see a movement of settlers to a district of unrivalled possibilities, the climate of which, Mr. Campbell states, is no more severe than in settled parts of the Western provinces.

In practically every item of Mr. Campbell's prophecy do we find an argument for forest conservation. The fisheries, water powers, mining settlement, fur trade, are linked arm in arm with forest maintenance Should the provincial authorities. neglect to co-operate in keeping fire out of the present tree-covered areas, the picture drawn by the Government Commissioner will not be realized.

FROM A LUMBER FIRM

Owen Sound, Ont.

Canadian Forestry Association:—

Enclosed find cheque for five dollars as a Contributing Membership fee for this season. We appreciate the work that your Association is doing and trust that you will be able to continue it along the lines that you have in mind."

Canada's Work in Forest Research

The Working Programme of the Forest Products Laboratories of Canada, With Description of Some Scientific Investigations.

Brief Excerpts from an Address by W. B. Campbell, Assistant Superintendent Forest Products Laboratories McGill University, Montreal. Delivered Before the Annual Meeting of the Canadian Forestry Association.

At the present time the necessity of scientific research in industrial work is universally acknowledged but at the same time there is an almost universal lack of definite knowledge of what is really meant by industrial scientific research. The fact that the marvellous progress made by Germany in the past twenty-five or thirty years is due most largely to the work of her chemists leads many people to suppose that chemists need only be presented by an industrial problem and they straightway produce the solution in their laboratory. Such a view overlooks the years of patient toil and the hosts of disappointments that come to the investigator before he produces tangible results. The research leading to the substitution of artificial indigo for the natural product, for instance, took about twenty years' time of many gifted men and the expenditure of about five millions of dollars before there was any return. Such a case is not at all exceptional and differs only in degree from many other problems solved by intensive scientific research.

Many of the investigations now under way at the Forest Products Laboratories are intended only to cover the immediate problem before us but others are designed to proceed until a knowledge of the basic principles of the subject is obtained. Such, we consider, is the most real purpose of our institution. The wood-using industries of our country are not of such size as to warrant their establishing individual laboratories of this kind and if the Forest Products Laboratories of Canada can furnish to these industries scientifically accurate information concerning their materials and products and the manufacture of those products, then we of the laboratories will consider that we have not only earned our salaries but that we have done our little bit to promote the industrial greatness of Canada.

A very brief mention of a few of the investigations which are now being carried on will suffice to show what we are attempting at present, though we are considerably handicapped by the absence of some of the best of our staff who are at the front and the impossibility of getting other suitable men at this time.

Some of the leading investigations now on hand are as follows:—

A comparative study of the mechanical strength and physical properties of all Canadian woods. Tests are made on a large number of small clear specimens cut in the same way from several trees of each species selected in the forest by Forestry Branch experts. These tests are being made on the same system as a similar series of tests under way at the United States Forest Products Laboratory so that our results will be directly comparable with theirs

and when both series are complete the data will cover all the North American woods.

A study of the comparative value and characteristics of mine timbers available for use in the coal mines of Nova Scotia. This includes strength tests and a study of the decay of such timbers both in the mines and in storage. Already considerable improvement has been made in storage conditions so as to greatly decrease the loss from rotting in the piles.

A study of the fundamental factors involved in the drying of wood and phenomena related to change of moisture content such as shrinkage, hygroscopicity, migration of moisture in the wood, heat conductivity, etc.

A study of methods looking for the utilization of waste sulphite liquor. About 600,000 tons of wood per year is consumed in the manufacture of sulphite pulp in Canada and approximately one half of that amount of organic material is thrown to waste in the liquor. The problem of finding a use for this material is a very complicated one and although a great deal of research has been done on the subject by various English, German and American chemists only results of moderate value have been obtained. At present the work of these laboratories is confined to the compilation of all available information in connection with this subject, leaving experimental work to be done later on.

A study of the fundamental factors involved in the beating of paper pulp. This beating process is a very important one in the manufacture of paper, particularly in the case of finer grades, and is one concerning which very little is known. A full understanding of the reactions involves a very complete knowledge of the colloidal characteristics of cellulose thus leading to very involved questions of physical chemistry. This research is one of the type mentioned as being of so complicated a nature as to necessarily extend over several years but is one which we are peculiarly well situated to attempt.

A study having for its object the discovery of a commercially feasible process of creosoting Jack pine and Eastern hemlock for use as railway ties.

An investigation as to the feasibility of chipping, drying and baling pulpwood for shipment and a determination of the value of chipped and dried wood as compared with round wood. There is a possibility that there may be a saving in freight effected which will make possible the utilization of forest areas which are now going to waste.

An investigation of the chemical composition of wood, particularly of those woods which may be of use for paper pulp. This work involves the testing and standardization of methods of analysis and the examination of the composition of several important species both in the green condition and after different degrees of seasoning.

An investigation of the possibility of treating prairie grown woods so as to make possible ther use as fence posts.

A study of the oils produced by the destructive distillation of wood, both resinous and hardwood, with reference to their use in ore flotation.

A study of the relative durabilities of Canadian woods when exposed to various kinds of wood destroying fungi.

A study of the fibre dimensions of Canadian woods. This is particularly important to the paper industry but is also of value in other work as well as being of considerable scientific interest.

A study of the sulphite cooking process and the factors involved in cooking various species of wood for pulp. It is hoped that a thorough study of the process from a scientific point of view combined with practical experience will point out ways in which the process can be improved.

