

PAGES

MISSING

ILLUSTRATED

20c. a Copy

CANADIAN FORESTRY

13,000
NATIONAL
CIRCULATION

MAGAZINE

Vol. XVIII

OTTAWA, CANADA, OCTOBER, 1922

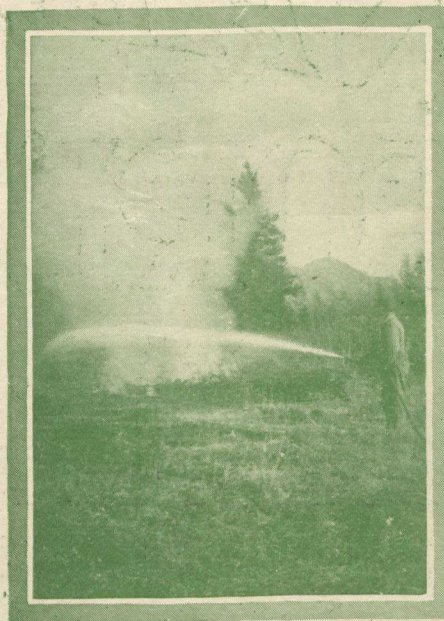
No. 10



Jasper Park Lodge, Jasper, Alberta

See Feature Story "Jack Miner, Philosopher and Bird-Lover"

FIRE FIGHTING PUMPS



A MONG the many appliances for fighting forest fires, **FAIRBANKS-MORSE FIRE PUMPS** have proved to be the most effective.

Operating anywhere within reach of a lake or stream they provide a means whereby one or two men can put out the fires when they start.

Weighing only 120 lbs., they can easily be transported by boat, canoe, aeroplane, and can be carried over the trail by two men.

THE CANADIAN FAIRBANKS-MORSE COMPANY, LIMITED

St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, Windsor, Winnipeg
Regina, Saskatoon, Calgary, Vancouver, Victoria



The Man Who Really Cares

about the way your Ford performs is the Ford dealer. His eggs are in the Ford basket.

He knows how a Ford is built and he repairs as Ford builds, sensibly, efficiently, honestly.

He refuses to put into a good Ford car a part that is **not a Genuine Ford Part**. To him a Ford with a spurious part is a steel chain with a lead link---worse, for the spurious part he knows may cause damage to other parts of the car.

Don't let anyone tinker with your Ford. See the Ford dealer.

DEMAND GENUINE FORD PARTS

FORD MOTOR COMPANY OF CANADA LIMITED

\$ 495

CHASSIS - - -	\$395
RUNABOUT - -	455
TRUCK CHASSIS	545
Starting and electric lighting on above models \$85 extra	
COUPE - - -	780
SEDAN - - -	870

Closed models are fully equipped.
Above prices F.O.B. Ford, Ont
Government Sales Tax Extra.



Real Cream Sauce over that Trout!

THE chef, who thinks more of cooking than does anyone else, prides himself on his cream sauces for fish dishes. And for years this best of sauces has been denied the camper. Now, with



THE NEW
KLIM
WHOLE MILK—POWDERED

it is possible for any fisherman or hunter to carry a supply of fresh full-cream milk in his kit.

KLIM in the brown and yellow tin must be part of the food supply on your next trip. It can be used wherever milk is called for in any recipe. That is because it is just good, pure milk minus the water.

If your dealer cannot supply you, write direct for prices and literature.

CANADIAN MILK PRODUCTS LIMITED

10-12 St. Patrick Street, Toronto, Ont.

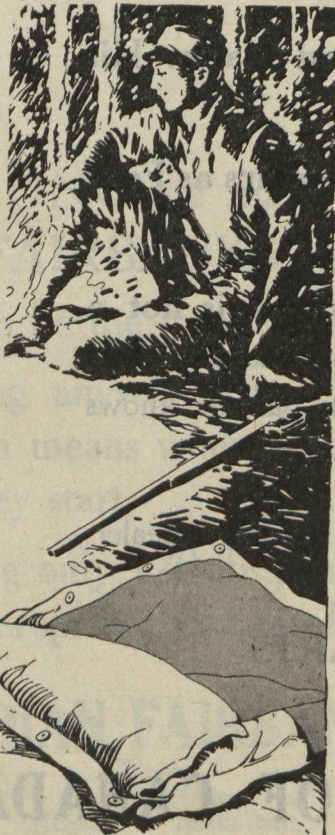
319 Craig St. W.
Montreal, Que.

428 Main Street
Winnipeg, Man

British Columbia Distributors:
Kirkland & Rose, 130 Water St., Vancouver

Eiderdown Sleeping Robes

SEND for latest literature--now off the press--containing full description of robe and reprints of unsolicited testimonials from leading men you know.



WOODS
Manufacturing Co.
Limited
OTTAWA, ONT.



Lumbermen, Fishermen and Campers will find in BETTY BRAND Condensed Milk a quality unexcelled.

It is not made from separated milk, but from full cream milk thus containing the whole of the original fat.

It is guaranteed to be absolutely pure. It is put up in convenient form. It will keep for a considerable time after opening.

Have you tried it?

Betty Brand Condensed Milk

is prepared under Government Inspection At the Condensery of

THE LAING PRODUCE & STORAGE CO., LIMITED

BROCKVILLE, ONTARIO.



THE ILLUSTRATED CANADIAN FORESTRY MAGAZINE



A Monthly Publication, National in Scope and Circulation, Devoted to the Conservation and Development of Canada's Forest Resources

VOL. XVIII

OTTAWA, CANADA, OCTOBER, 1922

No. 10

Editorial and Business Offices
SUITE 224 JACKSON BUILDING, OTTAWA, CANADA.

Montreal Office: 274 Union Ave.—Ontario Representative: Joseph McGoey, 18 Toronto St., Toronto, Ont.

Entered as second class matter in Post Office Department, Canada.

TABLE OF CONTENTS

	Page		Page
Jack Miner, Philosopher and Bird Lover (Illustrated) by Norman S. Rankin.....	1061	Canadian Forestry Association Exhibits Car (Illustrations).....	1082-3
Improving Protection of Ontario's Forests (Illustrated) by A. Victor Gilbert.....	1065	Editorial.....	1084-5
How Woodcraft is Taught to Boy Scouts (Illustrated) by C. W. Thompson.....	1066	Public Opinion—The Lumberman's Senior Partner (Illustrated) by Robson Black.....	1086
Shelter Belts on Prairie Farms (Illustrated) by Dr. J. G. Rutherford.....	1068	AERONAUTICAL SECTION	
Questions and Answers for Prairie Tree Planters (Illustrated).....	1071	Major MacLaurin, D.S.C. An Appreciation.....	1092
Communal Forests for Canadian Towns (Illustrated) by Clyde Leavitt.....	1072	Radio and Aviation—The Forester's Allies.....	1095
New Brunswick Forest Losses Low (Illustrated).....	1074	Eleven Hundred Miles in a Survey Seaplane (Illustrated) by A. M. Narraway.....	1096
How to Plant Trees in Fall (Illustrated) by B. R. Morton.....	1076	Forest Research in Eastern Canada by T. W. Dwight.....	1098
The Railways and Forest Fires (Illustrated) by Clyde Leavitt.....	1078	Prize Essay in Barnjum Contest by P. Swanson.....	1100
A Plan to Improve Ontario's Forests (Illustrated) by Dr. Judson Clarke.....	1080	Les Forêts du Portugal Par Noël Le Bressant.....	1102
		The Thrift of Grandfather's Day.....	1105

INDEX TO ADVERTISERS

(Alphabetically arranged)

Betty Brand Milk.....	1058	Instruments Ltd.	1091
Bovril.....	1101	Klim.....	1058
Business and Professional Directory.....	1106	Laurentide Air Service.....	1093
Canadian Explosives Limited.....	1110	Linn Logging Tractor (Mussen's Ltd).....	1060
The Canadian Fairbanks-Morse Co., Ltd.....	Inside Front Cover	Lord & Burnham.....	1103
Canadian Fire Hose Co., Ltd.....	1110	The Marconi Wireless Tel. Co. of Canada, Ltd.....	1095
Canadian National Railways.....	Inside Back Cover	Kenneth McDonald & Sons, Ltd.....	1105
Canadian Pacific Railway.....	1104	Lewis, Apedalle and Hanson, Inc.....	1090
Can. Woodlands and Pulpwood Agency Reg'd.....	1104	Montreal Boat Builders, Limited.....	1089
The Crabtree Co., Ltd.....	1111	H. R. McMillan Export Co.....	1110
Dayton-Wright Co.....	1094	Province of Ontario.....	1108
The E. B. Eddy Co.....	1091	Pulp & Paper Companies.....	1107
Ford Motor Co. of Canada, Ltd.....	1057	Royal Bank of Canada.....	1088
Grand Trunk Railway System.....	1104	Sampson Office Service.....	1102
Grant-Holden-Graham, Ltd.....	1101	Vickers, Limited.....	1097
Gray Rocks Inn, St. Jovite, P.Q.....	1111	Waterous Engine Works Co.....	Outside Back Cover
Greenshields & Co.....	1088	Windsor Hotel, Montreal.....	1111
Hardinge Bros. of Canada, Ltd.....	1090	Woods Manufacturing Co., Ltd.....	1058
Imperial Tobacco Co. of Canada.....	1099		

THE LINN LOGGING TRACTOR

Designed and Developed for Winter Hauling, in the North Woods



Linn Tractor Hauling 62½ Cords of Mixed Spruce and Hemlock

The Canadian Lumberman of today is finding increasing difficult woods problems confronting him. His Hauls are each season becoming longer, and the efficiency of the horse, as a haulage factor, is in the same ratio, decreasing. The stream drive is expensive and troublesome.

Therefore—Reliable, Economical Mechanical haulage must be utilized. The only medium that will fulfill all the requirements of the Canadian Logger is the Linn Logging Tractor—designed and developed during the past eight years—exclusively for log hauling in the North Country.

During the past season, we had a very comprehensive motion picture taken—showing Linn Logging Tractors in operation over various limits.—If you have not already seen this film, we will gladly arrange to show it to you, in your own office.—It is a revelation of logging methods—and not a set and arranged picture.—It was taken over different operations, under ordinary working conditions.

We also have a very comprehensive catalogue about to come from the printers. Your request for a copy will be immediately honored.

—Logging Department—

MUSSENS LIMITED

DUBRULE BUILDING

PHILIPS PLACE

MONTREAL

Jack Miner, Philosopher and Bird-Lover

By Norman S. Rankin

**"He prayeth best who loveth best
All things both great and small."**

GEESE are the most wonderful intelligent creatures in the world", said Jack Miner, "an' the man who said 'Silly as an old goose' didn't know what he was talkin' about. Year after year they come back to this old farm, pickin' out my old ponds an' bringin' new families with 'em. I figgers they just went back an' told the others about it and that they'd be perfectly safe, warmly welcomed an' well fed at my place—they know Jack now an' Jack knows them too, and loves 'em."

So spake old Jack Miner—old in experience and philosophy only—to a group of some thirty visitors, who, from Montreal, Ottawa, Toronto and intermediate points, had come up to visit his bird sanctuary near Kingsville, Essex County, Ontario, and to help him celebrate his fifty-seventh birthday. We stood in the sunroom of his newly finished house—a beautiful and artistic one—looking over the big pond which

or snare, in absolute protection and security of feed, carefully tended and nourished by their friend, Jack Miner, they rest and recuperate for a month or six weeks, preparatory to winging their way on the last leg of their long migration. Ten acres on the farm has been set aside as the sanctuary and though the balance of the property is given over to farming

The robins had not yet made their appearance but in the toy-like bird houses and along the hedges, other tiny feathered creatures, twittered and hopped and preened themselves expressing in every movement, their fervent joy in the coming of spring.

"What work", said some one, gazing out at the myriad rows of spruce and pine and cedar, "What work!"

"Work", replied our host, warmly, "work. It was no work. I've done no work. Work consists in doin' somethin' you don't want to do—an' yet, I'm always busy—as busy as a cow's tail in fly-time. To do the things you want to do, fellas, to put infinite patience, keen enthusiasm and unflaggin' perseverance into it—that's not work fellas, that's the joy of livin'—the very joy of livin', and thank God, the Almighty give me strong arms and good health to do it".

"I've done no work. Work consists in doing something you don't want to do—an' yet I'm always busy—as busy as a cow's tail in fly-time".

"Did you ever notice, fellas, that when you begin to work for others an' things go right, you get all kinds of encouragement and help? You

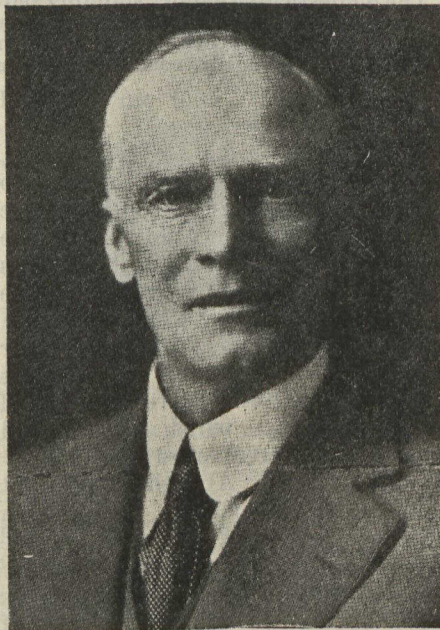
"Yes, and infinite kindness, too," added some one, and that some one was right.

Jack Miner made a picturesque figure in his brown corduroys and long gum boots, as he stood there talking to us. Fifty-seven years young, tall and robust, with a face tanned by the sun to the color of an old saddle or a sorrel horse, and muscles hardened by constant out door work and exercise, he was the very epitome of rugged health and strength. Blue eyes twinkled at you under gray over-hanging brows and a kindly smile betokened his entire harmony

Some "Jack Miner"-isms

"Geese are the most wonderful intelligent creatures in the world, an' the man who said 'silly as an old goose' did'nt know what he was talking about."

"'Genius', people says to me, 't was genius done it'. Nothin' of th'e kind. I got no genius; I got nothin' to boast of. Back of Jack Miner's been the powerful hand of the Unseen—that's what done it."



JACK MINER

find everybody working for you and with you."

and the manufacture of brick and tile, within the designated area, on artificial ponds and mudbanks and shrubbery, wild life reigns supreme.

Providence had blessed us with a perfect day—clear, bright and balmy. A warm spring sun shone from a cloudless sky while a gentle breeze ruffled the surface of the ponds and stirred the branches of the miniature forests which like encircling arms, completely surrounded the sanctuary.

literally teemed with wild geese. Here, in countless hundreds, year after year, with the first buds of early spring, the wild geese in great and small flocks, muster from the winter feeding grounds in the sunny south for their annual northwards flight to the shores of James and Hudson Bay, there to feed and breed in the rich marshes of the eastern coasts. Here, without fear of molestation or sudden death by trap or gun

with all nature. From every pore he radiated goodwill, enthusiasm and strength of character. Could I properly picture him as I saw him and felt him, you would better understand the characterization of him as Nature's Gentleman, Philosopher, Animal-Lover and Modern Evangelist. For that's what he is—that's what he is.

Jack Miner's life story is well worth repeating to the world. If ever a man was in perfect accord with the universe, possessed of absolute happiness in his surroundings and friends; if ever he got and gave the greatest good and happiness out of it, that man is Jack Miner—friend of man and bird and beast.

When he was four years of age, he moved with his father—an Englishman—and mother and nine brothers and sisters, from the old Buck-Eye state into the wooded wilderness some twenty-five miles south of the (then) village of Windsor.

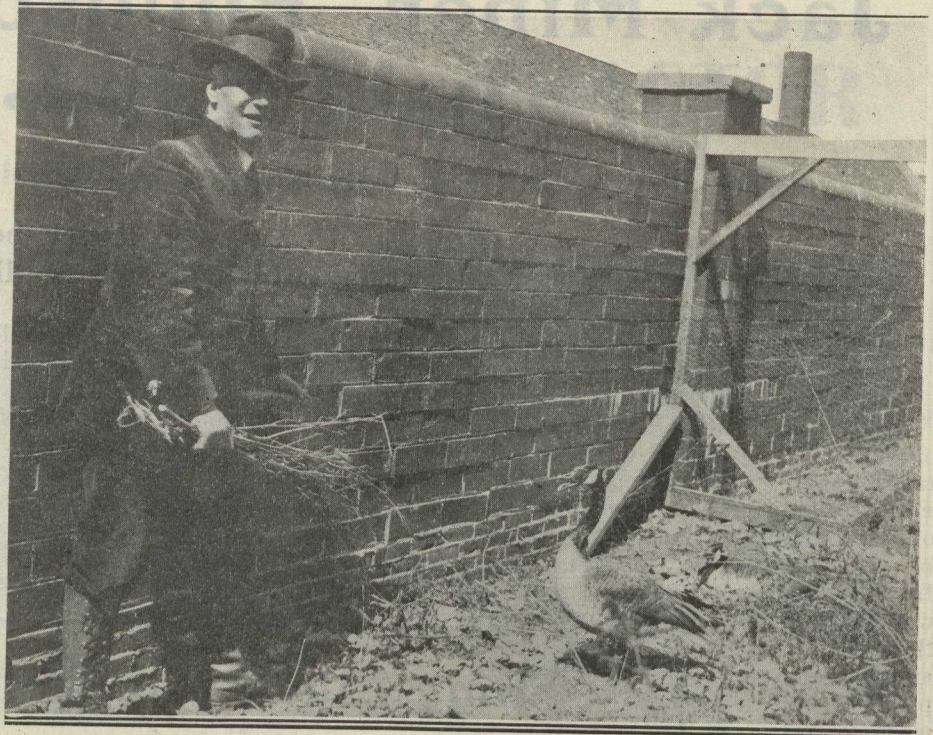
"We carved our home out of the heart of the forests", he picturesquely told us, "Dad built a small hut out of rough-sawn logs. When I lay in bed of nights, I could see the stars an' the moon peepin' in at me through the chinks an' feel the rain on my face in wet weather. They were twelve inch planks an' every year for thirteen years, they shrank an inch. Bit by bit, we wrested a livin' from th' soil an' outgrew poverty. Mother'd brought some shrubs an' bushes and soon the roses bloomed, an' look, boys, look what we got now."

I picture now, as I did at the moment, the broad, cultivated acres, the well-kept buildings, fences and out-houses, the miniature protection forests and hedges, the smooth, open lawns, the attractive gardens and shimmering artificial ponds. I see the hundreds of wild geese lazily swimming on the surface or, tail up, digging the muddy bottoms in search of delectable feed; I repeated to myself, "see what we got now, boys, see what we got now."

"As a bare-footed boy," he continued, "I hunted an' trapped an' shot, as my father did before me, roamin' the country round for miles till I knew every tree, every ditch an' pond, every trail, every stream.