The investigations mentioned do not include any but the outstanding problems. Besides these there is submitted to the Laboratories a continuous flow of minor questions which the laboratory equipment enables us to answer quite readily. Questions regarding the identification of wood from samples, for instance, are answered daily for people all over the country at no cost to them.

The Nurseries and the White Pine Menace

Concluding the Article on White Pine Blister Disease appearing in the February Issue.—By H. T. Gussow, Dominion Botanist.

Until quite recently it was held that the stage of the rust on the currant, did not winter over on the currant, but must start anew every year from some nearby infected pine. So it was thought unnecessary to restrict the nursery trade in cultivated bushes, since they would be shipped either before or after they had been infected. And it was said that, though badly infected in one year, the same currants planted elsewhere showed no infection in the succeeding year.

This point is still open to question. But it is noteworthy that the United States, at any rate, mean to take no risks, as is shewn by an amendment to the Notice of Quarantine No. 7, dealing with the White Pine Blister Rust. The original quarantine deals with the prohibition of importation of all five-leaved pines, and is dated 21st May, 1913. The amendment (No. 1) is dated 29th February, 1916, and reads " . . . it is necessary, in order to prevent the further introduction into the United States of the white pine blister rust, to forbid the importation into the United States from the Dominion of Canada and Newfoundland of . . . all species and varieties of the general Ribes and Grossularia known to be carriers of this dangerous disease."

To come back to this question of overwintering. If one notes, on the one hand, the ever-recurrent infections, year after year, within the danger area, and often with no pine anywhere near, and, on the other hand, confronts the apparent introduction of the disease into regions, where pine rust was unknown and currant rust absent,—certainly these factors do not by any means support the general belief in the non-ability of the currant rust to overwinter.

Up to 1916 there was no currant rust at the Experimental Farm in Ottawa; close search had been made, but did not reveal any signs. But towards August of last year some fifty black currant bushes were found to be infected—some young ones in nursery rows, and some half dozen old ones close by. On enquiry, it was learned that there had been planted in spring a small number of a certain variety purchased from near Hamilton, a district in which the rust was known to exist, although no data are at present available as to whether the nursery, when these particular shrubs came, was infected by it.

Another question of importance yet to settle is whether the spores of currant rust may be carried on fruit and containers from infected areas, and thus be conveyed to areas formerly uninfected.

Nursery Quarantine

If overwintering is definitely proven, and if the disease is likely to be conveyed by means of spores, then the problem would appear capable of solution by a quarantine on nurseries within infected areas, both against shrubs and against packages of fruit. This is, however, economically impracticable. The alternative—and, mark, the only alternative under these circumstances—is the complete and systematic destruction of all white and other five-leaved pines at present growing in that particular danger area. Once these have gone, re-infection of currants will not occur, for physical conditions promise to eventually wipe out currant rust, that may result from wintering over; since the virulence of the fungus is greatly increased by a continuance of its life cycle on the pine. Observations made this season by my assist-

ant, Mr. McCubbin, indicate a measure of control exercised by prevailing weather conditions.

This concludes the general consideration of the role of the Ribes species.

From a consideration of the role of these factors we can draw the following conclusions as regards control of the disease:—

(1) Exclusion of all foreign white and other five-leaved pines, which has already been done .

(2) Exclusion of all foreign species of the genus *Ribes* according to Gray's Manual, if known to be carriers of the rust, (which has already been done by the United States of America).

(3) Examination in plantations, hedges, shelter belts, etc., of all white pines originating from any foreign sources.

(4) Destruction in any such plantation, hedge, shelter, belt, etc., of each and every tree found infected even in the smallest degree.

(5) Examination of, and destruction, if possible, of *Ribes*, wild or cultivated, in the neighbourhood, where infected pines may be found; if disease be found, the area should be proclaimed as a danger area.

Scouting Necessary

(6) Systematic look-out, during April, May and June, for blister rust on native pines; and from June to October, for currant rust, followed by immediate report and proclamation as danger areas, wherever disease be found.

(7) Strict quarantine against the export of white pine or other five-leaved pines from any danger area.

(8) Strict quarantine against the export of currant or gooseberry stock from nurseries in any danger area, until a license has been granted by an authorized government official that neither stage of the rust has occurred on the premises of the licensee, whilst, at the same time, all pines have been destroyed throughout the danger zone.

(9) Destruction of all wild species of *Ribes* acting as carriers in the neighbourhood of valuable standing white pine timber.

(10) Planting of deciduous tree shelter belts surrounding new pine plantations.

(11) Mixed re-afforestation.

(12) Raising of pine seedlings, outside of danger areas, for future supplies from home grown seed.

The last three suggestions are made as additional and rational precautions. Shelter belts would protect against the attack of pines by disease; next, mixed planting would reduce losses in case new plantations may be invaded by disease in future; and my last suggestion is to encourage re-afforestation with young seedlings *grown in this country.*

Duty of Dominion Government

In order to achieve the best results from these prophylactic measures, the work should be divided. The part assignable to the Dominion authorities would be to give the required legislative support, to carry on, by means of their experts, researches into many uncertain phases of this important disease, some of which have been briefly referred to, and to act generally as scientific advisers and referees to the provinces. Arrangements could also be made for the training of provincial inspectors, if such be found necessary. The Field Plant Pathological Laboratories of the Dominion, under my direction, would affort great assistance in this respect.

To the provinces would fall the maintenance of systematic scouting inspection, the supervision of the eradication of pines or currants as the case may be, the replacing of diseased plantations by young stock, and generally the responsibility for the carrying out of the practical work in their provinces, and the soliciting of close co-operation from all interested parties.