"Schoolin'! We didn't have none—we didn't bother about it; till I was nearly thirty-three, I couldn't read nor write. But I learned Nature's secrets, the ways an' habits of the wild things in the forest an' the open—to talk with the rabbits an' the squirrels an' the foxes an' the wild ducks an' the robins, and I figger,

On Jack Miner's Bird Sanctuary, Kingsville, Ont:



The domesticated gander standing sentinel over the "setting" goose. The gander is on duty twenty-four hours a day and in defence of his "Missus" will fight anything from his own kind to an elephant. In this particular case he is keeping Jack Miner himself at bay.

fellas, Nature's school ain't so bad after all.

"About that time, the wild geese, in small numbers, began to come to us. Dad had discovered in the course of his farmin' operations, that the clay made tiles; the tiles in heaps made holes in the ground an' the holes filled with water an' made pools. Then the geese, wingin' their way northwards, rested on the pools an' right then and there we formed an acquaintance which has ripened into mutual confidence an' understandin'. The Almighty brought about that partnership in his own good way an' time. 'Genius', people says to me; 't was genius done it.' Nothin' of the kind. I got no genius; I got nothin' to boast of. Back of Jack Miner's been the powerful hand of the Unseen—that's what done it.

"I was out one mornin' early to shoot the geese an' lay for hours under an old blanket to get a shot. About daylight, along come two laborers to dig a ditch. I knew the geese were there for I heard 'em honk, but they took no notice of these men. I figger they knew they were attendin' to their own business an' wouldn't harm 'em nohow.

"I got my lesson then an' I've been studying it ever since. I made up my mind I'd shoot no more; that I'd be friends with 'em, welcome 'em an' help 'em on their way.

"So our fish pond grew. I dug it

out of the garden beside the house; I put drains down six feet to bring the water in from nearby springs; it would flow in warm and fresh an' the birds seemed to like it. Then I strewed corn all about the pond and on the shallow bottoms, I put cobs. I started in 1904 with seven geese an' next spring they come back with eleven. Each year they come in increasing numbers. Possibly there's three thousand out there now. I figger them birds is almost human—went back and told their friends about old Jack's duck pond an' that it was a safe and sure an' agreeable place to spend Easter in. P'raps they read an' told 'em of my Stay Back signs. That's why I put more of 'em over my land—and he pointed to one of many such notices scattered over the property. I jotted down the wording. It says:

STAY BACK

This is Private Property and These Geese are WILD. You have no Right to Scare them all Away so the Other Fellow can't see them.

Your friend,

JACK MINER.

"God gave man dominion over all the earth," he went on, "over everything that swims in the sea, walks on the land and flies in the air, an' if all men were kind to all animals, there'd be fewer wild ones. I notice the

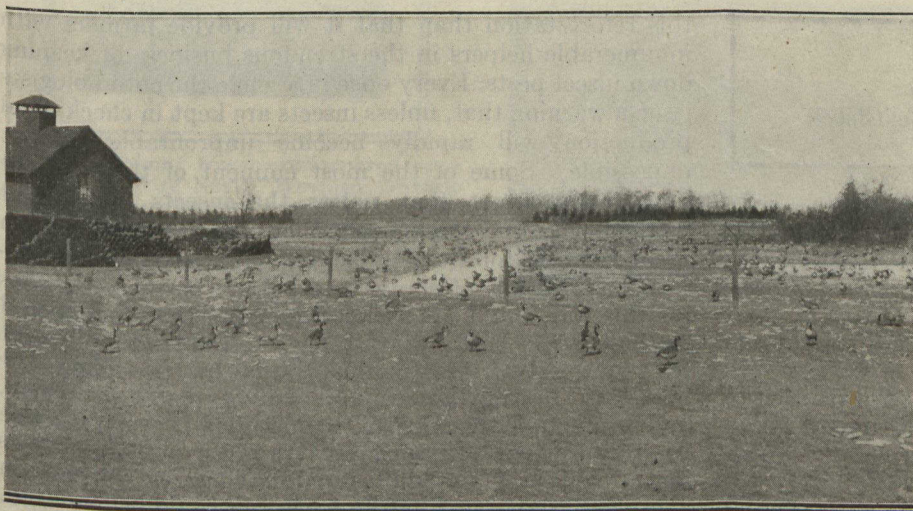
great increase since the Migratory Bird Treaty went into force in 1918—that was a fine thing. When you kill one bird you're depletin' bird life; you're takin' a mate away from some other bird an' wipin' out an unborn family, an' when Canada and the United States got together an' framed up that bird act, they did the very finest kind of thing possible to save wild life. More power to 'em I say, more power to 'em.

"Then my neighbors helped me—eighty-five per cent, of 'em—by petitionin' the government to make my place a bird sanctuary to the extent of two miles on either side, an' the township offered a reward of twenty-five dollars for information which would lead to the arrest of any man who shot a wild goose. Did you ever notice, fellas, that when you begin to work for others an' things go right, you get all kinds of encouragement an' help. You find everybody workin' for you and with you.

"The Ontario Government made me an annual feeding grant of \$400 an' the Dominion a similar grant of \$300. Last year I fed 2,000 bushels of corn on the cob to my friends—an' say, boys, they just fattened an' thrived on it.

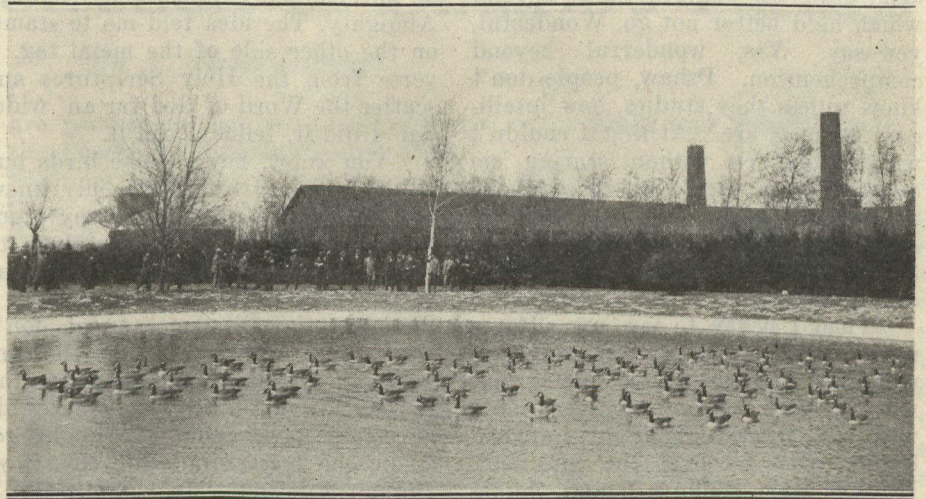
"Intelligent, did you ask? Intelligent? Yes, almost human. They know when to come and when to go, when to feed an' when to starve—for starve they do for a day or so before they light out for home. This an' the continued honking tells me when they're ready to move. They line up in families—mostly six to nine—in military squads or platoons, honk awhile, beat the water with their wings to raise themselves, run along the top paddlin' with their feet an' are gone, an' then the next family

On Jack Miner's Bird Sanctuary, Kingsville, Ont.



The "Old Orchard Beach" of the wild geese and ducks. Here "Nature reigns supreme" and even man is without vileness.

On Jack Miner's Bird Sanctuary, Kingsville, Ont.



No fear of molestation or sudden death here, semi-tame and approachable, the geese permit themselves to be photographed and visited by a number of Jack Miner's friends.



JACK MINER LOOKS ALOFT
Searching the skies for more feathered guests winging their ways to his far-famed Sanctuary.

and the next one. Up in the sky they form up in a V with an old gander leadin' 'em an' after circling round for awhile to take their bearin's an' sense the breeze an' sort of say good-bye, away they head for the north, with the leader repeatin' his cheerin' honk. An' he's true to his life-mate. If he's made a widower, he never mates again. Say, fellas, I wish I was as intelligent as those geese. Did you ever see an old mother goose settin' on her eggs with the gander on guard over the nest. He's on duty for twenty-four hours a day an' he'll fight anythin' from a field-mouse to a horse in defense of his own.

"An' that brings up the wonderfulness of nature or the human intelligence of the goose. That old settin' goose I showed you this morning lays her eggs an' hatches 'em, a month earlier than the wild geese. Mind you, she was originally wild but arrived here with a broken wing so that I clipped 'em an' her mate's too. They been here some years now—they had to stay.

"Wild geese breed only in the cold climate of the north an' as this old lady wanted to do her duty, she just naturally shifted her breeding time one month ahead so that her eggs would be hatched out in fairly cool weather. Can you beat that, boys, can you beat it? They come back here regular, not only to the same church but to the same pew.

"After the geese first began to visit here an' before the Government made it a sanctuary, my neighbor on the left use'd to shoot at 'em as they flew over his place. I put up a line of white flags between my farm an' his an' old Mr. Goose sensed right away what they were for. He'd stop short

at the flags for he knew they were the dead line, the danger limit, beyond which he'd better not go. Wonderful, you say. Yes, wonderful beyond comprehension. Pshaw, people don't know unless they studies, how intelligent animals are. At first I couldn't walk among 'em without scaring 'em away, though they'd circle overhead an' come back, but now, anybody can go among 'em on this place; they know there's no danger; they know they're safe.

"Then I began to tag 'em. Put a metal label on their foot with my name an' address on one side so that whoever shot 'em or found 'em could write an' tell me about it. I've had letters from all over the continent, Hudson Bay, Baffin's Island, James Bay an' practically every State in the Union. Last time I tagged 109. Fifty-seven flew back to stay with me again this year — I figger they liked the boarding-house — forty were shot up in Hudson Bay, one at Baffin's Land an' the other eleven are likely out there in the pond today. Ninety-nine per cent. of the geese are what are known as 'Canada Geese'; the others Blue Snows, Brants an' Hitchins. I figger most of 'em will keep on comin' back after Jack has passed away, for th' average goose will live, at least, fifty years.

"As far as ducks are concerned, I tagged 422 an' of these, 163 came back. The ducks come mostly in the fall. While some come in the spring, it's generally at night time; in the day they're driven away by the geese. Labels have come in from many points but mostly from Western Canada, Alberta, Saskatchewan an' Manitoba, an' say, fellas," he continued, opening his broad arms, "one day I was

settin' out on a stump thinkin' when an idea suddenly came to me from the Almighty. The idea told me to stamp on the other side of the metal tag, a verse from the Holy Scriptures an' scatter the Word of God far an' wide. An' I did it, fellas, I did it.

"You know, boys, I like birds but I like boys better. If we only knew how to handle 'em. That's why I got this ball park out here for them to play on. Some times we have dozens of 'em of a Saturday or holiday. I don't go to ball games an' I don't want them to go. I dislike the language of the city games. I figger the umpire knows all about where his ancestors have gone or should go, 'thout the spectators tellin' 'im. Boys and birds brought up right is God's best creatures. Look after the boys, fellas, look after the boys.

"I'm goin' to give up active work on the farm an' the tile an' brick business. I'm goin' to hand it over to my boys; one of 'em's away on his weddin' trip right now. I want to keep 'em at home, independent an' happy. When I was a lad, the other boys use' to come along an' tempt me off the farm. 'What do you want to stay there for, Jack,' they'd say, 'when you can make eight dollars a month workin' for somebody else. Come on with us.' But I'd a good home an' a good mother an' just naturally stayed, an' later on, praise God, I got a good wife. Never a man so good, fellas, but a good girl 'll make him better.

"There isn't money enough in the world to induce me to sell my home. I helped carve it out of the wilderness with my own hands, put patience an' love into the plantin' of each tree an' shrub an' the buildin' of each

shed an' house an' fence an' pond. Boys, I love my home. I'm goin' to set aside a hundred acres for the birds an' give all my time to 'em, an' as for money, well, I figger as the bankers have carried me all my life, when the Almighty thinks it's time to call me Home, I'll ask 'em to be my pall-bearers an' carry me to the end. But I'm goin' to live for a hundred years — or die in the attempt."

...o...o...

It was a great day that visit to Jack Miner's, and I think we all left there feeling better in mind and body for contact with such a man. We were uplifted, exhilarated—fired with his spirit and enthusiasm. And, so they tell me, it is with all who meet him—they want to see him and talk with him again. Simple, self-sacrificing, religious, honest, straight-forward and sympathetic — practising what he preaches — he is setting an example in that community which is spreading far and wide.

"Make a better mouse-trap than other men and the world will beat a track to your door," applies truly in this case. The track that is being worn to Jack Miner's is getting broad and smooth. His fame is spreading to the four corners of the continent, and invitations to lecture in this and that place are coming from many points. And he's welcoming them and accepting them. If ever he comes to your town or city, don't fail to hear him for if you do, you'll have missed a rare pleasure.

It's a great work you're doing, Jack Miner, a great work. More power to you, more power. May your shadow never grow less.

Sanctuaries

By Peter McArthur, in the "Toronto Globe"

A WOODLOT that is sufficiently protected to serve as a bird sanctuary is a beauty spot where wild flowers and wild fruits will flourish. Moreover it would be growing valuable timber for future generations, and during the war we found our supplies of fuel of great importance. Strikes and industrial wars may make them even more valuable in the future. Even in western Ontario there is much land that would be better if planted to trees than going on as weedy pasture. One might go on to a great length showing why what is left of our woodlots should be preserved, and, where the cattle have been allowed to run in them, why they should be fenced in and replanted with young trees to give them a proper start. But I do not think any better argument can be found for

this reforestation than that it will provide farmers with innumerable helpers in the strenuous business of keeping down insect pests. Every once in a while the entomologists issue a warning that, unless insects are kept in check, food production will rapidly become unprofitable, if not impossible. Some of the most eminent of them do not hesitate to assert that unless the insects are fought methodically and strenuously they will render the earth uninhabitable for human beings. We have already developed all kinds of sprays and poisons as the munitions for this war, but I am inclined to think that the natural method is the best. Start a back-to-the-land movement for our native insectivorous birds by providing the necessary nesting places and hiding places for them, and protecting them from enemies. If it were possible to start the opposite of a sanctuary for house sparrows and cowbirds I wouldn't mind having one blazing in every township, but I hardly see how it could be managed. How would it do to start to work with a slogan: "Bird sanctuaries instead of bug sanctuaries."?

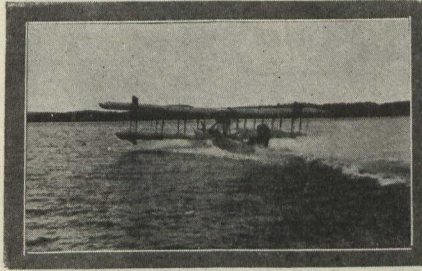
Improving Protection of Ontario's Forests

By A. Victor Gilbert

IN past years one was accustomed to hear much criticism of forest protection methods in Ontario. Such criticism was often voiced in forestry and lumbermen's conventions but perhaps more openly expressed in private views of foresters. Constructive criticism has its value since it is usually fruitful in bringing improvements but when the latter are manifested commendation should not be withheld, especially in our forestry literature. Modernized methods of forest protection now prevail in parts of Ontario and will, no doubt, be extended as rapidly as conditions permit over all the timbered districts of the province, since the administration at Toronto seems aggressive in pursuing a policy that is proving successful.

The writer on a recent visit to Algonquin Park, which lies in the

are proving to be. The planes for the Pembroke district operate from Whitney, just east of the Park, and those for the Parry Sound district from Parry Sound. The cost of air patrol is often raised as an objection to it but this objection probably belongs with all the others that have

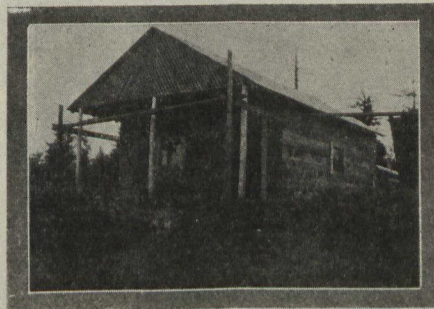


A flying boat used by the Ontario Forest Service in fire patrol

been advanced against forest protection, and which arise from the very blind viewpoint that would allow millions of dollars worth of timber to burn up rather than spend reasonable amounts to save such loss.

Lookout Towers

During the past season numerous lookout towers have been constructed in these districts and many more have been planned. These towers are of two distinct types, viz., steel, and timber. The former are about 80 feet high and have an enclosed cabin at the top, while the latter are the well known towers about 50 feet high made of timber and constructed by the rangers. Naturally

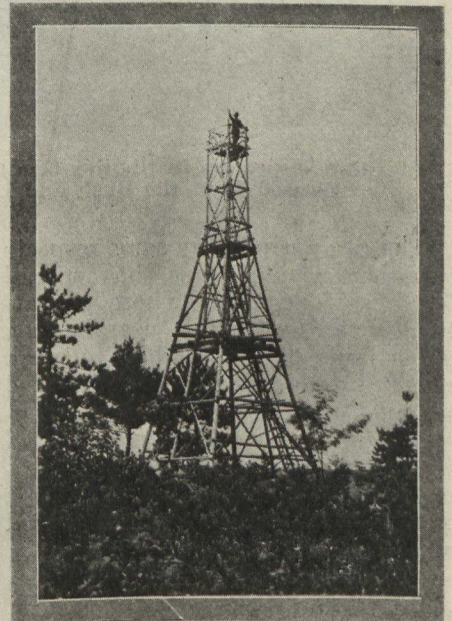


An Ontario ranger cabin built by fire rangers

the steel towers are much more expensive and the forest officers are not certain that the additional expenditure for steel towers is justified but this is probably a question which time will have to decide.

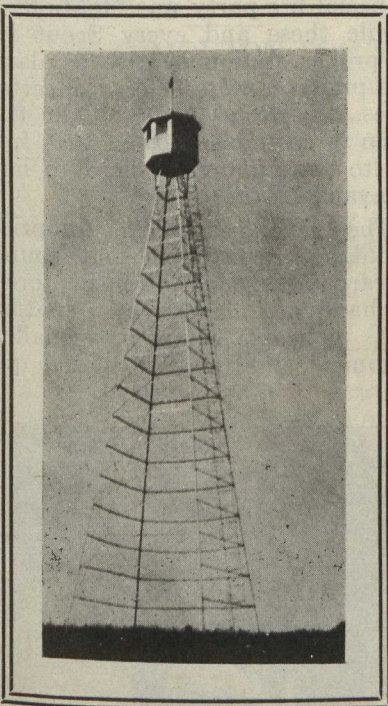
Trails and Telephones

Ranger cabins are being constructed at advantageous points and these add to the comfort and satisfaction of the rangers and will prove invaluable for emergencies. Much attention is also being given to clearing old trails and cutting new ones, an activity which has always been urged by all forest protection advocates. These are also a great advantage to the sport seeker on his canoe trips through the Park. Many miles of telephone line, linked up with rangers' headquarters, have been constructed and more are under construction. In this work the lumber companies lend willing aid and later they will secure benefits from these same lines.



A good type of wooden lookout tower constructed by rangers of the Ontario Forest Service.

Building towers, telephone lines and cabins and consistently clearing trails has been something of a departure for the average fire-ranger and a few have objected but the great majority are proving adaptable and as they see an active interest displayed by the district forester and chief ranger, as manifested in regular inspection trips, they themselves show a growing and commendable interest in their work, and a nucleus is available for a good personnel.