If all these suggestions are found practicable and economically safe, it would, then, be reasonable to hope that the disease, which has done such serious damage in Northern Europe, will not prove as appalling to America's most valuable lumber tree, as was expressed some years ago by Professor Sommerville, the well-

known authority on Forestry in Great Britain. The invasion by blister rust of the Continent of America, so often predicted by many writers, has at last occurred. Our efforts to combat the attack will be watched with interest in the Old World. In our vigorous Saxon vernacular, it is up to us to show that we are able to hoe our own row, and mend our own troubles.

New Brunswick Forest Club

About twenty men, including graduates and students of the University of New Brunswick, members of the Provincial Forest survey parties and others met at the home of Mr. P. Z. Caverhill on the evening of February first when the initial steps were taken for the organization of the New Brunswick Forest Club.

The object of the club will be to promote better fellowship between the members themselves and between the profession and those engaged in lumbering and allied industries. Speakers will be secured by the Club whenever convenient and the event was an auspicious one in the annals of forestry in the East.

Mr. Caverhill served as temporary chairman of the meeting, after which refreshments were served and these present became better acquainted. A committee consisting of G. H. Prince, of the Crown Land Department, Prof. Miller of the University and Edwin Hall of the city of Fredericton was appointed to draft a constitution and to look up the matter of incorporation the Club in the province. The next meeting was announced for February 16th, at the home of Prof. R. B. Miller. Those present as charter members of the club were: Messrs. Caverhill, Prince, Jago, Melrose, Burns, L. Webb, Williams, Brewer and Maxwell, from the Provincial forest survey staff, Hall from the Dominion Forestry Branch, and R. B. Miller, George Miller, J. Smart, Taylor, Crandall, Seely, Christie, Sutherland, H. Webb, Wheeler and Stephens, from the University.

Officers Chosen

The second regular meeting of the New Brunswick Forest Club was held at the residence of Prof. R. B. Miller, on the evening of February 16th. At this meeting the constitution was adopted and the following officers elected by the Club, whose incorporation under the laws of the Province may be arranged for: Pres. Prof. R. B. Miller; Vice Pres., Mr. P. Z. Caverhill; Sec'y.-Treasurer, Mr. G. H. Prince, with Mr. Robert P. Melrose as acting secretary during Mr. Prince's absence in the field. Messrs. Gareau and Hall were elected to serve with the President as an Executive Committee. The following names were proposed as active members: John Curry, Andover, N. B.; Percy G. Burchill, Nelson, N. B.; Colby H. Jones, Apohaqui, N. B.; Walter W. Gleason, St. George, N.B.; Reginald R. Bradley, St. John; and W. B. and Harry Snowball, of Chatham, N. B.; also Col. T. G. Loggie, Fredericton, N. B.

Mr. Gareau's Address

Mr. Gareau, forester for the W. B. Snowball Co., of Chatham, N. B., then gave an informal talk on his work of the past year with that company. The progressiveness of this firm is shown in the fact that it was the first to appoint a regular forester in New Brunswick and the saving that has been effected in the woods alone would seem to justify other companies in doing the same. The main saving effected has been in cutting low stumps, taking out tops to a small diameter and in marking off log length more accurately, with an eight foot pole, etc. In addition to supervision of about 65 camps widely scattered he cruised last summer about 70 square miles of timber intended for cutting operations. This has enabled the company to make better contracts with jobbers, since

BRITAIN— CALLS TO CANADA—

THE FACTORY — THE FARM

She must have Food—

for her Armies in the Field—for her Workers in the Factory—in the Munition plant—in the Shipyard—in the Mine.

THERE'S DANGER IN SIGHT—BUT YOU CAN HELP

Do You Know—

that the rapidly rising price of food stuffs means that the World's reserve supply is getting small?

Do You Know—

that a world-wide famine can only be averted by increasing this supply?

Do You Know—

that a "food famine" would be a worse disaster to the Empire and her Allies than reverses in the Field?

You Can—

help thwart Germany's desperate submarine thrust on the high seas.

You Can—

do this by helping to make every bit of land in Canada produce—the very last pound of food stuffs of which it is capable.

And Remember—

that **no man can say that he has fully done his part**—who having land—be it garden patch, or farm, or ranch—fails to make it produce food to its utmost capacity.

THESE FARM PRODUCTS ARE NEEDED FOR EXPORT

WHEAT,
OATS,
BEEF,
BACON,
CHEESE,
EGGS,
BUTTER,
POULTRY,
BEANS & PEAS,
WOOL,
FLAX AND FLAX FIBRE,
DRIED VEGETABLES

BRITAIN APPEALS TO CANADA

THE NEAREST PRODUCER OF STAPLE FOODS

India and Argentina are more than twice the distance away and Australia more than four times.

Canada to Britain - - - - 2625 MILES

India & Argentina to Britain 6000 MILES

Australia to Britain 11500 MILES

"No matter what difficulties may face us, the supreme duty of every man on the land is to use every thought and every energy in the direction of producing more—and still more."

MARTIN BURRELL,
Minister of Agriculture.

The Department invites every one desiring information on any subject relative to Farm and Garden, to write—

INFORMATION BUREAU

DOMINION DEPARTMENT OF AGRICULTURE

OTTAWA

they know the amount of timber accurately and the distance of hauling to landings.

Winter Survey in N. B.