A steel lookout tower constructed on a high point of North Western Ontario to allow an effective supervision of the forest areas and rapid detection of fires.

Pembroke protection district, had an opportunity of noting these modern methods and the increased efficiency resulting therefrom. The most striking addition to old methods of protection is, of course, the regular air patrol by flying-boats or sea-planes. Since this subject has been so exhaustively discussed in articles in this Magazine it is hardly necessary to mention what a wonderful means of detecting and locating fires these

How Woodcraft Is Taught to Boy Scouts

By C. W. Thompson, Scoutmaster, 4th Quebec Troop.

THE QUEBEC BOY SCOUTS Annual Camp was held in a new location this year. A permanent camp has been erected within the reserves of the Kennedy Lumber Company, at the extreme northern end of Lake St. Joseph.

boys the correct method of handling a canoe in all weathers.

At Home in the Woods

Prizes were awarded to the best campers among the Scouts, and special prize was given for a "Treasure Hunt" which means that the successful competitor must read certain signs and follow direction signs until they lead him to the concealed treasure or prize.

The camp itself was run on almost military lines with a daily inspection when the kits were laid out in the usual army manner; while the usual bugle calls, camp routine, and regulations were followed strictly.

Probably the most important feature of all was the fire drill and training. Special buckets were kept filled some with water, others with sand; axes and shovels were marked and placed in readiness in case of fire. A special fire party was "told-off" to handle these and every Scout had his proper station in case of alarm. Fire practices were held at uncertain times, and tests made of the time taken to assemble showed that from one to two minutes sufficed to have all available on parade.

The general training comprised ambulance instruction and courses for carpenters, cooks, firemen, foresters, handymen, laundrymen, naturalists, pioneers, campers, signallers, swimmers, and rescuers. Special qua-



Morning Inspection in the Boy Scout Lines. The Whole of this Ground was Cleared from the Bush and Levelled by the Quebec Scouts.

The camp, similar in some respects to other Scout camps, has special features of its own. Those who attended the Camp this year had an opportunity of learning how to break into the bush, clear thickly wooded ground, and pitch a camp. Subsequently a large hut was erected comprising dining hall to accommodate one hundred (100) persons; quartermaster's stores, kitchen, and officers' quarters.

Instruction was given in using the natural resources of the country, selecting boughs for bedding, suitable wood for cooking, and the construction of fences, steps, and shelters, using only materials at hand, without nails or cords, or any tools save a hand axe and saw. More elaborate work was undertaken at a later stage, and tables, forms, beds, notice boards, and even a log wharf and pontoon bridge were made successfully by the Scouts under the eyes of their instructors. The various kinds of trees were pointed out to the Scouts, and their uses explained. Those who had cameras were able to secure some valuable photographs of animals, birds, and snakes in their natural element, a collection of fifteen such photographs entitling the Scout

to wear the Stalker's badge, probably the hardest Scout Badge of all to obtain.

Special attention was paid to swimming and life-saving and to teach the



Quebec Boy Scouts bringing up the Water Supply. This Path was cut through the Bush, Rustic Steps Made, and the Water Drawn from an Ice-cold Mountain Stream

fications for each of the above are given in the Scout Handbook, which is the official handbook of the Association, enabling the awards of badges to be uniform throughout the Dominion.

Real Lessons in Forestry

Many who came to the camp knew little or nothing of the resources of the Canadian forests; few if any had had any practical training in the fighting or prevention of forest fires, and the information gained has not remained with the boys alone. Proud of their forests, and proud of their knowledge of them, not only have they learned to be careful of Canada's great forests themselves, but they have "passed-on" the information and the feeling of pride to their friends and relations with, let us hope, the

success that is needed to preserve our greatest national asset, the forests of the Dominion.

The scene of the Camp has just been revisited. In many places along the Lake shore are signs of "picnic" fires, while in one case large felled logs have been scorched by the flames. In the middle of our clearing a fire had been built. This clearing is entirely surrounded by the bush which on one side is not ten yards from the edge of this fire.

During our five weeks in this district we were successful in keeping away all picnic parties and persons without proper permits, and it is possible that next year we may be able to extend this work over the whole of the months of July and August, and so reduce the danger from fires having their origin in picnic-parties.

SOME WORDS OF CHEER

SERVING FUTURE CANADIANS

A letter to the Canadian Forestry Association from Mr. Charles S. Hosmer of Montreal:

"You are doing a great work and future generations will rise up to call you blessed."

AN EDMONTON VOICE

From a letter to the Canadian Forestry Magazine by Dr. J. P. Johnston, Physician, of Edmonton:

"I have read with great interest the numbers of your magazine that have come to my office since subscribing. It is without doubt the most fascinating and truly Canadian magazine published."

"HITTING THE NAIL"

A letter from Harris A. Reynolds, Secretary, Massachusetts Forestry Association, Boston:

"I have just one objection to the Canadian Forestry Magazine:

"I find when I start to read it I neglect my other duties until I have finished going through it. It seems to me you are hitting the nail on the head with every issue and in such a way as to force the attention of the public to this enormous problem."

VALOR REWARDED

Mr. Archibald Mitchell, who directs the prairie province tree planting campaigns of the Canadian Forestry Association is not unaccustomed to friendly comments on his public services.

"The Manitoba Free Press," however, inadvertently elevates Mr. Mitchell to a dignity which he by no means claims. In a recent issue, appears a special article by, him in which the typesetter's overflowing courtesy has inserted the name of the author as "Archbishop Mitchell."



Not enough elevation for these cub bears in Mount Robson Park, British Columbia! Tame bears are by no means an infrequent sight in this great playground along the Canadian National.

Shelter Belts on Prairie Farms

Stock Can Live in the Open All Year Round if Tree Shelter is Provided—
Real Profits in Windbreaks.

By Dr. J. G. Rutherford, Commissioner, Board of Railway Commissioners,
Formerly Veterinary-Director-General and Live Stock Commissioner for Dominion Government.

THE EASTERN traveller who sees for the first time the great plains of Southern Alberta and Southwestern Saskatchewan is perhaps more unfavourably impressed by the scarcity or lack of trees than by any other feature of the landscape.

The great northern areas of our three prairie provinces are fairly well wooded and where special plantations are deemed advisable, their installation and development involve no great difficulty. Central and Southern Manitoba are by no means destitute of trees and natural forest growth is also plentiful and easily encouraged in the Southeastern portions of Saskatchewan. In many districts indeed, the development of tree clumps, at least of the native varieties, is more a matter of preventing prairie fires and letting nature work its will, than one of planting and cultivation.

The early settlers in Manitoba and Southeastern Saskatchewan were mostly from old Ontario, and though many of them, in view of their earlier experiences, were none too friendly to a tree, they were real home builders, and wise enough, not only to avail themselves of natural shelter when this was convenient, but when it was lacking, to plant windbreaks and shelter belts.



The McIntyre ranch at Magrath, Alberta. "Long, laborious years to get any such result," does some reader say? Not by any means. The planting was done in 1919, just three years back.

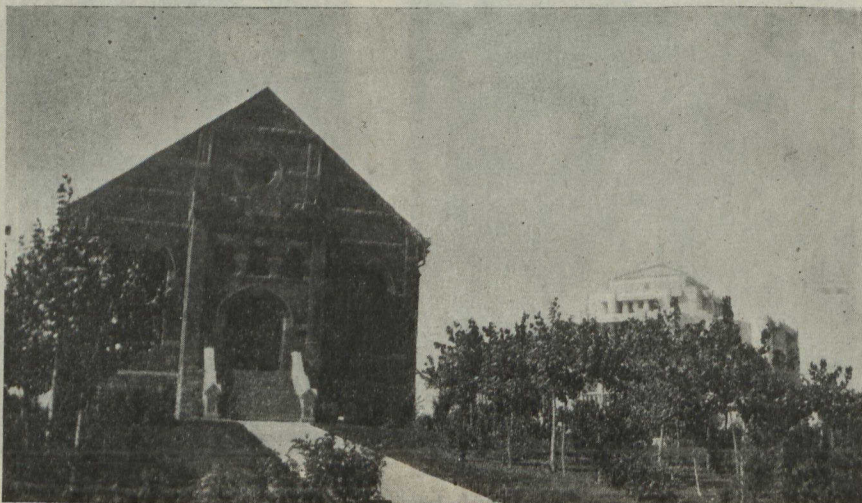
An Eye to Profit.

This custom has become almost an article of doctrine, so that today even those portions of the territory under discussion, which the early settlers found bare of trees, such as the Portage Plains, the Big Plain and similar areas, present an infinitely more attractive and homelike appearance than they did when first settled. These older settlers, while by no means indifferent to beauty of

landscape, have other sound and practical reasons for encouraging tree growth. They know well that a good shelter belt is a most profitable investment; that the protection which such a belt affords against the winter winds not only makes the house and yards greatly more comfortable, and life infinitely more liveable and homelike, but lessens in marked degree the quantity of fuel required for heating purposes from year to year. The stables and barn yard also benefit and that to an even greater extent. Not only are the buildings when shielded from the wind, more comfortable and easier to keep warm, thus effecting a great saving in feed, especially in concentrates, but the existence of a good wind break renders it possible to maintain, and even finish, in the open, stock which without such a shelter, would certainly have to be housed.

Stock Can Live in the Open.

Every experienced feeder knows, and every farmer should know that stock will not thrive or lay on flesh when constantly exposed to the winter winds of our western prairies. On the other hand, it is well established that if afforded adequate protection from the winds, live stock can be



In April, 1921, this was a treeless area at Cardston, Alberta. Any prairie community can achieve similar results about its buildings.

profitably fed to a finish in the open, even in our coldest winter weather.

I am quite aware that this statement may be questioned by persons lacking actual experience, but definite proof of its truth is fortunately available from many different sources. Reference may be made to the work in this line, carried on at the Brandon Experimental Farm, especially dur-

much extra work, but allowing the yards to dry out much more quickly in the spring.

17½ Tons Corn per Acre.

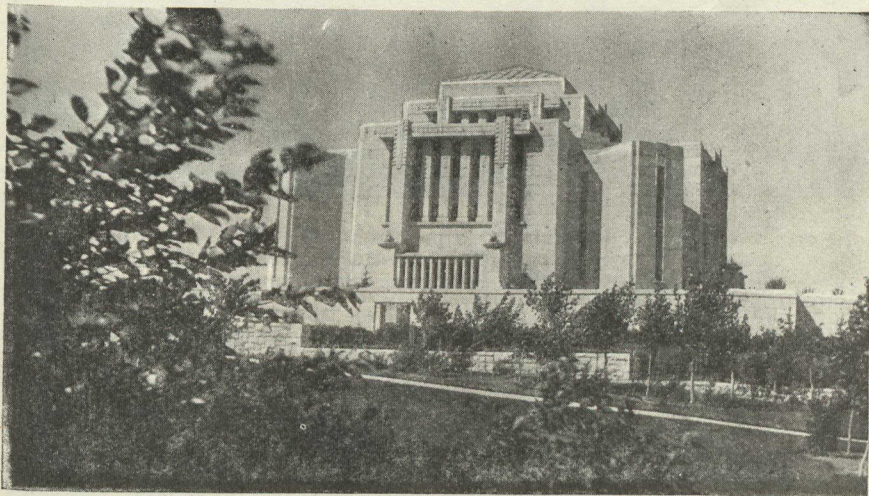
When endeavouring to acclimatize field corn in Western Saskatchewan and Alberta, where, owing to high altitudes, cool nights and battering

corn field for shelter purposes, as the sunflower grows more rapidly than the corn, is less affected by winds and achieves, if of the right variety, a somewhat greater height. Four rows of sunflowers were planted to every twelve rows of corn; the prevailing winds being North and North West, the rows ran east and west. The result was very interesting, the rows of corn immediately south of the sunflowers being practically equal to them in height, with each succeeding row markedly shorter until the next sunflower shelter was reached, when the same condition was again observable. In fact, the whole corn crop presented a succession of southerly slopes, divided by the strips of sunflowers.

Using Sunflowers.

The sunflowers went into the silo with the corn, and were found to be excellent forage. As it was plainly evident that in order to get the full shelter benefit of the sunflowers, they should be more evenly distributed with the corn, they were the following year, planted in alternate strips of four rows each, this arrangement proving eminently satisfactory. It was I think in 1916 that the first sunflowers were put into the silo, which, erected in 1915, was one of the first in Southern Alberta.

It will be observed that without specially mentioning the fact we have got away from the buildings and into the open fields. There also, the shelter belt is a most important factor, not only in protecting growing crops from unkind winds, as already indicated, but in preventing the fatal soil drifting, which, of recent years,



The million dollar Tabernacle of the Mormons at Cardston, Alberta. The planting arrangement of the grounds was laid out by Mr. Archibald Mitchell, Western Lecturer of the Canadian Forestry Association.

ing the Superintendency of Mr. James Murray, now District Representative at Medicine Hat for the Alberta Department of Agriculture; to the experience covering many years, of Messrs. R. J. Phin of Moosemin, Saskatchewan, W. F. Puffer of Lacombe, Alberta, Colonel Harry Mullins of Winnipeg, Mr. Grayson of Newdale, Manitoba, and many others too numerous to mention.

The Prairie Garden.

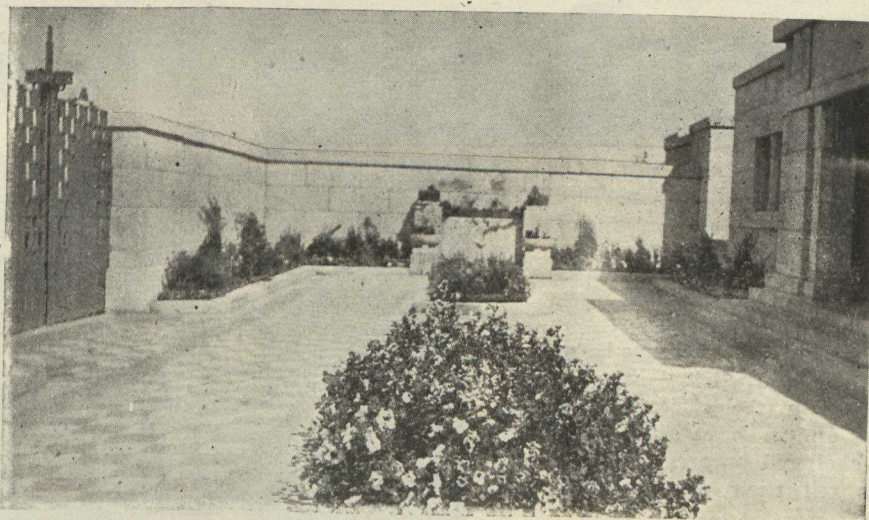
Leaving the barnyard, we come to the garden, and it is surely needless to say that on the bald-headed prairie a good wind-break is essential to the well-being of the garden.

Given shelter from the wind, and reasonable care, the gardens of the prairie provinces are as good as can be found anywhere. All the standard vegetables and small fruits flourish in abundance, while as for flowers, the old friendly favorites of one's childhood and the most modern varieties, as these are introduced, respond readily to the rich soil, the warm sun and the placid atmosphere of the oasis beside the shelter belt.

When properly laid out, trees also effectively prevent those vast accumulations of snow which, during the winter storms often surround and even more or less completely cover

farm buildings, thus not only saving winds, it was for long difficult to obtain home-grown seed, the writer on one occasion fortunately planted a small field lying south of an excellent shelter belt of Manitoba Maple and Russian Willow. This corn did wonderfully well, producing 17½ tons to the acre, as against an average of somewhat less than 8 tons, when grown in the open.

Subsequent similar experiences led to my planting sunflowers in the



This is the "Court of the Gentiles" in the million-dollar Mormon Tabernacle at Cardston, Alberta. Note the happy effect of flower beds and shrubbery.

has done such widespread and in many cases irreparable damage.

Forest Belts or Lost Farms?

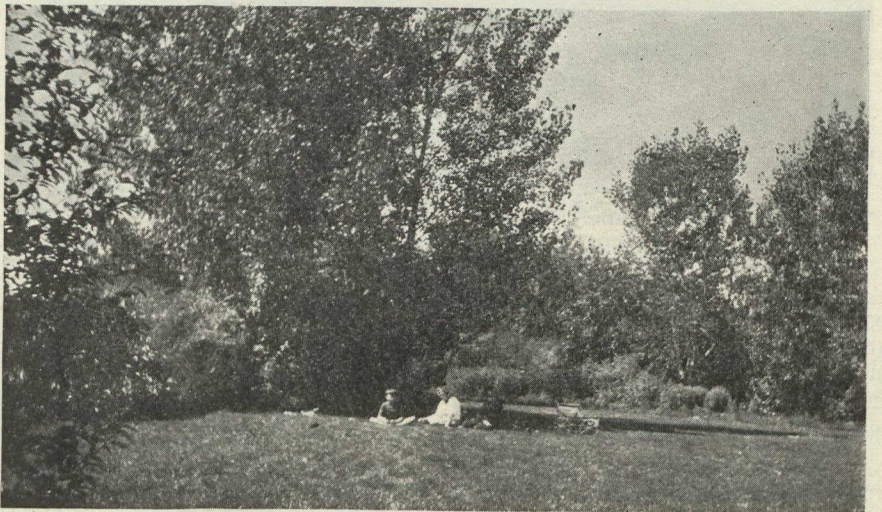
It is a much more serious and expensive undertaking to provide wind-breaks for an entire farm, than it is to plant the sheltering trees necessary to protect the small area occupied by the home buildings and garden. Nevertheless, while other agencies may also be of value, it is Nature's safest and surest way of holding things down where they belong. On many Southern prairie farms it is a pressing question today and will be an even more exigent one next year and after, as to whether the forest belt shall come or the farm shall go, either on the wings of the wind, or for what it will fetch, less the humus already gone.

The writer does not care to assume the responsibility of advising the individual farmer in so important a matter, and one involving so great an expenditure as that of providing shelter for an entire farm, but he would strongly urge those who are interested in this phase of the subject, and they are many, to avail themselves of the valuable knowledge and advice of the experts of the Canadian Forestry Association; and the officers of the Forestry Branch of the Department of the Interior.*

*Editor's Note:—Full and free information is always available by addressing Superintendent of Tree Planting Division, Dominion Forestry Branch, Indian Head, Saskatchewan.



There's nothing "bleak" about this prairie home. Mr. H. A. Suggitt of Coaldale, Alberta, is a great "practitioner" of treeplanting, witness these two scenes from his farm property.



Mr. Suggitt has the advantage of irrigation but similarly beautiful results are not denied the dry farmer. His trees are only 11 years old.