A Crown Land survey party consisting of about fifteen men started work again February first in the vicinity of Pangburn on the Transcontinental and will work towards Moncton. They report good going on snow shoes and in spite of cold weather are living comfortably in tents, hauling in supplies on hand sleds or more properly, toboggans. They will work until the spring break-up which means about the middle of April when they will come in again until the regular summer field work season.

"HAMMERFEST" OF FORESTERS

The annual "Hammerfest" was held at the forestry camp of the University of New Brunswick on the evening of January 26th, under ideal winter conditions and an attendance of about 22 men. Among the guests were Priovncial Forester Caverhill and some of his office staff, Prince, Brewer, Melrose, Maxwell, Leland T. Webb, Edwin Hall and Colby Jones, of the class of 1916 who were in the city at the time, and Mr. McAllister of the Engineers of the University to represent that department. Two members of the Ninth Heavy Siege Battery were also on leave for the night, Lee Kilburn and Glenn Mowatt. Good fellowship prevailed and the usual toast list carried out after a sumptuous feast prepared by the "Grub" Committee whose efforts were duly appreciated. Every man is behind Mr. Caverhill in the forest survey now being carried out under his direction for the Department of Lands and Mines and the meeting was full of the spirit of optimism and co-operation.

PROCESS TO UTILIZE MILL WASTE

Dr. J. G. Davidson, of the University of British Columbia, in co-operation with Lloyd L. Davis, of the department of industrial chemistry of the University of Washington, has discovered a process of distilling sawmill waste whereby it is believed that thousands of dollars now lost will be saved.

By means of this process tar, a light oil, acetate of lime, and charcoal are formed. The gas produced by distillation is carried through a pipe nine inches in diameter and twenty feet long. In this pipe is an electrically charged wire, which causes precipitation of the heavy particles of tar. The tar, forty gallons for each cord of wood distilled, is of medium consistency, and immediately marketable. The light oil, obtained in a water condenser, is immediately marketable for use in ore refining, and the yield is twelve gallons to the cord of wood. Eighty pounds of acetate of lime are obtained from the pyroligneous acid of each cord of wood. Nine hundred pounds of charcoal are the final yield.

Dr. Davidson has been working on the problem of simplifying the distilling of wood and coal by the process indicated above for over two years. The greater part of the work has been done in the Vancouver gas plant and the Tacoma gas works, and the facts discovered in these two plants were utilized last summer in a series of experimental runs lasting for about a month in the wood distillation plant belonging to the United States Forest Service and the University of Washington at Seattle. Mr. Davis, a senior student of that university, made the analysis of the products. Arrangements are now being made to test out the process in connection with the carbonizing of coal under conditions which give the volatile products as tar and light oils with a minimum of coal gas. It is expected that this will complete the experimental and demonstration work which is considered desirable.

"SENSIBLE FIRE PRECAUTIONS"

(*Manitoba Free Press Editorial, Feb. 22nd*, 1917.)

The terrible disaster last year in Northern Ontario, involving the loss of 264 lives and the destruction of 800,000 acres of forest by fire,

served to draw public attention to the general question of protection against forest fires. Life and property in the northern areas of this Province will be rendered less liable to danger from this cause if amendments to the Fire Prevention Act now before the Legislature become law.

It is proposed to render it obligatory upon every person setting a fire in the wooded districts of Manitoba, or within six miles of a forest reserve, to possess a permit for the act. These will be obtainable either from a special fire guardian to be appointed or from a Dominion forest ranger, who will have power to refuse it in a dangerous season. Fire guardians are also to be invested with authority to arrest without warrant any person violating the Act, the burden of proof being on the defendant.

The institution of the permit system is aimed principally at settler's fires. After land-clearing operations it has been a common practice to set fire to the brush, often with disastrous results to vast areas of timbered land, not unaccompanied by risk to human life. Apart even from the needless destruction of valuable natural resources, *the precautions asked by the Fire Commissioner will be generally commended. No hardship is inflicted upon the settler by placing him under the necessity to observe reasonable care in setting his fires.* He is, in fact, relieved from the possibility of unpleasant suspicion by increased supervision in this respect.

Paper For Warmth

Paper blankets, long a familiar stand-by of the hobo, have been reduced to a form acceptable to the sportsman. The gentlemen of leisure who first made practical use of the insulating qualities of paper to secure protection from the cold simply covered themselves with old newspapers. Such "blankets" were too inconvenient and too fragile to ap-

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peal to the truly strenuous. But now the market affords a "blanket" of tough rice paper, covered with muslin for its protection, which will stand an indefinite amount of rough handling. Used outside of woolen blankets, it is reported, a pair of paper blankets will give as much warmth as an extra pair of five-pound wool blankets, with not much than one tenth their weight in the pack. This would seem to be a step toward the realization of the woodsman's dream of "a blanket as warm on the bed at night as it was in the pack all day."

Now, I have struck a phase which you people understand—the forests. People living in Canada thousands of years from now will want wood and the products of wood just as badly as you do now. These resources are Canada's, and not yours, and during the period of trusteeship and occupancy the lesson is this—that no tree should be taken out of our forests where it was not provided that another tree was growing to take its place (hear; hear; and applause). Not one ton of pulp wood would be taken off the land of this country unless there was another ton coming to maturity to take its place in due time. It can all be done. Germany nearly every continental country in Europe has proved that. It can all be done and no intelligent man in the industry today can dispute that it can be done if forestry and forestry work is prosecuted under proper conditions and by proper conservation and preservation, using the things which are necessary for the present generation, but leaving it just as it was before."
—Sir George E. Foster at luncheon of Canadian Pulp and Paper Association Montreal.

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The following books are suggestions. They are worthy of our inspection. Send for copies to-day, and be prepared to meet the various daily problems

FOREST VALUATION

By Professor H. H. Chapman, Yale University.

A valuable book for those not already familiar with the economic and mathematical principles on which the theory of forest finance is based.

283 pages, 6 x 9. **Cloth, .2.00 net.**

ELEMENTS OF FORESTRY

By Professors F. F. Moon and Nelson C. Brown, N.Y. State College of Forestry at Syracuse.

Covers, in an elementary manner, the general subject of forestry.

392 pages. 6 x 9, illustrated. **Cloth, $2.00 net.**

LOGGING

By Professor Ralph C. Bryant, Yale University.

Covers the more important features of operation. Discusses at length the chief facilities and methods for the movement of timber from the stump to the manufacturing plant, especially logging railroads.

590 pages, 6 x 9, illustrated. **Cloth, $3.50 net.**

MECHANICAL PROPERTIES OF WOOD

By Professor Samuel Record, Yale University.

This volume includes a discussion of the factors affecting the mechanical properties and methods of timber testing.

165 pages. 6 x 9, illustrated. **Cloth, $1.75 net.**

THE PRINCIPLES OF HANDLING WOODLANDS

By Henry Solon Graves, The Forester, U.S. Department of Agriculture.

Contains chapters on The Selection System, The Coppice Systems, Improvement of the Forest.

325 pages, 5¼ x 8, illustrated. **Cloth, $1.50 net.**

THE THEORY AND PRACTICE OF WORKING PLANS (Forest Organization)

By Professor A. B. Recknagel, Cornell University.

In preparing this book the author has constantly kept in mind the experience which he gained while doing active work for the Forest Service in various parts of the United States.

235 pages, 6 x 9, illustrated. **Cloth, $2.00 net.**

CANADIAN FORESTRY JOURNAL,

119 Booth Building, Ottawa

Wooden Homes for Belgian Refugees

A proposal that combines relief measures at present with export trade possibilities for the future has been placed before the lumbermen of the Pacific Coast by Albert G. Von Hecke, professor of civil engineering at the University of Louvain, Belgium.

Belgian refugees to the number of 1,000,000 have migrated to Holland. The housing of this influx of settlers required considerable attention on the part of the people of Belgium. The construction of two, three and four room portable houses was undertaken. The material for these houses came from the Baltic. The price of this material prior to the war was $16 per thousand delivered in Holland, on a $2.50 per 1000 normal freight rate from the Baltic. This price has advanced considerably, due to the abnormally high charter rates.

Mr. Von Hecke is touring in the interest of the Belgian Relief Fund, and has suggested that the lumbermen of the Pacific Coast, including fir, pine and redwood manufacturers, contribute a cargo of lumber, say three million feet, of such material as would be suitable for building these temporary structures in Holland, which later, upon the restoration of Belgium, may be moved over the border into that country.

Excellent Advertisement

Mr. Von Hecke states that he believes an admirable opportunity now exists to advertise the merits of Pacific Coast woods in Holland, Belgium and France. The class of material required for these houses would be common grades, but Mr. Von Hecke believes that some of the higher grades of Douglas fir, pine and redwood should be included in the sample cargo with a view of demonstrating the qualities of both lower and upper grades of Pacific Coast lumber. He has suggested that this lumber be stenciled so as to identify its species and the source. The stenciling to be effective should be in Flemish, French and English.

Modern Houses Rare

In an interview Mr. Von Hecke stated that the people of Europe, with the exception of Norway and Switzerland, were not accustomed to the wooden house, the ordinary building material being brick and stone. It was a revelation to him to learn that wooden houses 100 years old are in good condition in some sections of to-day. This fact should be impressed very strongly upon the people of Europe, who look upon wood merely as a temporary building material.

Cost of Rebuilding

The New York Economic World has printed a most valuable compilation showing the approximate losses sustained by France and Belgium on account of the war. The figures are stupendous. The presentment is a most interesting one and will be studied with deep interest and appreciation by the lumber interests.

"In a report on 'World Trade Conditions After the European War,' submitted to the Fourth National Foreign Trade Convention, at Pittsburgh, Pa., January 25,27, 1917, estimates were included of the value of the property destroyed as a result of the war in Belgium and Northern France, and of the cost of what will be immediately required for replacement purposes upon the conclusion of peace. The sections of the report covering these matters are as follows:

"Several attempts have been made to estimate the financial loss caused by the war in Belgium and Northeastern France. These estimates were mostly made in the early part of the war.

"During February, 1915, the Cen-

tral Committee of the Agricultural Restoration of Belgium and North-eastern France in London estimated the total loss of agriculture in Belgium at $280,000,000, of which $150,000,000 was lost in crops and stock. The loss of France was estimated to be approximately the same.

TWO GOOD TURNS ASKED OF MEMBERS

First: Request your Public Library to become a member of the Canadian Forestry Association thereby placing on the library reading tables everything we issue.

Second: Clip out the following sentence and ask the manager of your favorite motion picture theatre to run it in on future programmes. He will likely do it gladly.

When you are in or near the forest this summer, never leave your camp fire until it is absolutely OUT. Never throw away lighted matches or tobacco or pipe ashes. These rules are followed by all veteran sportsmen and good citizens.

(From Pulp & Paper Magazine)

The salary of E. J. Zavitz, director of forestry for the province of Ontario, has been increased by the Provincial Government from twenty-six hundred to three thousand five hundred annually.