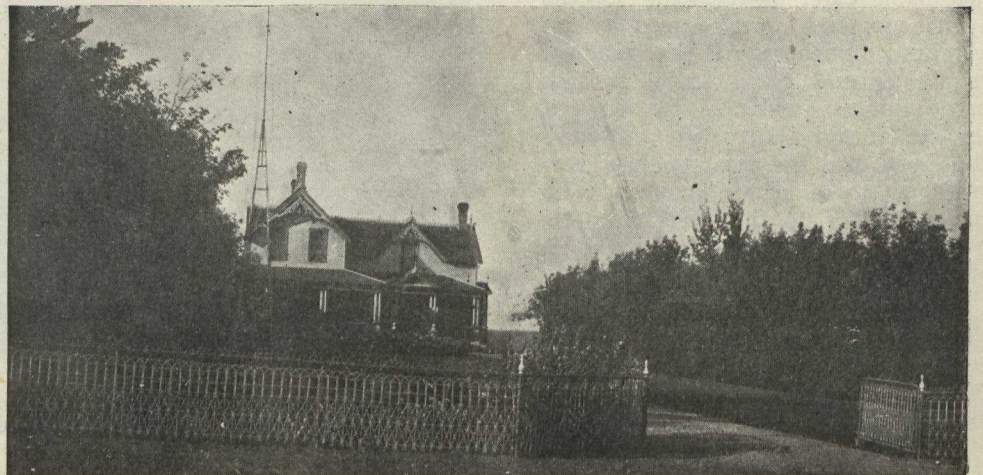
Courtesy of Biggar, Sask. Agricultural Society



There's all the difference between 'existing' and 'living' when one compares a treeless prairie homestead and a beautifully planted and sheltered property. The pictures tell their own compelling story.



'Comparative Pictures of Prairie Homes in Saskatchewan.



Questions and Answers for Prairie Tree Planters

Q.—My laurel Willow Hedge has been planted three years but it does not appear to be hardy and freezes down every winter. We water it well every summer and it grows as much as four feet in the season but always freezes down. Other people seem to get theirs to winter. What is wrong? Have I the wrong species or what?

A.—This looks like a case of over-irrigation. Water should not be applied to trees on the Prairie after the middle of July, unless in a very dry season. Examine the ends of the branches and if they are not getting firm and woody, trim off a few inches. This will stop their growth and enable them to harden up before frost comes. The Laurel Willow is quite hardy if it gets a fair chance.

Laurel Hedge Withered

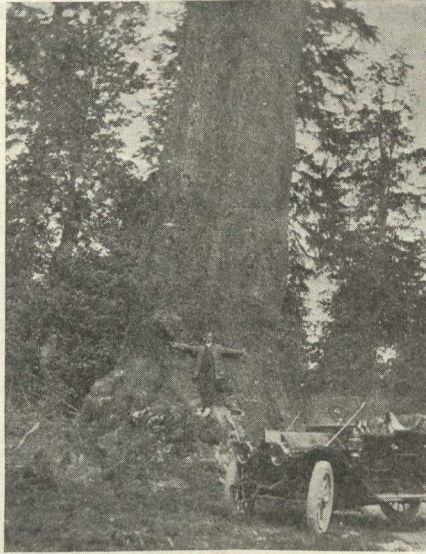
Q.—One of the plants in my Laurel hedge is all withered up and looks to be dead. It was just as green and glossy as the others till three weeks ago. What can I do about it?

A.—We presume you mean Laurel Willow hedge since you write from Calgary. Your plant is dying from a kind of disease on the roots which occurs occasionally but which is not yet well understood. Dig the plant up and burn it and see if the adjoining plants are getting yellow. If so, dig them up too. Then mix some quick lime in the soil, leave for a year and then fill up the gap with fresh plants. As a rule this trouble does not spread very far if taken in time.

Firm Planting Needed

Q.—I live in Calgary. This spring I planted a Caragana hedge on land that has been used for the past two seasons as a garden, the soil being well cultivated and in good condition. The plants used were from twelve to eighteen inches high and although all have grown the leaves are very small and the plants not vigorous looking. What can be the matter?

A.—This looks like a case where the plants were not packed firmly into the soil when they were planted. There seems to be no question about the plants being alive, and as the soil was in good condition and free from alkali, this is about the only conclusion to arrive at. Firm planting is very important in the prairie country, even with an abundant supply of water.



B. C.'s UNRIVALLED GIANTS

We publish the above picture by kindness of Rev. Dr. Charles T. Scott, Pastor of Howard Park Methodist Church, Toronto. It was taken near Chemainus, Vancouver Island. Dr. Scott is standing at the base and his outstretched arms measure five feet, eight inches.



A DISTINCTIVE TREE

Photographed by Rev. Dr. Scott near Royal Bay, Vancouver Island. A horizontal limb extends about 18 feet, at the extremity of which two trees are sustained, one about 18 inches, the other 12 inches in diameter.

Machines help the rangers

Q.—What mechanical equipment is used nowadays by fire rangers in detecting and suppressing forest conflagrations?

A.—Lookout towers for detection with here and there the service of seaplanes for the same purpose. Fire finding machines are used in the

towers for fixing the location of the blaze. Motor speeders and velocipedes are widely employed for patrolling railway lines. Gasoline pumps are highly effective for fighting incipient fires. Small motor cars and trucks are used where roads permit. All these and other devices are helping to check forest fires.

What a planted forest can do

Q.—How large an area would be required to be planted with timber trees in order to give enough timber to support a small pulp mill?

A.—The Chief Forester of the Laurentide Company estimates that 250 square miles will yield 100,000 cords of pulpwood in perpetuity. Please bear in mind that this refers to a planted forest which should yield 75 cords an acre, whereas the natural forest in Eastern Canada now yields only from four to ten cords an acre.

Driftwood on our northern shores.

Q.—I understand from explorers that enormous masses of logs are found at the mouth of the Mackenzie River. Where does this material come from?

A.—The Geological Survey, Ottawa, reports that the 'derelict' logs massed at times at the mouth of the rivers flowing into the Arctic have been carried all the way from Siberia, Norway and the St. Lawrence.

Forest fires and the newspapers

Q.—As a newspaper editor, I have always maintained that the daily and weekly press are paying the bills for forest fires. I refer, of course, to the destruction of paper making woods, spruce and balsam.

A.—Your statement is not exaggerated. Spruce and balsam are the raw materials of newsprint paper. Dear wood automatically follows forest fires, as the United States paper mills are finding today. When Ontario loses 700,000 acres of timberlands by fire in a single season, and Quebec another 600,000 acres, it is not difficult to understand that the price of depletion must be paid by the ultimate consumer of wood products. We cannot hold down the price of newsprint paper and at the same time allow forest fires the right of way.

Communal Forests for Canadian Towns

An Idea Borrowed from Europe's Successful Experience and the Need of Local Woodlands in Canada for Recreation and Fuel.

By Clyde Leavitt

THE recurrent shortage of coal brings periodically to mind the value and importance of wood fuel as an emergency substitute, in town and city homes.

Perhaps the advocacy of the general establishment of public forests by cities, villages, townships and counties may not be regarded as having a very direct bearing on the problems incident to the existing fuel emergency. However, history has a way of repeating itself, and it is the part of wisdom to be prepared.

While it is not to be anticipated that a general slaughter of municipal forests would be likely to take place to relieve a future fuel shortage, it is nevertheless true that forests under good management produce a substantial amount of wood each year which may be marketed when mature, without injuring the forest. In fact, the quality may be greatly improved by judicious cutting. Thus, a municipal forest, like any other, may be made to contribute substantially to man's needs, without injury.

What A Forest Produces

From one-half to one cord of wood per acre per year is a reasonable estimate of the productive capacity of a forest area under proper care. Some proportion of this would be primarily suitable for fuel, while, in time, products of greater value or higher use would be available. With sufficient area, there would be a handsome net revenue each year, to reduce the burden of local taxation, in addition to other valuable services.

For example, a municipal forest might well serve as a community picnic or camping ground, and perhaps also as a camping ground for automobile tourists. There is a distinct movement toward the establishment of the latter and many cities and towns in the United States and to a lesser extent in Canada have found it a good investment to provide such accommodations with provision for water, fuel, fire places and sanitary conveniences. The

recreational aspect of forests has not yet received the attention which its importance deserves.

A Supply Near At Hand

Reverting to the commercial aspect of a community

forest, it is well-known that a considerable percentage of the cost of forest products, particularly wood fuel, is due to high cost of transportation. Conversely, timber conveniently accessible to a market will have a high "stumpage" value. Since a community forest would ordinarily be highly accessible, a good return for marketable products would be assured, while at the same time wood fuel could be disposed of, in times of emergency, at a price that people could afford to pay. Obviously an area of some size would ultimately be desirable, to justify necessary costs of protection and administration.

Municipal forests frequently serve the important purpose of watershed protection for town or city water-supply. In many cases this would not apply, but where conditions are favorable, this reason alone would amply justify the investment. This has been the primary incentive, in quite a number of cases in the United States.

Use the Waste Lands

In many districts there are areas of more or less waste lands which are primarily suitable for forest purposes, and which can be secured at a comparatively low cost.

A beginning might be made by acquiring a piece of such land already in forest, with provision for extension by planting. The provincial forest services of Ontario and Quebec, and the Dominion Forestry Branch in the prairie provinces, maintain large forest nurseries, and these organizations are prepared to co-operate heartily

in such projects as are here under discussion. In fact, they are most anxious to help in any way possible. In Ontario, thanks largely to such encouragement, probably a dozen

Why not City and Town Forests?

In the United States, legislation encouraging the formation of municipal forests has been enacted by a number of the states, including New York, New Hampshire, Massachusetts, Pennsylvania and Minnesota. Prof. Toumey, of the Yale Forest School, estimates that there are 250,000 acres of municipal forests in the entire country, and he strongly advocates a very large extension of this area. His reasoning is equally applicable to Canada, if we substitute reference to the provinces for his reference to the states. He says:

"It is my judgment that public attention should be directed by those who have it in their power to do so, to the desirability of increasing our present area of public forests in this country by literally thousands of communal forests. Towns and cities should be persuaded into purchasing such forests, and wealthy citizens encouraged into acquiring suitable forest properties and giving them as memorials to their home communities. Here is a field for the forestry associations in the several states that is almost untouched. If the forestry association in any state can, through its avenues for publicity, show the public what communal forests mean, and why the present time is auspicious for the increase of such forest ownership in this country, and can carry its influence so far that tangible results are attained, it will perform a public service infinitely beyond anything heretofore undertaken. For one, I believe in city and town forests in America. We should have many of them and widely scattered over the country. Furthermore I believe that they are practical, in the long run economical and advantageous to the community. I believe that a considerable area in communal forests well managed will be better appreciated by the public than an equal area in national forests or state forests."

"In the development of communal forests it is not enough for individual towns to secure tracts of land either by gift or by purchase and call them town forests. If they do, and if there is no organized machinery for their use and development, very little is accomplished. Furthermore, an individual town owning a small area of forest land can ill afford to employ an efficient forester. This, I take it, has been the chief difficulty in the past in this country and the reason for the lack of efficient management of the limited areas of communal forests that we now have. It is my judgment that communal forestry must be closely linked up with the state forest administration and laws promulgated that will afford a form of co-operation between the community and the state which will insure to each communal forest a reasonably high order of forest management."

such projects are already under way, involving village, city or township governments.

The Boy Scouts and other similar organizations, including schools, may be usefully employed to some extent in forest planting, with incidental educational advantages of great value. Arbor Day activities might be directed

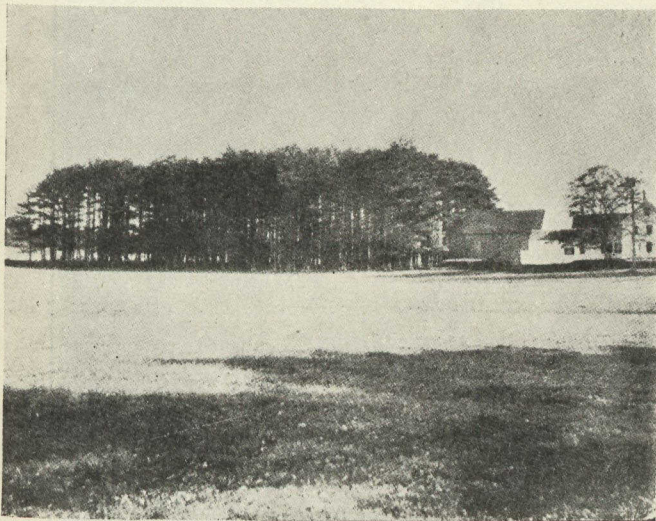
forests owned by cities, towns, townships or counties is comparatively new in this country, though the reverse is the case in Europe.

What Foreign Communities Do

In Switzerland, 67 per cent. of the forest area is held under town or some other form of communal ownership. In France, 23 per cent. of the forest area is so held, and in Germany 16 per cent. In Alsace-Lorraine, nearly two-thirds of the towns own communal forests.

Many of the communal forests in Europe have been under such ownership, with continuous protection and management, for many generations, in some cases for centuries. The city forest of Zurich, Switzerland, is a classic example. This forest, called the Sihlwald, has an area of 2,580 acres. The known history of this forest runs back to the year 853, since which time it has been under some form of protection and management, and has continued to supply forest products for the people. It became the property of the City in 1524. The records of the forest show that in 1460 the appointment of two foresters was authorized. It is interesting to note the comparative antiquity of forestry in Europe, in contrast with the youthfulness of this profession in America. Prof. R. S. Hosmer of the Forestry Department, Cornell University, records that the mill in the Sihlwald employs 20 men, and that 120 more are employed in the forest itself, so that this small forest alone comfortably supports a small community by itself. A city woodyard is maintained, to supply citizens with fuel. Under normal conditions, a substantial profit is derived from the forest, which assists to reduce taxation.

Hundreds of communal forests exist in the various countries of Europe, reducing taxes, affording the means for public improvements of all kinds, supplying timber for local use, furnishing employment for citizens, and adding substantially to the pleasure and health of the population by the recreational facilities which they afford.



A thriving wood-lot, such as that pictured above, adds from \$500 to \$2000 to the value of the Canadian farm.

to the same end. Forests serve splendidly as memorials, existing forests or areas of waste land for planting being acquired by purchase or through donation by public-spirited citizens.

Canadians are quite accustomed to the idea of public forests as applied to the Dominion and provincial governments, a large percentage of the forests in the Dominion being in such ownership. However, the idea of public

The Example of Carthage, N.Y.

The village of Carthage, Jefferson county, N. Y., has made a remarkable record in the reforestation movement and has today probably the finest municipal forest of any community of its size in the country, according to a bulletin of the N. Y. State Conservation Commission. On a tract of 2,000 acres 585,000 trees have been set out on the Carthage watershed, the forest serving the double purpose of protecting the water supply and making provision for a future supply of timber. The trees set out fifteen years ago now measure from 15 to 18 feet in height and six inches in diameter. This tract eventually will furnish a million board feet of lumber a year and is a splendid investment for a village. In Europe where planted forests are a well established source of revenue, returns of from \$7 to \$12 an acre are secured from community forests.

While Carthage was the first municipality in the state to undertake reforestation, many cities and villages have successful plantations today and each year sees the number increased. School districts are joining the re-

forestation movement and there are a number of school district forests, the oldest in the town of Constable, Franklin county, where ten acres has been planted to Scotch pine and white pine. The town of Watson in Lewis county has begun the planting of 94 acres in a school forest. It already has set out 14,000 trees in two

plantations and will plant 10,000 trees each year until the entire acreage is filled. The Raymond Riordan school has started a forest with 15,000 trees and other schools have made smaller plantations which will be added to from year to year and which ultimately will be a source of revenue to the district.



Where the vogue of large families still persists a group of spruce which have all been seeded in from the original tall spruce at the center.

New Brunswick's Forest Losses Low

STATISTICS released by the N. B. Forest Service covering the present fire season to the middle of August show that the damage has been light and the expenditure for forest fire protection comparatively low. Eighty fires have been reported, burning over a total of 5,760 acres, 30% of which contained merchantable timber and 70% being previously burned land containing young growth of various ages. On Crown Timber Lands only 1,920 acres were burned. This is 96% less than the area of Crown Lands burned in 1921, and 93% less than the average of Crown Lands burned the last four years. Sixty per cent. of the fires did not spread over five acres and only 9 fires spread over 100 acres. When one realizes that over 12 million acres of forest land exist in New Brunswick the damage of 5,760 acres is indeed low and marks a new low record for this province at least. Only ten fires required expenditure of money by the government in extinguishing, the other 70 being put out either by the warden or other person discovering it, or by the county councillors with the voluntary aid of the community, everybody giving their services without pay.

Why fires are lower

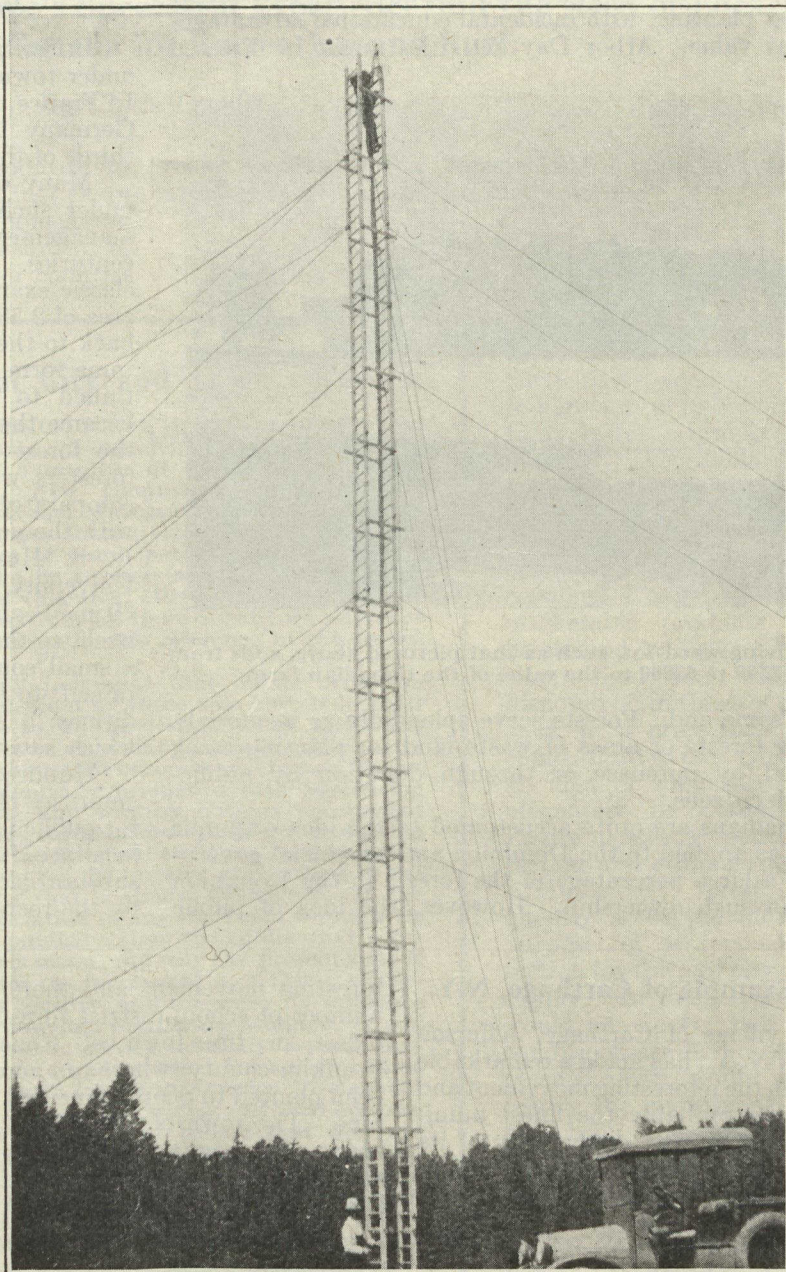
It is rather difficult to decide just where most of the credit is due for this comparatively encouraging state of affairs in fire protection, for co-operation has come from almost every quarter, often from the most unexpected sources. Even the weather man has helped for a part of the time at least. Hazardous periods occurred during the first week and the latter ten days of May and first three days of June and again during the latter part of July, but the heavy rains falling between these dry periods was of unestimated value in preventing forest fires. The recent amendments to the fire law enacted last session were a considerable aid in extinguishing those eighty fires which started, especially those on granted land, where the country councillors who were appointed fire wardens under the new regulations so ably and promptly extinguished those fires which started on private land, relieving the government wardens of this responsibility and allowing them more time to look after fire prevention on Crown Lands. Westmoreland County operating under a separate County Act reports no serious fires and the total loss in that

County is less than ten acres burned over.

County responsibility

There is no doubt that the new enactment requiring the municipalities through their county councillors to extinguish fires without any remuneration whatever has had the effect of encouraging the prompt control of all fires starting and discouraging the starting of fires to secure pay. Again, the greater interest taken by the communities is

reflected in the care of settlers' fires, where the settler wishing to burn and knowing it is against the law to burn without a permit respects the rights of his neighbor as much as he does the fire law, knowing that damage claims are often more costly than actual fines. Railroad fire prevention has again improved this year, reaching a new high record in preventative methods and control. Although thirty-six of the fires were chargeable to railways, the prompt action of the railroads in



A New Brunswick Forest Service portable tower which may be erected in two hours to a height of 85 feet. In this way the Department is able to determine the most advantageous locations for lookouts. Each section is 12 feet long. It requires 2,300 feet of guy rope.



The work of amateur campers and fishermen. Fire fighters are putting out some smoking embers and guarding against a new outbreak.

extinguishing these is a fair indication of the realization by the management of the responsibility of railroad fires and the necessity of efficient control. Railway patrolmen following trains in forested sections extinguished some 250 tie fires during the dry periods.

The public as a whole have shown greatly increased interest this year. The department has now reached that long-hoped-for period in fire protection when public organizations and

individuals are asking for literature and lectures pertaining to forest fire prevention. The attitude of the press is highly commended for scarcely a week passes without able editorials on fire protection by the leading papers, while the bulletin service of the Canadian Forestry Association is eagerly copied by all the papers. And the editorials are in the right key, not demanding that the organizations do this and that, but getting down into the causes of

forest fires and asking the thoughtless picnickers and fishermen to be careful of fire. There has indeed been a smaller percentage of fires chargeable to the thoughtless pleasure seeker than ever before. To keep the subject of forest fire prevention everlastingly before the public during twelve months a year is the policy of the forest fire department and it is hoped that each year will continue to reveal more efficient fire protection.



A View in the Laurentians—The Boy's Farm at Shawbridge P.Q., as it looks from one of the surrounding high spots.



How to Plant Trees in Fall

Expert Instructions on Time to Plant, Selection of Trees and Precautions in Tree Removals

By *B. R. Morton, B. Sc. F., Dominion Forestry Branch, Ottawa.*

THE planting of any tree is best done at a time when it is making no growth, either early in the spring before the buds open or in the autumn before the ground freezes. Evergreens, such as the pines or the spruces can be planted with more or less success during the summer months, but it requires extra precautions to be taken and should be avoided if possible. Broad-leaved species such as maple and elms should never be planted when in leaf, that is, while the leaves are still green and active. It is not necessary to wait until every leaf is shed. Some trees, like the oaks and the beech, frequently retain many of their leaves throughout the greater part of the winter. Spring planting usually gives better results than fall planting. Spring is the season of most vigorous growth, and planting at that time gives the tree an opportunity to establish itself, and the soil a chance to become thoroughly settled before the winter. There is then little danger of the trees being heaved by the frost. However, if proper precautions are taken, there is little risk of serious loss as a result of fall planting.

Selection of Trees.

In buying trees, other things being equal, it is advisable to order them from a local nursery. This reduces the risk of loss during transportation, and enables one to visit the nursery and make the selection personally.

In selecting a tree, a compact root system is of great importance. The more small roots a tree has the greater its chance of surviving the shock of transplanting, and the more rapid will be its growth. A large top is desirable provided there is an abundance of roots. A tree with many branches and few roots will make very slow growth if it survives at all. A tree which has lost many of its feeding roots is unable to meet the demand made by the branches, and it is therefore necessary to remove a proportional number of branches to restore the balance.

No matter how carefully a tree

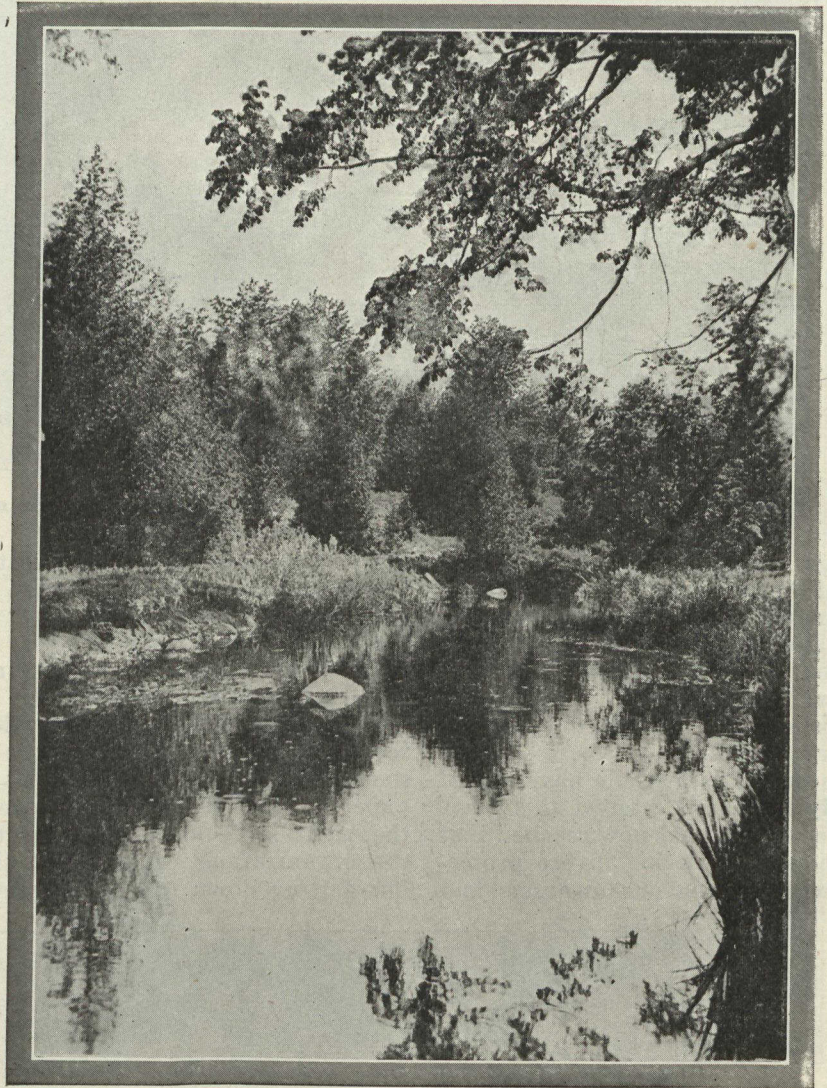


Plate by courtesy, Imperial Life.

A Study of Nature near Clinton, Ontario.

is dug up many of the roots are sure to be broken off or injured. The larger the tree the greater the loss of roots and more severe the pruning required. The removal of four-fifths of the past season's growth from all branches will be sufficient with trees not more than three or four years of age. The cut should be made just above some strong bud. Care, however, should be taken not to destroy the leader or main stem. All broken roots should be trimmed to enable them to heal. All cuts should be made by a sharp knife and be smooth.

The Single Leader

It is frequently impossible to trim an evergreen tree without permanently destroying its value for ornamental purposes. Therefore greater pains should be taken to secure a larger proportion of the root system with these trees.

Only trees with a well-developed single leader or main stem should be chosen. Those with two or three leaders will probably develop into crotched trees and have all the weaknesses of that type. However, by

Careful pruning as the tree develops, the central stem can sometimes be encouraged to become the leader.

A good straight leader like a whip-stalk or fishing pole is what is desired for the ideal street or lawn tree. For planting adjoining walks, where head room is required for pedestrians, a straight stemmed tree from one to one-and-half inches in diameter at breast height, and clear of branches for at least seven feet from the ground, will be found most suitable. If the tree is set near a driveway it may be necessary to gradually remove the lower branches as the top develops until there is ample clearance for vehicles. On lawns and other open situations the lower branches may be retained if desired.

One of the commonest mistakes made is in choosing large trees. The smaller the tree the less likely it is to suffer in transplanting. Small trees will often catch up to larger trees in a few years.

On Arrival From Nursery.

Trees are shipped from the nursery in bales or boxes with their roots packed in wet moss and wrapped in burlap. The stems are surrounded with straw and also wrapped and tied. If they arrive before planting time the roots should be "puddled" and the trees "heeled in." Puddling consists in dipping the roots in a mixture of clay and water about the consistency of ordinary paint. This forms a coating over the roots and aid in preventing them from drying out. The heeling in consists in digging a trench sufficiently deep to contain the roots with moist earth. If protected from damage by rodents and the elements, they may be heeled in during the fall and left all winter for spring planting.

Taking Up Trees.

In taking up trees which are growing on the place, as much earth as possible should be removed with the roots. This prevents the roots from drying out. If the trees are to be carried any distance before planting again it is advisable to wrap the ball of earth in canvas or place each tree in a bag and tie in such a manner as to prevent the earth from being shaken off. At no stage in the taking up, transplanting or planting should the roots be allowed to become dry. This is important. The planting should be done as soon as possible after taking up.

Preparing Holes.

The hole in which the tree is to be planted should be made much broader and deeper than is necessary to accommodate the roots. Before placing in the tree, the hole should be partly filled in with good garden loam or some of the surface soil, which has been removed in the digging, mixed with some well-rotted manure.

The hole is filled in sufficiently deep to bring the tree to the same level at which it stood before being taken up. The tree should not be set deeper than it stood before, neither should earth be banked up about the stem, except possibly in the case of fall planting, when it is advisable to heap it up at least a foot high until the spring. This overcomes the tendency to heave out and to a certain extent affords protection against mice.

If the tree retains a ball of earth about its roots it can then be set in the prepared hole. The remaining space surrounding it is then firmly packed a little at a time with good garden loam until the hole is completely filled and the tree firmly set.

It is well to leave an inch or so of loose earth over the whole surface to act as a mulch.

In fall planting a layer of manure or dead leaves over the top will reduce the chance of heaving in the early spring.

Trees without earth around their roots should be set in a similarly prepared hole so that the roots spread naturally and are not twisted or crowded. Rich soil should then be sifted over them, a little at a time, and firmly worked in among them with the fingers or a pointed stick. This is proceeded with until the hole is filled. It is important to have the soil well packed about the roots.

In setting a tree care should be taken from the very start to see that the stem is kept perfectly vertical. Attempts made to straighten it after the earth has been packed about the roots are liable to injure the tree.

Work of Staking.

After the hole has been filled in, to prevent the tree from getting out of vertical by settling of the earth and the swaying of the top in the wind, a guard stake should be used. A single stake is sufficient for any situation in which there is little danger from damage by children or vehicles. Otherwise, a secure crate the full height of the trunk should be constructed about it. The single stake should be long and rigid enough to be driven at least two feet into the ground and still support the tree six or seven feet above the ground. The tree should then be attached to the stake in several places. A piece of manilla rope run through a piece of old rubber hose which has been bent about the tree serves as a good fastener. The hose minimizes the chafing.



PLEASE MAIL THIS COPY TO A SCHOOL TEACHER

Scores of readers of the "Canadian Forestry Magazine" make each copy do double work by mailing it to school teachers, clergymen, and other influential citizens of their acquaintance.

One man mails his copies to Wales, another to India, but what we are asking now is that you give your copy to a school teacher, if possible. Two cents will accomplish this service. You might mark any special articles that you consider more than commonly worth while.

The Forestry Magazine is a publication with a positive patriotic purpose.

Help to double its influence!



The Railways and Forest Fires

Canada's steam roads now a minor cause of forest destruction—Systematic patrol generally enforced

By Clyde Leavitt, Chief Fire Inspector, Railway Commission

A VERY noticeable feature of present-day discussions of the forest-fire situation is the general absence of charges that the railways are responsible for a high percentage of the fire losses. In earlier times, the railways were always referred to as among the greatest offenders in the setting out of forest fires. The probabilities are that they were charged with having set many fires that were actually due to other agencies, but it is nevertheless true enough that both during the construction stage and during the period of operation they were responsible for the destruction of enormous areas of forest.

Of late years, however, the situation has become reversed, and the railways are now definitely among the minor agencies in forest destruction.

It should be noted that the number of fires reported due to railway agencies is not a correct index of the relative damage caused by such fires. Statistics of railway fires are perhaps more complete than of those in some of the other categories, since reports are submitted both by the railway organization and by the governmental forest services which are co-operating with the Railway Commission in providing local inspection. Thus, a very large percentage of the fires which occur are reported.

Consider These Facts

Many of these fires are very small, a surprisingly large proportion covering less than one-fourth acre and doing practically or actually no damage. Further, lands along railway lines are to a very considerable extent either cleared off or logged over, or have been the scene of

old fires, so that the loss of merchantable timber by fire is usually less than in the case of lands at a distance.

Increased efficiency in the prevention of railway fires is evidenced by the conspicuous extent to which young

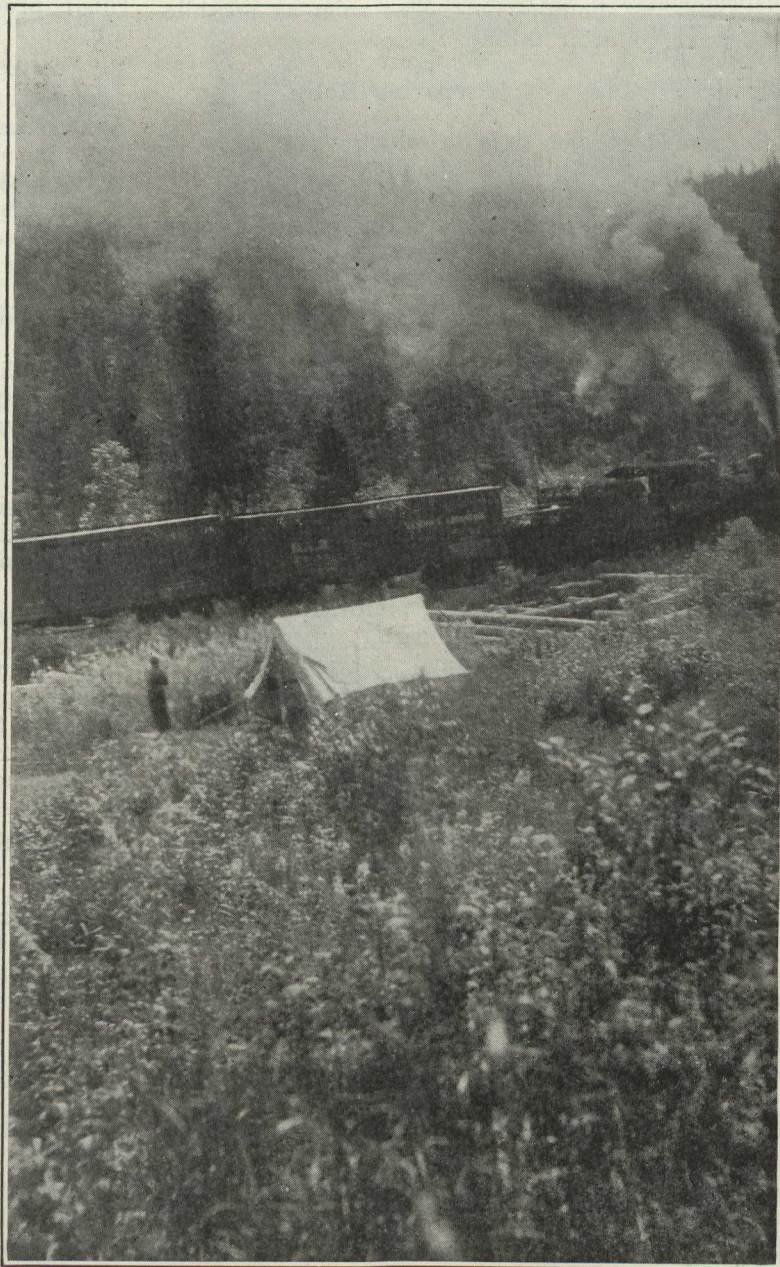
forest growth has come in, during recent years, on large areas previously burned over, along almost any of our Canadian railways passing through forest sections.

The railways realize fully that forest fires along their lines are the poorest kind of business, since they destroy potential freight and passenger traffic of great value, as well as raise the costs of supplying their own future requirements for ties, posts, poles, lumber, etc. Burned areas are shunned by tourist traffic of all kinds, particularly campers, hunters, fishermen, trappers, etc.

Very substantial progress has been made by the railways in preventing the occurrence of fires along their lines. Spark-arresting devices on locomotives are kept in better condition than ever before, according to reports on inspections made by officers of the Railway Commission. Large amounts are expended annually on keeping railway rights of way free from inflammable debris, thus greatly reducing the fire hazard. An intensive system of special fire patrols is maintained through valuable forest areas, and section men and all regular employees of

the railways have very stringent instructions relative to the immediate reporting and extinguishing of any fires that may occur. Warning notices are posted in smoking cars and smoking compartments, calculated to reduce the danger

Two Potential Causes of Forest Fires



Railroad locomotives were at one time justly considered to be frequent causes of forest fires. Now the camper, as pictured above, is the more guilty party.

of fires being set by careless or thoughtless passengers throwing burning smoking materials from trains.

All these features of railway fire prevention are covered by regulations of the Board of Railway Commissioners and are closely checked through a co-operative arrangement under which a large number of the officers of the several Dominion and Provincial forest services are deputized to act as local fire inspectors for the Board. The railways are co-operating splendidly with these organizations to the great and mutual benefit of all concerned.

About Electrification

The electrification of railways would be a tremendous boon from the viewpoint of forest protection, quite aside from its other great advantages. This, however, is a

matter for future development, and may be expected to come slowly, largely on account of the very high capital cost involved.

The use of crude oil as locomotive fuel on portions of the Canadian Pacific and Canadian National lines in British Columbia has greatly reduced the danger of fire, but no great extension of the use of this fuel is to be anticipated, unless and until large supplies become available at reasonable cost from Northern Alberta or elsewhere. At present, supplies are limited, costs are high, and transportation inland is expensive.