Homesteads or Farm Lands

Oregon & California Railroad Co. Grant Lands, title to same revested in United States by act of Congress dated June 9, 1916. Two million, three hundred thousand acres to be opened for homesteads and sale. Timber and agricultural lands, containing some of best lands left in United States. Now is the Opportune time. Large sectional map showing lands and description of soil, climate, rainfall, elevations, etc., postpaid one dollar.

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A Partial List of Contents of the March 1917, Issue of

Rod and Gun in Canada

Gentleman Jones
The Dwellers of Darkness
The Treacherous Snow; King of the Big Swamp
A Brother Sportsman
Gun Trap Set for Wolf
The Winter Camp
Matters Pertaining to Conservation
The Survival of The Fittest.

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NOTICES TO LOCATE RANGERS

By B. M. W.

Great strides are being made in the advancement of forest protection methods and standards. The move by the Ontario Government in the appointment of an expert to handle a reorganized protection service, the enactment of laws relative to settlers' fires and the burning of slash, the enforcement of regulations now on the statute books, and the success of the cooperative associations on the Lower Ottawa and the St. Maurice watersheds indicate the growth of appreciation of forest protection.

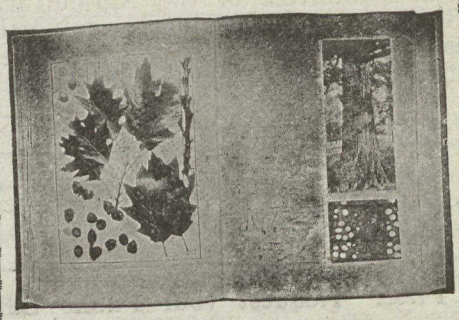
It is patent that if small fires were attacked when they were small there would be no big fires.

Rarely, if ever, is an organized attempt made to fight fire until the government ranger arrives. This may occur in 24 hours, possibly within a week. In the meantime the fire gets good headway and the expense necessary to extinguish it rolls up. The sooner the ranger is notified the sooner will he arrive.

Forest guards are not permanent, changes in the personnel of the staff are made from year to year. Usually it is very difficult to ascertain who the ranger is and where his headquarters are. The most needed improvement of the present is the placing of notices before the public showing name and location of ranger with a request to phone him in case of fire. The following notice printed in French and English and posted in Railway Stations, meeting halls, Post Offices and near churches and summer camps will justify the expense. No other printing should be on these notices.

New Forest Fire Laws

G. M. Homans, State Forester of California, is preparing a forest fire law which he will present to the incoming legislators. Strange as it may appear, California has practically no forest fire regulation in common with those of Oregon, Washington and Idaho.



HANDBOOK OF TREES OF THE NORTHERN STATES AND CANADA

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"The most valuable guide to the subjects ever written."—Springfield Republican.

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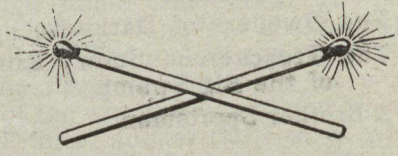

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TREES FOR C.P.R. STATIONS

An extension of the Floral Department of the Canadian Pacific Railway for 1917 includes the planting of trees and shrubs about the stations as well as a great variety of perennial plants. From this time on the gardens are to take permanent form. The Floral Committee is composed of Messrs. F. Curtis, Montreal, B.M. Winegar, Forester, Montreal, and R. D. Prettie, Superintendent of Forestry, Calgary. The company has had great success in its scheme of beautifying the grounds about station buildings, prizes being awarded for the best work. Not only has the added attractiveness been appreciated by the travelling public but the resident employees and their families have been benefitted. The development of the plan so as to include trees and shrubs is praiseworthy and ought to bring good results within a year or two under the new committee.

New and Interesting Publications

Sent Free of Charge to Any Member of the Association

"MON PREMIER LIVRE SUR LA FORET"

32 pages, 25 photographic illustrations. An attractive booklet for French-speaking senior boys and girls. This edition will be distributed in many of the schools of Quebec, in parts of Ontario, New Brunswick and Manitoba. (Printed in French only).

"THE WHITE PINE OF CANADA THREATENED WITH EXTERMINATION"

An eight-page pamphlet, well illustrated, by H. T. Gussow, Dominion Botanist giving the most thorough discussion of White Pine Blister disease yet published.

"YOUR ENEMY'S PHOTOGRAPH"

A six-page folder with graphic fire picture in four colors. Published in French and English. Text deals with fire prevention.

"WHO LOSES?"

A four page pamphlet, illustrated, containing Question and Answer on a score of points commonly raised regarding the forest resources of Manitoba, Saskatchewan and Alberta.

"FIRE!"

A racy eight-page pamphlet, with cover picture of an approaching conflagration in red and blue. Contents include a sketchy talk on forest protection, and complete directions on "How To Build A Camp Fire." This booklet of special interest to guides, campers, sportsmen, etc.

The Forestry Association is carefully distributing large editions of all of the above throughout Canada, through the channels of branch banks, railroads, forest services, the clergy, etc.

If you believe you can assist this distribution, the Secretary will be glad to hear from you.

Lumber, pulp, paper and other wood-using industries can secure whatever quantity desired for local distribution at the bare cost of printing.

By a recent ruling of the Association, our many 1917 special publications can be sent only to members who have paid their fees for the current year.