The railways should be given credit for not only handling their forest fire problem with very commendable efficiency, but also for co-operating splendidly, with governmental and private agencies in extinguishing many fires for the origin of which they are in no way responsible.

Some "Speaking Pictures" of Shelter Belt Results on the Prairies

"I could never grow my vegetable crops or orchards if I hadn't first planted shelter belts to catch the snows and retain moisture" is the testimony of John Hupka of Winnifred, Alberta, a very successful farmer and a great planter of trees. Some day the prairie west will be a great vegetable and fruit growing country but tree shelters must come first.



Let's have ten thousand John Hupkas! At Winnifred Alberta, Mr. Hupka has made his farm a blessing and an example to the whole neighborhood. He came to a land of "barbed wire and telegraph poles." He couldn't change all of it but he did change his own section. Note the excellent results as depicted above. Mr. Hupka has no irrigation to help him.

A Plan to Improve Ontario's Forest Management

First Great Step is to Properly Enforce the Dominant Business Interest of the State in the Public Owned Resources.

By Dr. Judson F. Clarke

THE widest interest has been shown in the proposed re-organization of the Ontario Forest Service, which has been under discussion for many months.

Recently, Premier Drury asked Dr. Judson F. Clarke, a forest engineer of repute, to submit a report as to what should be done to better the forest administration of the Province. The report is given verbatim as follows:—

I.—DEPARTMENTAL RE-ORGANIZATION

I am convinced that the outstanding need of the present, and for much time that is past, is the placing of the administration of the Provincial forests in the hands of a competent Forest Engineer under the Minister of Lands and Forests.

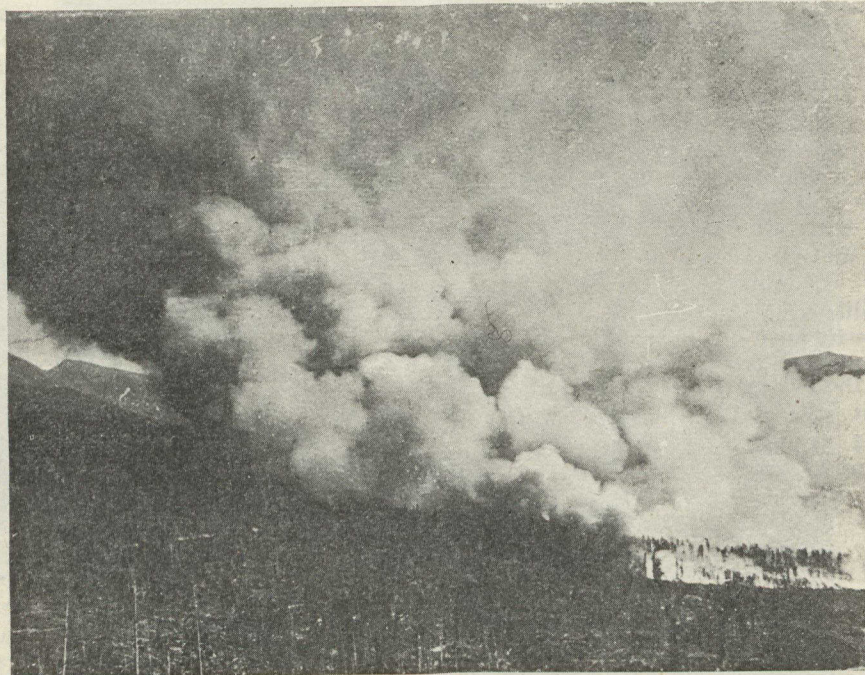
The man for the position must be a Forest Engineer of thorough training in his profession, of proven capacity as an executive, and wide business experience and outlook. The logical position for such a man in the Department of Lands and Forests should be that of Commissioner of Forests: though of much greater importance than the name of the position would be an entire freedom, under the responsible Minister, to develop the Department along business lines so that the Provincial Forests may increasingly be a greater Provincial asset and an ever increasing source of Provincial revenue.

No words of mine are needed to emphasize the vast interests involved or the vast opportunity for service afforded in this matter. I might, however, be pardoned for adding a personal conviction that this position affords the greatest opportunity for a constructive work open to the members of the Forest Engineering profession on this Continent, and your Government should be able and willing to command the services of the best available man. Were I looking for such a man for a similar position in my own business, I would not hesitate to pick Mr. E. T. Allen of Portland, Oregon, as the man who would best

work out the problem. I am sure that the professional opportunity for a great public service would appeal to him strongly. Whether he could make the financial sacrifice involved in giving up his present work, I am not so sure.

The present Department of Lands and Forests, as the name indicates, calls for two distinct, though closely related, departments of public service. The present volume of detail work coming to the desk of the Deputy Minister of Lands and Forests makes it entirely impossible, even with much overtime work, to find the necessary leisure

for study of the larger problems of policy and administration. It is even impossible for the Deputy to have that personal contact with the workings of his department inside and out, which is so necessary if progress is to be made. The present enormous volume and prospective growth of departmental work in caring for the public forests and public lands amply justify the division of this great department into two separate departments, which might be termed the Department of Forests and the Department of Lands, both



The "Reason Why" for the Growing Scarcity of Timber in Eastern Canada. Canada's Forest Fires this Summer Numbered Over 4,000.

remaining as now under the responsible care of the Minister of Forests and Lands.

In organizing a Department of Forests for the care of the public forest lands, it would be logical and in the highest degree desirable that all forest interests should be included under the one administrative head. For example, the administrative care of the Provincial Parks and of all minor forest products, such as Game and Fisheries, would naturally find its place in this department.

Having created a separate Department of Forests, and appointed a Commissioner of Forests, who from a business standpoint will always mean the Business Manager of the Public Forests, this Business Manager must be required and permitted to manage the public forest business. That is to say, the public which deals



Plate reproduced by courtesy of the Western Lumberman.

This Fir Giant measured 417 ft. in height with a clear 300 ft. to the first limb. At the butt it was 25 ft. through with bark 16 in. thick, its circumference being 77 ft.: 207 ft. from the ground its diameter was 9 ft. Felled near Vancouver in August '95 by George Cary, who is seen upon the ladder

with the department must quickly learn that he is the real executive officer, to carry out the policies, laws and regulations of the department as enacted by the Legislature or ordered by the responsible Minister.

It is high time that all the public having business with this great department should understand that hard luck stories of sick wives and children, personal leases and interesting angles of local political situations and such, have absolutely no place as a part of a business transaction having to do with the care of the public forest lands or the sale of the public forest products. For many years the harassing of the Minister and his Secretary with personal and other appeals in the settlement of simple business matters, fully covered by law and departmental regulations, has wasted a vast deal of exceedingly valuable time, and greatly hindered the regular functioning of the department.

II.—SUNDRY OTHER MATTERS

Should the department be re-organized along the lines suggested, it may safely be left to the Forestry Staff in conjunction with the responsible Minister to work out the further re-organization in the office and in the field. I shall, however, as you request, comment on some of those problems which my previous connection with the department and long acquaintance with its work have convinced me need special attention at this time. In this I have been greatly helped by the information made available to the public by the Timber Commission who have so long and carefully examined into the affairs of the department, and by the courtesy of the department officials who have assisted my inquiry in every way possible.

(1) Re Measuring Wood.

The modern diversity of wood products has long since antiquated the measurement of the main forest product—wood—by the Doyle Rule, the Scribner Rule, Clark's International Rule or any other *product* rule. The forest

administration of the Province sells *wood*, and it should not in the measurement of that wood concern its mind with what the purchaser may do with it after he has bought it and paid for it. The Province should sell its customers just so much wood; so many cubic feet of wood; and let the buyer saw it into "feet board measure" with a good or bad saw or a good or bad sawyer, (getting, of course, from the same sized logs various quantities of "feet board measure"); or let him pulp it, or burn it for fuel. Why indeed should the Forest Administration be concerned if a customer should convert the wood, which is sold and paid for, into sugar and eat it, or distill it for moonshine and drink it?

The ridiculous side of using a *product* unit instead of a *volume* unit in measuring wood has not been generally appreciated. This is no doubt due to the fact that we can in time become accustomed to almost anything, (we have used the present product unit for over forty years), and perhaps more especially to the circumstance that the evils of a product unit were of gradual development as the methods of manufacture and the uses of wood gradually changed. Should a gasoline merchant decide to measure his gasoline on the basis of the *mileage* that he thought his customers ought to get in their various cars, or the number of pairs of gloves that they ought to be able to clean with the gasoline, his troubles would be well begun.

The troubles of the Province with its habit of measuring the wood it sells by a product (*Board foot Unit*) instead of a *volume (cubic foot) unit*, have long since been well begun, and have bred much undeserved loss and unearned gain, also endless suspicion and controversy.

There is, of course, no question that the cubic measurement of wood is the ideal measurement. It is also clear that it is entirely practicable. It is, indeed, much the simplest means of measurement for future sales. Happily, it is already being used by the Department of

(Continued on page 1109)

On this and the opposite page are reproduced interior photos of the Forest Exhibits Car of the Canadian Forestry Association, which attracts over 200,000 people a year in scores of small communities. This car is equipped to tell the story of forest protection by unique and graphic appeals. During the present year this car has travelled 9000 miles in the provinces of British Columbia, Ontario and Quebec.



To the left is shown one of the 'rooms' of the Forest Exhibits Car, showing a model of a pulp and paper town, samples of woods, a display of Canada's water powers as related to forest industries, etc., etc.



E D I T O R I A L

ILLUSTRATED CANADIAN FORESTRY MAGAZINE

Published and Owned by

**The Canadian Forestry Association
Jackson Building, Ottawa, Canada**

ROBSON BLACK - - - - - Editor
GEORGE A. MACKIE - - - - - Publication Manager

SUBSCRIPTION RATES

With Membership in Canadian Forestry Association.	\$2.00 a year
Contributing Membership	\$5.00 a year
Life Membership	\$25.00

SINGLE COPIES, 20 CENTS.

NOTICE TO CONTRIBUTORS

The Editor will consider for free publication articles, photographs and communications of general interest. Rejected matter can only be returned if the necessary postage is enclosed, and no responsibility is undertaken for the safe return of such matter. When payment is desired the fact should be stated. Letters and articles must be written on one side of the paper only. The views expressed by contributors writing over their own signature are not necessarily endorsed by the Editor.

Pashas Without and Within

IF MUSTAPHA KEMEL PASHA stole a shipload of lumber from one of John Bull's merchants, the whole British Empire would be on tip toe to see who gave Kemel his first trouncing.

We like to see our national friends and enemies draped becomingly in flags and bunting. We seem to recognize antagonists only when they have been passed upon by a Cabinet Council. Then commences the flood of telegrams: "Every man and every last dollar"; "Count on the whole battalion"; and much more of a like and worthy sort.

Meanwhile, a hundred Kemel Pashas work vast mischief to the economic life of this Dominion. They wear no uniforms, they trouble no Foreign Office. They raise no alien flags. The pillage they do pays perpetual dividends of misery. But because these evil forces are not rigged out in the uniforms of foreign tyrants, we fill up our days with turning furrows and laying bricks and thank the Lord that Canada has nothing to worry over.

Well, Canada as regards her forest problems can free her mind from worry only by shutting off her intelligence. The heaviest drag on the progress of Canada has not been a National Debt but a neglect of the natural resources. The needless sacrifice of white pine by fire in Ontario and Quebec alone would unquestionably have matched the present provincial debts. The squandering of timber through unobstructed fires in the prairie provinces has doubtless been equal to the bond issues of the three administrations. Month after month the reckoning of forest fire losses, as published in this magazine, would astound and stir to action any board of directors of a private company, but leaves untouched that peculiar Company of Citizens in charge of forest assets valued at several billions of dollars. Why is it so?

The Canadian citizen is no dullard. He is accustomed to act promptly on what is put up to him as a "public issue." But we are not a nation of political or economic students. We wait for the newspapers to tell us what the

"issues" are. Sometimes we pick up a hint from our politicians. That is why the American continent is so readily swayed by propaganda. An issue not backed by organized propaganda is elbowed out of the main road by issues that are. This may explain why the great basic policies—the sane conserving and developing of the natural resources, for example—have had to give way in legislative halls to less important but more emotional issues of social reform, road construction and the import tax on mouse traps. Inaction by our governments on the really vital matters is a precise barometer of public opinion. Until public opinion on forest preservation takes on the glow of an evangelistic cause, we will continue to take our seats about the arena of blazing forests with the same unconcern that we apply to 34 cents worth of Rudolph Valentino.

The Canadian Citizen owns eighty five per cent. of the forest area. And he does not know it. The Canadian Citizen being the forest owner is the responsible forest conservator. He does not know it. The Canadian Citizen is a personal trustee for his grandchild's forest inheritance. He does not know it. The Canadian Citizen as forest owner, holds in his hands the responsibility for the greatest industrial expansion that lies in the path of this nation. But he is unaware of it.

The moment the simple convincing facts of his partnership in the profits and penalties of forest management are put in possession of the Canadian Citizen, the jubilee of forestry will be at hand.

A TRIBUTE None the less appreciated
through being unexpected
by the Catholic Record

HERE is a magazine (Canadian Forestry) which to those having the welfare of the Domini on at heart is informing and interesting in the highest degree.

This Magazine, as the official publication of the Canadian Forestry Association, is devoted to the preservation and development of the forest areas of Canada, but it is not a journal purely technical in its scope and make-up. On the contrary, it is full of interesting matter on the great life out of doors, and by its graphic delineation of the scenic glories of the Dominion becomes an important factor in the stimulation of that love of country and zeal for its advancement which does not exist in the degree that it should if Canada is to attain the great position in the world's affairs to which her resources, climate and geographical position entitle her.

Canada's timber areas have constituted one of her greatest natural resources up to the present time. But when one considers the terrific drain upon them, first of all by fires (often by ordinary precautions preventable) then by lack of judgment in felling, and finally by the neglect of reforestation it becomes easily conceivable that it is a heritage not destined to last long. The mission of the Forestry Association, and of its magazine, is to conserve existing resources, to provide by reforestation for the needs of the future and to create aesthetic appreciation of the tree, not only as a source of wealth, but as that "thing of beauty" which is a "joy forever." It would be a great gain to the nation, then, if the Canadian Forestry Magazine, (whose office of publication is at Ottawa) found its way into even a tenth of the homes of Canada.

Let's Have a Bonfire!

An Editorial in the Pulp and Paper Magazine of Canada.

COME ON, let's burn it all up! There's wood enough for a dandy fire. All over the Dominion there are acres of slash, left by careless, thoughtless lumbering.

There are also large areas where the bud-worm and windfall killed trees lie on the ground, making a tangle of debris that will prevent the fire fighter from making headway. All we have to do is to build too big a campfire and leave it burning; or we can throw down a burning match; or throw a cigar stub or cigarette butt from the railway train, or motor; or burn brush on a clearing, close to the timber; or use locomotives or saw mill engines with out good spark arrestors. It's a cinch to start a forest fire, and gee! what a fine blaze it makes.

Of course it will probably burn some nice big trees too, but what do we care? We don't have to hunt and fish in the woods; we can go to the ocean, or on the big rivers. In fact if we get rid of the woods, the fur animals will have to go somewhere else. Some calamity howlers say that civilization is built of wood and that Canadian industry is largely dependent on the forest. That's all poppy-cock. We don't need wood for houses, this is the age of steel and concrete—and let the baby wear a head-guard so he won't crack his skull on the cement floor. We shall not need axe handles as there will not be any wood to cut. And no more splinters—won't that be fine! We can slide down the aluminum ladder without danger to our breeches.

When we go fishing on the ocean we can sail a steel or concrete boat—they sink better than wooden ones. The fisherman need not bother about barrels, tubs or boxes to ship his fish in. He can eat what he wants and use the rest to fertilize his garden.

And then come the books and papers. Why should we have them? They just occupy time that might be employed in sleeping or other useful work. Newspapers use up lots of wood, so the best way to kill them off is to burn the trees; or ship them out of this country—anything to get rid of them. We are doing pretty well at it, however. In one Province we burned over a million acres last year, and nearly as much already this year. Other provinces are doing as much or better. At this rate it will not take long to get rid of the ugly green things the poets talk about and the artists make pictures of. The idea of letting the trees keep the water from running back to the sea, and taking the warm brown earth along with it! Isn't it lots nicer to see a tumbling torrent in spring and the nice smooth rocks on the bottom in summer? Even if the cattle do go thirsty, we have enough milk canned; or the fields dry up and crops fail, we can buy less (we'll have to); or the factories shut down for lack of power, we can rest; or the stock of lumber for houses fail, we can find a cave some place.

And the Lord seems with us in our destruction of the forest. He sends the spruce budworm, the larch saw fly, the borers, fungi, lightning, and wind. Don't give it up! We can have Canada as bare as a billiard ball in another generation if we only keep on burning and exporting our trees. There will not be so many jobs—nor so many to do our work and buy our goods. Consequently, with less work there will be more rest. Oh, happy thought. What if we don't get enough to eat, there is still plenty of fresh air and water and earth. The elements present therein are only rearranged to make human bodies. Perhaps some genius will perfect a new mutatory apparatus in place of our antiquated alimentary and respiratory systems.

So down with the trees!

A New Ford Experience

HERE is a true tale of a Ford which our readers will appreciate. It comes from one of the Canadian Forestry Association field men who made a trip of inspection in Alberta by means of a machine belonging to an early vintage. The story goes on:

"It was an excellent trip, one in which you had plainly to trust in Providence about ninety per cent. and depend upon your driver and the Ford for the rest of it. We are advised on very high authority of the excellence of walking by faith and this trip was what might be very aptly termed a moving illustration of the same. Our driver had only one eye, and a most uncannily careless way of gracefully waving one hand over the landscape and twirling the wheel with the other. Added to this, we found his reputation is that he never rides with the windshield up now as he had been propelled so frequently through previous ones on occasions when his career was stopped short in a ditch. He carefully showed us how well he looked after his running gear and pointed out the bolts in the steering apparatus and elsewhere that were worn down almost to the vanishing point and which he intended to have replaced "the next time" he went to Taber. He was a cheerful old bloke. We asked him if his father's name was Nimshi, but in the words of the old song, he failed to see the point. It is to be hoped that when the Provincial museum is fairly under way the old Ford will be secured as an example of long life, coupled with extreme activity. A novel feature was that he used rope instead of wire to fasten his doors and hold his fenders up. Even his fashion of blowing out tires was new: In this case the tire was not only blown out, it was actually blown away. One of the passengers walked back from the point where the machine was brought to a standstill (about half a mile) where he found about a third of the inner tube in the side of the road. The old man couldn't understand it and certainly neither could we. However, he was well equipped to remedy all defects in that regard and we soon went on our way rejoicing. We enjoyed every minute of that trip."

Duty of Foresters

"I like to emphasize with all my strength that the object of a forester is not to protect trees from being cut. There would be no foresters employed in this or any other country if there were no lumbering operations. It is the forester's business to produce wood, and if he can make money in cutting and selling trees three inches in diameter he is doing perfectly legitimate business. The guiding principle in forestry is to see that wood production is continuous for all time; to see that areas that have been cut over shall come up again in commercial trees; that areas having been burned over shall be regenerated with commercial trees; and that waste lands and areas unfit for agriculture shall be made to bear commercial trees." —*Dr. C. D. Howe.*

Public Opinion -- the Lumberman's Senior Partner

The controlling factor of all wood-using industries is not the state of the market but the state of the forest

By Rol son Black, Manager, The Canadian Forestry Association

A PINCHED-OUT Forest means a pinched-out lumber industry. An impoverished forest means dear lumber, poor lumber. It means also a jubilee for wood substitutes, as tin, asbestos and cement. After all, the controlling factor of the lumber trade of Canada, as conditions stand in 1922, is not a folio of building permits but the productive capacity of the forest resources.

"Every prediction I ever made on forest depletion" said a wide-eyed Canadian lumberman the other day, "has turned out wrong."

"You don't mean to say that," protested a friendly listener.

"I mean exactly that," replied the lumberman, "because my predictions have always *under-estimated* the truth as it turns out."

True it is that the unpalatable prophecies of observant Canadians of thirty years ago have been out-distanced by actual present-day conditions. None of us enjoys the doleful sayings of the "denudatic." We are all

Canada, for example, and the quality of manufactured lumber.

Of course we all recognize the reason why the owner of a lumber yard or a saw mill does not always consider Forestry as one of his active interests. He and his father, perhaps, have been "moving on" from operation to operation for seventy years. They have always had logs and in what is left of their lives probably always will be able to cut or buy a log supply. From the log to the consumer he knows every step. But what lies in the opposite direction between the log and the seed of the tree that gave the log he may leave to chance, or at most to "the Government." The "life expectancy" of a growing forest is, say, sixty to a hundred years. And that is a long imaginative bridge to ask any man to travel. "Cheap logs! Cheaper logs!"—like cheap wool or cheap eggs—has a horizon of six or twelve months. That seems long enough in a business field choked with uncertainty. Most of us live a day at a time and our field glasses have no



An effective reminder to motorists and others, used by the New Brunswick Forest Service at many points throughout the province. The road shown in the picture is between Chatham and Bathurst and passes through 35 miles of unbroken forest.

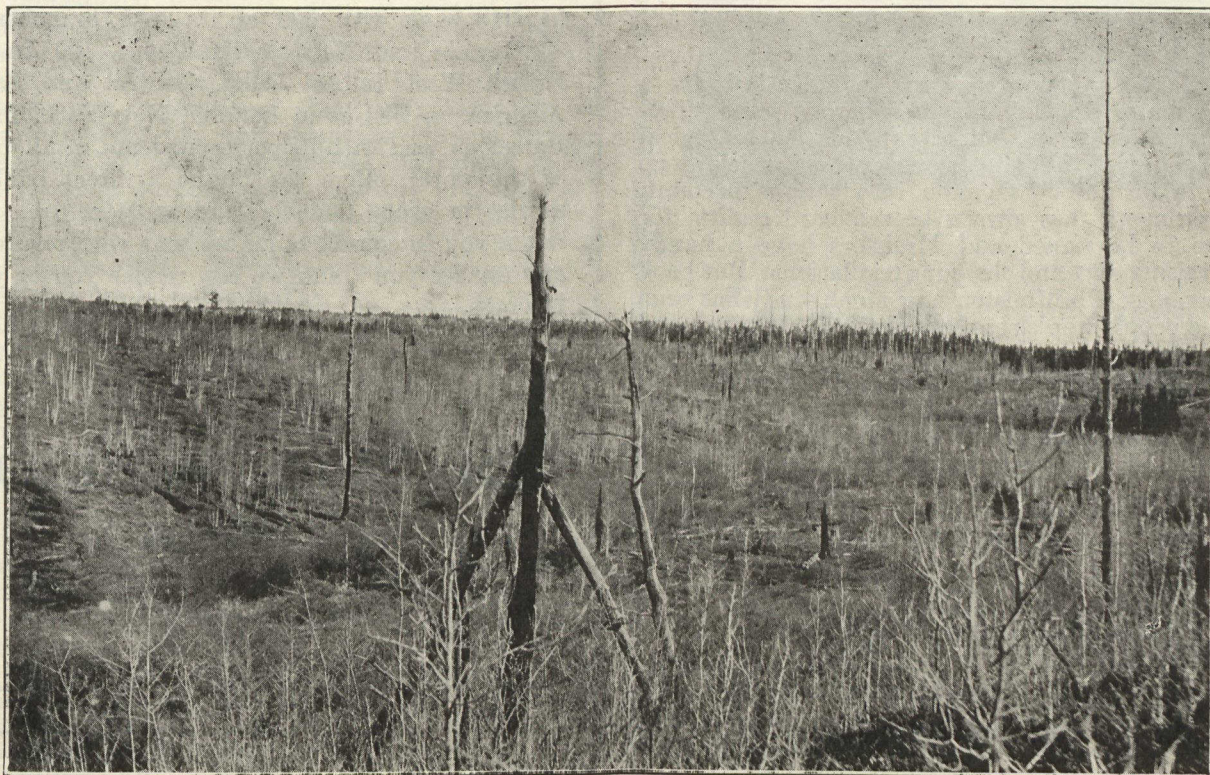
Micawbers by lazy instinct. Something will turn up, we say. Lots of things are turning up. Logging costs, for example. Length of haul and length of drive. The sale of substitutes. Competition of foreign woods. And a few things are turning down. The size of logs in Eastern

more range than to the other side of 1923. That may do decently enough in a shingle mill but it plays the devil when we apply such human limitations to the forest for Nature is a leisurely old lady and she works by a tedious Law.

Flame Throwers

A hundred years may be her fixed rotation for a white pine crop. We protest, we defy, we say: "you can't do a lumber business on that basis" and proceed to break every law of reproduction. We let loose our settlers, our campers and smokers with thousands of torches and start in this year of grace alone about four thousand forest fires. We Canadians turned into charcoal since 1822 a forest estate eighteen times the size of the Maritime

sponsibility to some degree, depending upon the Provincial or Dominion enactments. For example, in Quebec the licensee usually controls his fire protection through a mutual association of his fellow limit holders. In Ontario the Government Forest Service is sole boss of fire ranging. In British Columbia the partnership of limit holder and Forest Service follows more than mutual plan. But everywhere in this Dominion the government that owns the non-agricultural land on which timber is growing



Destruction Caused by Repeated Forest Fires on Portions of Cains River Watershed, New Brunswick. Scattered Reproduction Has Started Only Near the Edge of the Green Forest.

provinces. We spread flames across seven-hundred thousand acres of Ontario last summer and as much of Quebec and had over two thousand blazes in British Columbia between May 1st and August 1st, 1922. And after that we hoax ourselves with the belief that a boom in building permits is the last word in permanent trade revival. It is not the last word, nor the third from last.

Let us get back to the gist of the original text: A forest without timber trees is a lumber yard without lumber. We do not need to go that far. Progressive deterioration of the Canadian forests is automatically reflected sooner or later in increased competition and higher prices and lower demand in the lumber trade. We cannot play hob with the raw materials and keep the market thriving. It couldn't be done in the textile or flour milling or shoe making industries and the lumber business is not an exception.

Very well, then, if an A1 lumber industry in Canada cannot be built upon a C3 forest, whose business is it to look after the natural resources; whose business is it to stop the present plague of fire destruction and put the timberlands on a basis of sustained yield?

Where the State Comes In

In Canada where fully 85 per cent. of the forest lands are owned by the People and managed by the Governments, the primary responsibility rests upon the State. The timber license holder, by law, must share this re-

recognizes, (in principle anyway), responsibility for keeping those lands in a state of continuous timber production. The licensee, so the theory runs, must operate so as not to depreciate the value of public-owned areas as regards the sustained yield of the only possible crop, timber. This is indeed the primary purpose of public ownership of forest land, for the State thereby declares that while timber utilization is a private commercial function with us, *timber growing* is a long time proposition necessitating the exercise of public credit and a tireless uniformity of management over great lapses of time, utterly impossible of consideration by any private corporation.

Now let us ask ourselves a question: Since the Government is the acknowledged protector and conservator of the forest resources in Canada, by legal fact and moral right, who, pray, is the Government?

The Government is a company of legislators and cabinet executives elected and dominated by Public Opinion.

The People are the Landlords

The Forest Protection Service, its personnel, its good laws and its loose laws, all its inadequacies and inequalities, are there because the weakness of public demand, the sluggishness of popular intelligence on forest matters make any other situation impossible. After all, it is the People who own the forest lands, with few exceptions, and thereby are the permanent landlords. It

is the masses who have most to lose by forest destruction because the State pays enormously the greatest penalty when a township of timber goes up in smoke. It is the People who destroy their own patrimony, for nine out of ten forest fires are set by "good citizens." To call a convention of limit holders on forest protection is a simple and sometimes useful procedure. But until the man on the street—millions of him—is called into a conscious partnership with the forest resources, their protection from fire, and their operation on a programme of reproduction, we are simply trying to start a locomotive without the preliminary of raising the steam.

Who that knows how easy and popular it is for a radical newspaper to libel "timber barons" and "predatory lumbermen" can doubt that this is the logical result of a policy of the industry as a whole which at no stage has taken Public Opinion into serious account. The "Government" has always been a hard reality, for leases have to be signed and Ministers have a handy faculty of raising dues and changing regulations. But back of the personality of a Minister, how much study has been given to the people who elect that particular Minister and control his acts? How much time does the limit holder spend in learning "why" people burn his timber for him, "why" popular legislation handicaps him, "why" public co-operation is so clumsy and so tardy? In no other Canadian industry is the sympathy and support of the general public so utterly essential. The lumberman must have it or lose his timber by fire. He must have the public with him or be damned by public suspicion and ill-will, expressed in pawky legislation.

Public Rights and Public Duties

The public, of course, is fast acquiring a sense of its "rights" in the natural resources. The "rights" mean little in national betterment unless parallel by a sense of responsibility and a desire for fair play. There is no point of antipathy between an *informed* public and the operating limit holder, but a *misinformed* public can easily put half the limit holders out of business. The major faults in all public forest policies today are the faults of popular belief or lack of belief, for under our form of government, our principle of forest land ownership, the power of ignorant belief can accomplish any mischief it sets out to do.

Take the one matter of forest fire prevention! Some men still think that this is the job for fire rangers, canoes, towers, and—nothing more. Fire inspectors, chief rangers, the most experienced of the field men say otherwise. They say: "We must have organized patrol, of course, and mechanical equipment, but the big task is to *prevent fires from starting*. We must get the good will and personal help of the thousands of campers, settlers, railroad men, fishermen and others who start the fires. These men start forest fires because they don't give a "whoop". It is not so very hard to make them care a good many whoops but that is mainly an educational job. It needs persistent, patient propaganda." Note what Henry Sorgius, manager of the St. Maurice Forest Protective Association, one of the most experienced men in his line, says:

"Every dollar spent in educating the public against forest fires is worth over \$2,000 spent in detecting fires. This is the only method to obtain real protection and I am saying this after my eleven years in this particular line of work. It is through experience that we are apt to know the best means. Look at the results that we have obtained from the settlers, log drivers and railways and this I may say is all due to the education of the public either by posters, lectures, etc. If we want to save our forests we

A World-Wide Banking Service



THIS bank with 600 of its own branches in Canada and Newfoundland and 100 in the British West Indies, Cuba, Central and South America, as well as in London, New York, Paris, Barcelona, and with its correspondents in all parts of the world, offers the public a direct banking service in every financial and trade centre. We invite you to consult our Managers with regard to any service you think we can render you or your business.

THE ROYAL BANK OF CANADA

Incorporated 1869

WELL SECURED BONDS FOR INVESTMENT

YIELDING
6% to 8%

We buy, in whole or in part, issues of securities for the financing of corporations, municipalities and provinces

Write for Investment List

Greenshields & Co.

INVESTMENT BANKERS
Montreal: 17 St. John Street
Toronto, 14 King St. East
Ottawa, Central Chambers

will have to prevent fires and not wait to detect them when it is too late."

Public Opinion Dominates

Mr. Sorgius' view is no different from that of the other efficient managers of Quebec forest protective associations or of the heads of government forest services. Let us look for a moment at the force of propaganda in other spheres.

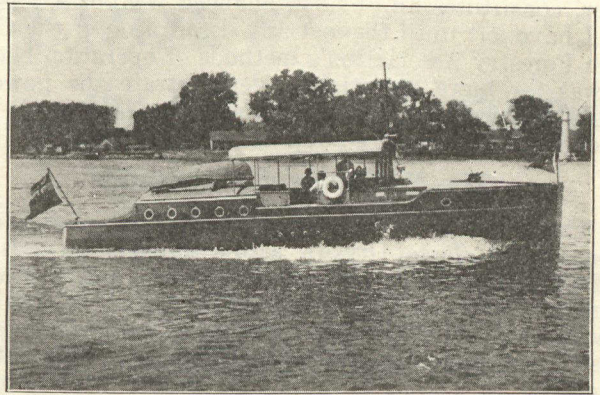
In the first Victory Loan campaign 30,000 people, mostly professional investors, were persuaded to buy bonds of the Dominion Government. Recognizing that the mass of people must be persuaded to purchase bonds the Minister of Finance began his next campaign by a hard-hitting and inspirational advertising campaign on the simplicity and profit, and patriotism of bond buying. As a result 800,000 people purchased Government bonds. A short time ago the coca cola company of New York sold their goodwill for three million dollars. That three million dollars was paid for an attitude, not for anything substantial or tangible. The money was paid because an idea has been firmly implanted in the minds of millions of persons that a particular drink was worth buying. More recently, the United States private-owned railways sought a remedy for their troubles under public operation by carrying their case to the general public. As a result the private railway managements secured an almost unanimous verdict in their favour which certainly would not have been possible had they not called in the jury of public opinion.

Is not fire protection as palpable and plausible as coca cola or a Victory Bond? Is not the Canadian citizen, with a high average of education and a keen sense of fair play, as ready to back forest protection as he is to back a telephone company or railway? Emphatically he is. During the past ten years we and other agencies have proved it so. Others have proved it so.

Now what has all this to do with the Canadian Forestry Association?

The Canadian Forestry Association came into being twenty-two years ago to develop an intelligent public opinion on the subject of forest conservation. The Association is directed by men representative in the widest sense of all interest, involved, the profession of forestry, the railways, newspapers, the lumber and paper companies, the agricultural interests and many others. The view point is national and philanthropic. No private interest enjoys the inside track. Policy and action proceed from a belief that the public interest in forest conservation is the dominant interest and that enlightened management of the forest resources will not come except through an educated public opinion. This is the theory on which all the great forest services of Europe have come into their present status. It is equally the conviction of thousands of Canadian patriots whether in the lumber business or in the forestry profession or running an Alberta farm. In a very few years, it is bound to become the working principle of every forest administration in this Dominion and will be a recognized plank in political platforms.

The business—for it is a definite business—of *creating public opinion* on such an issue as forest protection called into being twenty-two years ago the Canadian Forestry Association. Why not have left the task to a Government department? Because political limitations were and are insurmountable. A national association working from coast to coast amongst all classes of people in every province must have no politics. Why not attach the work to a lumber or paper mill association? For the reason that propaganda from a commercial body is earmarked as self-seeking and ruled out of court instantly by the public it attempts to influence. The strict *independence*



Pictured above is an example of the skilled workmanship executed in our plant.

WE are qualified and equipped to undertake original or standardized designs and carry them out in detail. On our staff we include a Naval Architect who will act in an advisory capacity in the preparation of plans and specifications.

No work is too large and none too small to receive our most careful attention.

We solicit enquiries regarding the construction of all types of motor driven and sailing craft.

**MONTREAL BOAT BUILDERS
LIMITED**

371 St. Joseph St. Lachine, Que.

of the Canadian Forestry Association, therefore is perhaps its mightiest asset, and at the same time, as will appear later, constitutes an obvious financial weakness.

I have left until the last any description of the Canadian Forestry Association's methods of operation because it was far more essential to demonstrate the power of public opinion over the forest industries of Canada than to define a scheme of standardized propaganda.

The Workings of Propaganda

The Canadian Forestry Association maintains a modest head office at Ottawa, with a Manager, an assistant, a Publication Manager, two field men, and a staff of stenographers. The financial maintenance comes from government grants, company grants and membership fees. It is interesting to note that firms having nothing whatever to do with timber industries contribute as much or more than all the lumber companies combined. This well illustrates the broad basis of public sentiment concerning forest conservation and tree planting. The total of revenues is about \$50,000 a year, with another \$15,000 in donated services and materials.

Two railway cars, one fitted as a lecture room, with electric generators and motion picture equipment, the other as a Forest Exhibits Car or, as it is called, "a traveling school in forest protection" are kept in action about eight months of the year, attracting in hundreds of very small communities an aggregate audience of over 200,000 persons. The chief duty assigned to the Lecture Car and its two field men is the development of tree planting in the bare southern areas of the three prairie provinces. This is not exactly forest conservation but it is closely allied and the public consequences of the campaign on the prairies are so remarkable that the enterprise now constitutes one of the strongest reasons for the Forestry Association's continued existence.

The Forest Exhibits Car which moves only in forested districts argues forest fire prevention by visual instruction. Elaborately built models showing the destructive power of forest fires, the importance of forests to farm fertility, the connection of good jobs and good timber, and many other features of the subject impress the throngs of visitors as nothing else could do. Then, too, scores of visitors are met and talked to by one of them in charge. They are given literature on forest fires prevention. In the evening they come to a motion picture demonstration in forestry and fire prevention. Many a day this summer showed an attendance at the car of 4,000 persons, all keenly interested in the Car and the meetings. Scores of thousands of these people had never previously thought of their personal responsibility in keeping fires out of timber.

The Help of the Canadian Editor

The largest number of people are reached, of course, through the Association's daily news service to four hundred Canadian newspapers and magazines. Articles written in popular style are syndicated from coast to coast. "Questions and Answers on Forestry" appear in scores of papers of great aggregate circulation. "Special interviews" are sent out by wire. "The Editor's Scissors", containing items for clipping has proved of great value. It hardly needs to be stated that the French language is employed in the Province of Quebec to the limit. One of the recent new undertakings has been the broadcasting of weekly "talks on the forest" through the Marconi Company's radio stations.

Have you seen the forest protection cards attached to menus on the dining cars? Thirty thousand of these have been used this summer through the Canadian Forestry Association. Perhaps your boy has carried home an Essay Competition for cash prizes. This again was the

AVIATION INSURANCE

We are prepared to place coverage on short notice with respect to Aeroplane and Aircraft Risks as follows:—

- (1) Accidents to Pilots and Passengers.
- (2) Damage to Aircraft, Full Cover, including Burglary and Theft.
- (3) Public Liability and damage to property of others.

For particulars and application forms

apply to

LEWIS, APEDAILE & HANSON

Incorporated

809 Lewis Building, 17 St. John St.,

Telephone: Main 7077-7079

Montreal

Is It Fair to the Ranger?