CANADIAN FORESTRY ASSOCIATION

119 BOOTH BUILDING, OTTAWA.

"Rapid Deterioration"; a Timely Warning

One of the important subjects engaging the attention of the Advisory Council for Scientific and Industrial Research, recently appointed by the Dominion Government is the preservation of the forests of Eastern Canada. "These, contrary to the opinion which prevails generally, are not inexhaustible," says an official announcement of the Council:

"They have already been seriously depleted and are rapidly deteriorating in character. In most of the leading countries of Europe the forests, whether owned by the Government or by private interests, have, by the application of modern scientific knowledge, been immensely improved in character, and instead of being plundered and then abandoned, have been converted into assets of enormous national value, and which year by year yield large revenues to the Government, or to their private owners, which are as regular and as continuous as those from any other gilt-edged investment, the forest all the time being maintained with its capital unimpaired.

"Different methods of forest management have been adopted in different parts of Europe to secure this splendid result. The Canadian forests present special problems of their own. The Council has recommended that certain investigations be at once carried out through the Forestry Branch of the Department of the Interior, to ascertain which of these methods can best be applied to the Canadian forests for the purpose of stopping the destruction which now threatens them, and making them a great and permanent source of wealth to the people of the Dominion.

"As has been mentioned, other important problems are now under consideration by the Council, but require further examination before the Council is in a position to take action with reference to them.

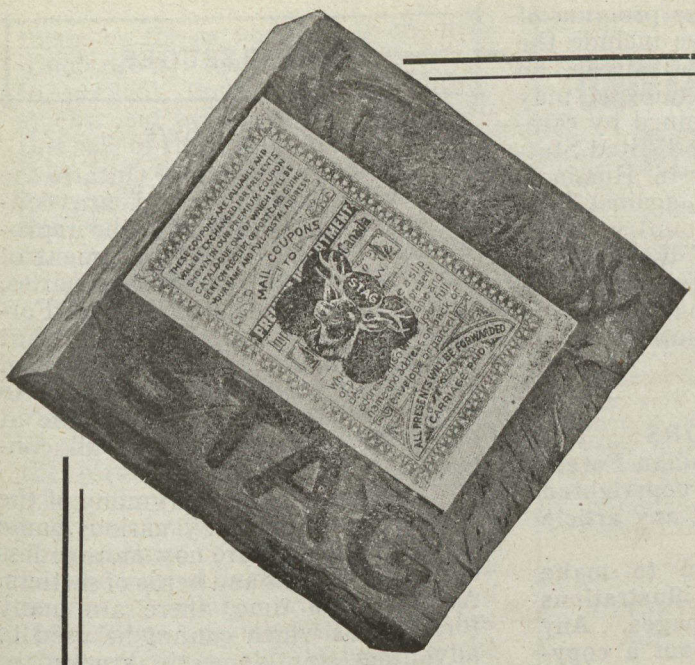
"This excellent work which will all help in giving to Canada the place which she should occupy in the industrial world, should receive the hearty support of the whole public of the Dominion."

Great Forest Development for Russia

The development of the timber business in Siberia and Eastern Russia is engaging the attention of the Russian people. In a recent article in The Economic World, of New York, Samuel McRoberts, vice-president of The National City Bank of New York, in referring to Russia timber supply, said:

"Russia's forests have hardly been touched, and comprise to-day the great timber reserve of Europe, the empire having practically all of the surplus timber available outside of Canada and the United States. She exported in 1913 some $84,000,000 worth of timber products.

"Europe must go to Russia for timber when the inevitable rebuilding program begins, and will afford Russia a wonderful opportunity to realize upon the latent wealth of her forests. This will require an enormous outlay of capital for the building of railroads, port facilities, steamships, sawmills, pulp mills, and all those things incidental to the manufacture and transportation of timber products. The development of Russia's railroads since the beginning of the war has been at a standstill; and even now they are inadequate in her most developed territory. The opening up of Turkestan and Siberia



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will require an enormous program of railroad building. If we include the undeveloped territory of Russia, an idea of what railway mileage may be required can be obtained by comparison with that of the United States. The total mileage in Russia is at present 47,000 miles, against 260,000 miles in this country. This means for Russia, on the basis of square miles, only 5 per cent, and on the basis of population, only 10 per cent of the railway mileage of the United States."

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Canadian Forestry Association,
Booth Bldg., Ottawa.

GAME REFUGES

By E. R. Kerr

When the sportsmen of Ontario are sufficiently organized and are considering the question of game reproduction through the establishment of game refuges, or game sanctuaries, upon a number of the National Forests, they must clearly realize that others also are interested in the use of these forest areas, and they desire to proceed along lines which will be at once just and equitable to all concerned.

It is well known that many of the areas once occupied by various game animals and birds are now more or less used by the flocks and herds of settlers. At the same time, there are many forest areas which cannot be used to advantage for domestic stocks, or which from their very nature will support a number of wild game in addition to domestic stock without injury to either.

It will be the policy in establishing such refuges, or sanctuaries, to locate

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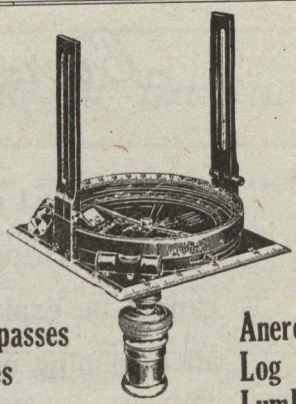

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them, as far as possible, upon areas which are so rough or inaccessible as to prevent their use by domestic stocks, and before one is established, this side of the question must be carefully looked into. These areas, however, will be comparatively few, and the restrictions upon grazing which may be necessary will not be a burden on the nearby farmers or settlers.

Many sportsmen to-day feel certain that every farmer, stockman and settler is interested in the preservation of game birds and animals in his vicinity, and the only practical method of preservation seems to be through the establishment of sanctuaries in which they may breed and multiply and eventually spread out over the surrounding country. There they may be hunted during the open season and in accordance with the laws of the various provinces in which they are located, thus furnishing to the local settlers a fairly stable supply of winter meat. It is, of course, unreasonable to expect that such game as deer, moose and caribou can subsist upon barren rocks and mountain scenery. They must have forage upon which to exist, the same as all other animals of their class. At the same time it is well understood that such animals as these can and do sub-

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sist upon many species of plants and grasses which are not palatable to domestic animals, and also that they will penetrate into regions so rough and so distant from water that domestic stock will not use them.

ENGINEERS COMMEND CONSERVATION

In the report of the Conservation Committee of the Canadian Society of Civil Engineers, presented at the annual meeting held in Montreal on January 23rd to 25th, reference was made to the conclusion of a treaty whereby Canada and the United States will cooperate in the protection of migratory bird life which would prove of inestimable service to agriculture and forest production, the two chief branches of Canadian primary industry. The material importance of this measure and the utility of the insectivorous bird life which it is designed to protect might be judged from the statement based on reliable authority that the annual loss in the United States from the depredations of insects amounts to $800,000,000.

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YALE University Forest School is a graduate department of Yale University. It is the oldest existing forest school in the United States and exceeds any other in the number of its alumni. A general two-year course leading to the degree of Master of Forestry is offered to graduates of universities, colleges and scientific institutions of high standing, and, under exceptional conditions, to men who have had three years of collegiate training including certain prescribed subjects. Men who are not candidates for the degree may enter the school as special students, for work in any of the subjects offered in the regular course, by submitting evidence that will warrant their taking the work to their own advantage and that of the School. Those who have completed a general course in forestry are admitted for research and advanced work in Dendrology, Silviculture, Forest Management, Forest Technology and Lumbering. The regular two-year course begins the first week in July at the School camp, Milford, Pennsylvania.

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No Politics in B. C. Forest Service!

The lumbermen of British Columbia took an important step recently when they appointed a deputation of their members to wait upon Premier Brewster at Victoria and urge that the Forest Service of the province be so administered in future that politics shall play no part in it.

The deputation was composed of Mr. C. D. McNab, president of the Mountain Lumbermen's Association; Messrs. H. R. MacMillan, Hugh Davidson and R. H. H. Alexander, of the Coast Lumber & Shingle Association; and Messrs. Mark Rector and W. B. W. Armstrong of the B. C. Loggers' Association. In order that the Forest Service might be taken entirely out of politics these gentlemen suggested to the Premier that all appointments be placed in the hands of a Commission composed of five members—two representatives of the Mountain lumber interests, two named by the Coast lumbermen, and the Minister of Lands. Premier Brewster said that when taking office his government had determined to make efficiency their guiding principle when making appointments, and believed the objects aimed at by the lumbermen would be fully safeguarded in this way, but he was prepared to promise very careful consideration of the commission plan on the part of himself and colleagues, their earnest aim being to handle the forest resources of the province in a way that would yield the highest possible revenue while conserving the supply of timber and guarding the future growth.

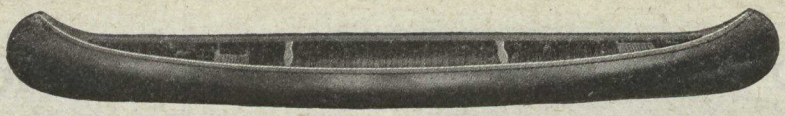
The Victoria Colonist, in referring to the request made by the lumbermen, backs up the need of technically trained men for the Forest Service in the following words:

"Ever since the former Chief Forester, Mr. H. R. MacMillan, inaugurated the Forest Branch of the Department of Lands, it has been the aim to have a professional service, that is, a service composed of men who have undergone training in the technical side of the business. This practice is now being followed everywhere that governments have control of forest wealth. British Columbia took the lead in Canada in that respect and only recently Ontario, profiting by the drastic experience it has had in the tremendous waste of timber wealth in northern Ontario through disastrous forest fires, has adopted the most of British Colubmia's forest protection methods. The fact, too, that the provincial branch has been co-operating in many material ways with the federal authorities in forest protection and that this joint work has done great good in reducing the timber loss from fires to a minimum is indicative of the necessity that in the future the efficiency of the service should be maintained at the very highest point. The present Chief Forester, Mr. M. A. Grainger, is also a strong advocate of a technically trained service, and while, since the war began, the service has lost through enlistments some of its best field men, it is his desire to keep the service up to the previous standard."

Douglas Fir on British Railways.

As evidence of the remarkable strength of Douglas fir, an official of one of the great British railways in a letter to an official of the British Columbia forestry department, stated that out of 616 railway ties of Douglas fir laid down more than 16 years ago, on a main line over which traffic of fifteen million tons per annum passed, only 23 had been renewed, the remainder being still in good condition.

British Columbia possesses an inexhaustible supply of this magnificent timber observes the Vancouver Sun, and undoubtedly it will compete successfully with other timber in the markets for building timber which will be opened in Europe when the war ends. Present indications are that Douglas fir will be a source of immense wealth to this province at the close of the war.



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