To Provide him with no means of showing what work he does?

To Expect him to be his own Time-keeper?

To Expose a faithful and reliable man to suspicion?

He has only his word to give that he was on duty during long weeks away in the woods.

GIVE THE RANGER A SQUARE DEAL—

PUT FIRE RANGING ON A BUSINESS BASIS—

Hardinge Fire Ranger's Clocks enable every Ranger to furnish indisputable records of each day's work, even though they may be away from Headquarters for a month at a time.

Make a test of a system for the balance of this season at our Expense. It costs nothing.

Hardinge Bros. of Canada, Ltd.

50 Front Street East, Toronto, Ont.

Canadian Forestry Association's work: a nation wide effort to interest the school children in Canada's forests, fire prevention, and tree planting. Perhaps you have heard your clergyman give an address on forest protection as a preliminary to his sermon. Thousands of ministers give such co-operation to the Forestry Association, as do thousands of school teachers.

It would, perhaps, prove tedious to go on and enumerate the full variety of Canadian Forestry Association's publicity schemes launched in a single year. The power of the Association's membership, however, cannot be passed over without a few words.

Twelve thousand Canadians are members of the Association for two reasons: because they believe that forest conservation is the greatest need of present-day Canada and organized effort is the only hope of success, and because they appreciate the Illustrated Canadian Forestry Magazine which is part of the return made for the two-dollar membership fee. This body of influential members is scattered in hundreds of communities, one or two here, fifteen or so there, each acting as a local point of educational contact for the spread of the Association's propaganda. When doctors, storekeepers, farmers, (yes, 2,000 farmers) newspaper editors, bank managers, fruit growers, and almost every class is willing to take a hand in forest protection work, is it too much to suggest that every business man in this Dominion, having a direct interest in the Association's success should take up membership without a moment's hesitation. The membership fee of two dollars only pays for the blank paper and the printing of the magazine. For those desiring to take a larger share in the work, a Contributing Membership at five dollars is quite to the point.

Abraham Lincoln, who knew as few others the main-springs of human action once made a statement which might well be blazoned over the doors of the Canadian Forestry Association:

"In this and like communities, public sentiment is everything. With public sentiment nothing can fail; without it nothing can succeed. Consequently he who moulds public sentiment goes deeper than he who enacts statutes or pronounces decisions."

We Offer for the Next 30 Days

PENDER

The Big \$6.00 Electrical Engineers'

Pocket Book

at \$3.50 Post Paid to
your Address

Send Your Order To-day and SAVE \$2.50
To Book Department

The Illustrated

Canadian Forestry Magazine

225 Jackson Building, Ottawa

"EDDY'S"--

the best word in Matches

"EDDY'S" is the Canadian word for Matches.

Isn't it good to know that, when you say "EDDY'S" to your dealer, you can secure the best Matches that money can buy—safer, better and more dependable Matches for every consumer use.

Counted and packed under Government supervision. Every Match treated to prevent dangerous after-glow.

THE E. B. EDDY CO.,

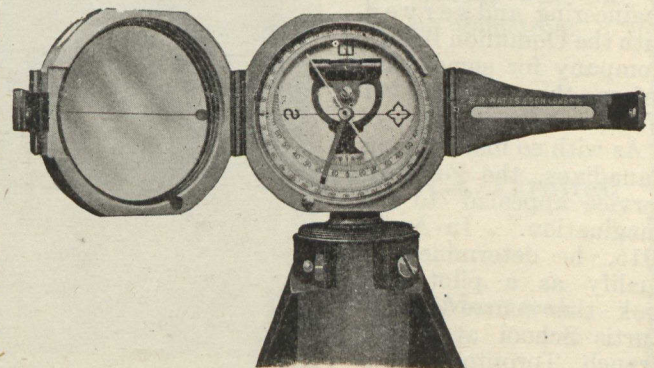
Limited

Hull, Canada

INSTRUMENTS

LIMITED

Scientific Instruments for Every
Purpose



THE BRUNTON TRANSIT

Drawing Office Materials, Temperature
Measuring Instruments, Power Plant
Instruments.

Head Office:

43-45 BANK ST. OTTAWA, ONT

Clarence MacLaurin, D. S. C.

1889 - 1922

An Appreciation

"Death Chooses a Shining Mark"

NEVER was it truer than of Clarence MacLaurin, drowned off Point Grey, British Columbia, on September 11th, that "death chooses a shining mark".

The cause of the accident will probably never be ascertained, though it is possible that further light may be shed on the circumstances during the official enquiry now being held. As in so many cases, he alone knew the sequence of events. The controls were found to be intact. His skill as a pilot and long experience make it hardly credible that he stalled his boat in flight. He has joined the noble army of martyrs to the cause of aviation. Canada is today poorer by his loss and the Air Force mourns an officer beloved by all who knew him.

Born in Ottawa in 1889, the youngest son of Louis MacLaurin, now of Lachine, Quebec, of the well known family of Ottawa Valley lumbermen, he was educated in the Public Schools and Collegiate Institute in Ottawa, and afterwards at McGill University. He chose the profession of engineering and served with the Dominion Bridge Company for some years before the outbreak of War.

As with so many young Canadians, the Flying Service appealed to his imagination. In April, 1915, he determined to qualify as a pilot and took the course at the Curtis School at Long Branch, Toronto, at his own expense. He was accepted for the Royal Naval Air Service and proceeded overseas, one of the first little band of six cadets sent from Canada. He was posted to Chingford Air Station for further training on land machines, then to Calshott, the Naval Air Service Training Base, for seaplane training. He was discharged to active service in October of that year and appointed to command the Naval Air Station at Bembridge, Isle of Wight, where he remained in charge until January, 1918, on anti-submarine patrols

and convoy work in the English Channel. In January, 1918, he was promoted to the rank of Squadron Commander, Royal Naval Air Service, and attached to Felixstowe, the great Naval Air Base on the North Sea, for further experience in the larger types of flying boats then being developed for long distance patrols in the

North Sea in conjunction with the fleet and anti-submarine work of the Navy. In March, 1918, he was appointed second in command of Huton Bay Naval Air Station where he remained until September when, after a serious illness, following exposure for 48 hours in the North Sea after a forced landing, he was transferred to Washington, D.C. and attached to the United States Naval Air Service in an advisory capacity. In October, the Department of the Naval Service applied for his services to assist in the organization of the Royal Canadian Naval Air Service. He remained in Ottawa until the Armistice busily engaged in the building of the Naval Air Stations at Halifax and Sydney, N. S. and the organization of the first distinctively Canadian Air Force. After the Armistice this force was demobilized and Major MacLaurin was retained as its Director during the demobilization period.



The Late Major Clarence MacLaurin, D. S. C.

A Valorous Record

His War record was a distinguished one. His character and ability gained him early promotion and the Admiralty awarded him the Distinguished Service Cross for gallantry in action.

On the advent of Peace his activities turned to the development of civil aviation in Canada. He was quick to realize the possibilities of flying in Canada and the aid it would bring to the development of the country and the conservation of its resources. His personality inspired confidence everywhere. The ready response and generous co-operation, in the early

development of flying in Canada, received from the many Branches of the Government engaged in forestry, survey, and exploration work in the remoter parts of Canada, were due, in a large measure, to his clear, practical judgment. His counsel and advice were invaluable during the interim period. The Air Board Act, 1919, conveying the control of aviation in Canada, owes much to his knowledge and foresight. After the formation of the Board in July, 1919, he was asked to make a survey of the Eastern Provinces of Canada and report on the most useful and practical lines of development in the Maritime Provinces, Ontario and Quebec. His early reports on the possibilities of aviation and its probable lines of development were prophetic and show the soundness of his judgment and the clearness of his vision. He was in the closest touch with foresters and surveyors and their interest in aviation and the quick response received from those services is largely due to his missionary work in 1919 before organized flying started in Canada.

In the summer of 1920 he was appointed Air Station Superintendent, under the Air Board, and proceeded to Vancouver, B.C., to take charge of the construction and operation of the Station at Jericho Beach. Here his energies had a splendid field. After three months strenuous work he was ready for flying. In November of that year he took a flying boat into the interior for demonstration flying, from Kamloops and Sicamous, for the Forestry Branch Department of Interior. Though weather conditions at that time of year were miserable, between November 1st and 15th he made 20 flights of a total duration of 22 hours and 45 minutes, covering the whole area between Ashcroft and Sicamous, on the C. P. R. main line, and from Nicola Lake and Mabel Lake on the south, to the head of Adams Lake and well up the North Thompson Valley on the North. This expedition showed clearly the possibilities of flying in British Columbia. The Dominion and Provincial Governments were quick to support the useful development of aviation and in 1921 a full programme of work was carried out from the Station for many Branches of the public service. During that year 362 flights were made with a total of 488 flying hours and a mileage of 36,600. During the present year this work has been continued and extended.

Great Service at the Coast

It is safe to say that at no station in the world has a greater variety of useful applications of flying been developed. In three years flying, much of it under difficult conditions, no fatal accident has previously happened to any water machine in the Air Board service. Major MacLaurin, as well as being a natural pilot of the highest order, had administrative ability in extraordinary degree. His initiative and resource were endless. His judgment in business affairs and as an administrative officer was unusually sound. His tall, handsome figure, his quickness of movement, action and decision, inspired confidence in all with whom he came in contact. The greater the emergency the cooler he became, "the quiet of whole courage." He was a conservative pilot, never taking unnecessary risks, though, when necessity demanded, his cool daring was wonderful. One instance may be cited—his landing at Hell Gate in the Fraser Canyon when caught between two storms in the mountains and his safe taking off from such a landing place.

The last few pages of his flying log tell the story of the remarkable services rendered by him and his staff during the recent forest fires. Numerous patrols were carried out safely under impossible flying con-

A RECORD OF SERVICE

During a period of less than four months from May 6th to August 31st, Laurentide Air Service planes have:

Made **472** flights, remaining in the air for **513** hours, and covering over **38,000** miles.

Carried many hundreds of cruisers, engineers, sketchers, photographers, fire rangers, executives and others, a total distance of over **45,500** passenger miles.

Carried useful loads aggregating **68,000** lbs. various distances the equivalent of transporting one ton **5,637** miles, or twice the distance from Halifax to Vancouver.

Every passenger has been delivered at his destination without a scratch and in less time than would have been required by the fastest ground transportation available. No pilot or engineer has been absent from duty for a single day through injuries. Every pound of express or freight carried has been duly delivered without damage and often to places where a man could not penetrate on foot.

All this work was carried out at tariff rates known in advance by the passenger or shipper. Payment was made only after results delivered.

We believe the above figures, representing safe and efficient flying, are a conclusive argument for aircraft operation by a separate organization of specialists. We solicit inquiries dealing with the use of aircraft, and these involve no obligation.

LAURENTIDE AIR SERVICE, Limited

Head Office:

Lake of the Woods Building, Montreal.

Quebec Base:

**Lac à La Tortue,
P. Q.**

Ontario Base:

**Remi Lake, near
Moonbeam, Ont.**

Associated with

Fairchild Aerial Surveys Co. (of Can.) Limited

ditions with visibility "nil." Flying a few feet over the tree tops or water he carried party after party of fire fighters with their equipment, fire pumps and hose, tents and provisions, through blinding smoke and heat and landed them, in an hour or two, many miles from their base, on the scene of the fires in the centre of Vancouver Island and other inaccessible districts.

The early death, from pneumonia, of his beautiful young wife in 1920, cast a shadow over the last two years of his life. From that date he gave his whole life to his work and the care of his little son Cedric, now so suddenly bereft of his father.

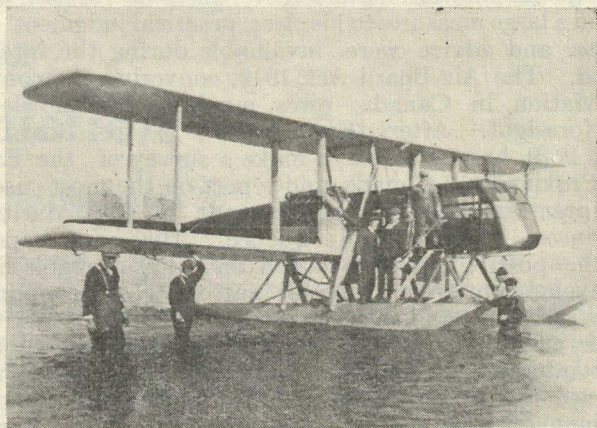
Major MacLaurin's life and work will stand as an inspiration to his successors in aviation and an example of courage and devotion to duty to the officers and men of the Canadian Air Force, who mourn him today. The work he took so much pride in and did so much to further will continue. Aviation means much to the future development of British Columbia. In the years to come when the beginnings of flying on the Pacific Coast have become history, his name will stand as the one who laid the foundations on sound, sure lines, a monument to his vision, courage and resource, for all time to come.—W.

Radio and Aviation The Forester's Allies

THE application of radio telephony to the work of forest protection was given a unique and convincing demonstration recently at Rockcliffe, Ottawa, by representatives of the Militia Department and the Air Force, in the presence of a group of forestry officials and lumbermen. The success of the experiment was absolute and the impression of those present was that the adoption of a system of radio communication by the Provincial forest services would improve efficiency out of all proportion to the expenditures involved.

For demonstration purposes, the Rockcliffe station was regarded as a ranger station, typical of sixty or seventy such points scattered over the Ontario forest area. A tent was equipped with a simple set for receiving radio phone communications from the central radio station or the patrol aeroplane. The cost of the demonstration set, when made in quantity under arrangement with the Royal Canadian Corps of Signals, it was stated, should not exceed \$25 per station. From the shores of the Ottawa river a seaplane in which a sending set of radio was installed with a microphone suspended before the mouth of one of the pilots, took the air and as soon as it had reached a few hundred feet altitude those in the ranger station, equipped with telephonic receivers, began to hear in the most distinct tones the spoken messages of the flying observer. As altitude increased the distinctness of messages was not materially affected so that from a point several thousand feet above the supposed forest area those on the ground were constantly supplied with detailed information. The value of a flying patrol has been thoroughly demonstrated in many parts of the Dominion but it now became apparent that facilities such as radio furnishes for immediate communication greatly enhanced the flyer's service. A system of simple signals to inform the pilot that his messages were coming through successfully was operated on the ground and must have impressed observers with the remarkable visibility of comparatively small and simple signs thousands of feet beneath the aviator's eyes.

The main station at Rockcliffe was intended to



Mapping 1000 Sq. Miles by Aeroplane

THAT is what is being done by the Spanish River Pulp & Paper Mills, Limited. They are using a Dayton Wright seaplane to map 1,000 square miles of their timber leaseholds. They know that the wings of the airplane and the eye of the camera can give them the facts a hundred times quicker than a whole army of timber cruisers could.

This new seaplane will also be used for a fire patrol. Thus fires can be detected and reported days in advance, when compared with the usual hit or miss system of human patrols. That alone should mean the saving of many square miles of valuable pulp wood every year.

Quick and accurate mapping of large areas; frequent inspection for forest fires; easily made timber surveys—these are the advantages accruing to the companies who use the Dayton Wright Forest Air Service.

Your inquiries are welcome and will be given immediate and careful attention.

DAYTON WRIGHT COMPANY

DAYTON, OHIO, U.S.A.

"The Birthplace of the Aeroplane."



represent the central radio station at the headquarters of the District Forester. The set as installed there would both send and receive and requires a staff of at least three skilled wireless men. This station would be able to receive all messages sent by the patrol aeroplane to all the ranger stations, thus saving a duplication of reports. It would also be able to send to patrol aeroplanes equipped with receiving sets such messages as would be required under actual conditions. It could get into communication with ranger stations at stated hours giving orders, instructions, etc. It was pointed out that two-way communication with the aeroplane insures that all reports are correctly received and that the District Forester thereby could control the entire patrol operation.

Tried out in Alberta

That this experimental application of radio to forest protection purposes is not mere guesswork has been well proved by the operations carried on in Alberta this summer, a report of which will appear probably in the November issue of the *Forestry Magazine*. Those who have been interested in the use of aircraft for forestry purposes will bear in mind that the tests carried out in many parts of Canada by the Air Force, while remarkably successful, have not been under ideal conditions. As a matter of economy, cumbersome and out-of-date machines, which years ago were presented to the Dominion, have been employed whereas under a proper plan, light single-seater machines should be available for the actual patrol service, capable of flying at an elevation of six thousand to ten thousand feet. Large flying boats would be used, not as scout machines, but as reserve craft to carry emergency fire fighters to the scene of a fire and to handle supplies, fire pumps, etc.

Air Board Statistics

The Air Board has issued the following Civil Aviation Statistics for the months of July and August.

Private Air Pilots' Certificates

Lapsed—H. R. Hillick, Geneva, N.Y.; R. F. Redpath, Ottawa.

Renewed—A. G. McLerie, Toronto.

Commercial Air Pilots' Certificates

Issued—A. T. N. Cowley, Victoria, B.C.

Lapsed—A. Carter, Calgary; R. A. Logan, Middle Musquodoboit, N.S.; C. H. Fitzherbert, Vancouver; L. S. Breadner, Ottawa; G. K. Trim; Vancouver.

Renewed—A. G. McLerie, Toronto; G. E. Brookes, Winnipeg; A. Tapping, Revelstoke; A. E. Godfrey, Vancouver; D. S. Macdonald, Wallaceburg.

Air Engineers' Certificates

Issued—Earl Leslie MacLeod, Atchelit, B.C.; A. T. Cowley, Victoria.

Re-Instated—G. A. Doan, Burlington.

Aircraft Registered

Issued—Air Board, Ottawa, One H.S. 2L Flying boat and One F3 Flying boat; Laurentide Air Service, Montreal, One Loening M23 Flying yacht.

Cancelled—E. Hubbard, Seattle, Wash.

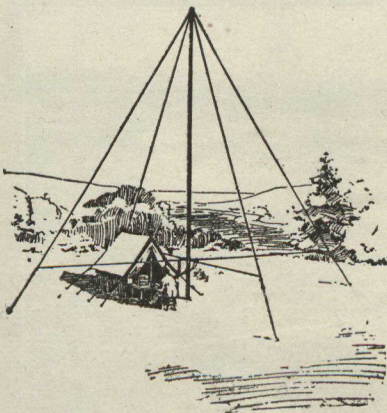
Canadian Air Force

Pilot Officer R. A. Smith, London, England, completed a tour of duty at Camp Borden during July.

MARCONI WIRELESS

TELEGRAPHS - TELEPHONES

For Forestry Work:



Portable and
Semi-Portable Outfits.
Aeroplane Equipment.
Motor Launch Sets, Etc.

The Marconi Wireless Telegraph Co., of Canada, Ltd.

Marconi Building, Montreal

Dominion Building, Vancouver, B.C.

Arcade Building, Halifax, N.S.

93 King Street, East, Toronto

240 Water Street, St. John, Nfld.

1100 Miles in a Survey Seaplane

Definite Proof Secured of the Economy and High Efficiency of Aerial Operations for Government Services.

By A. M. Narraway,

Controller of Surveys, Department of the Interior

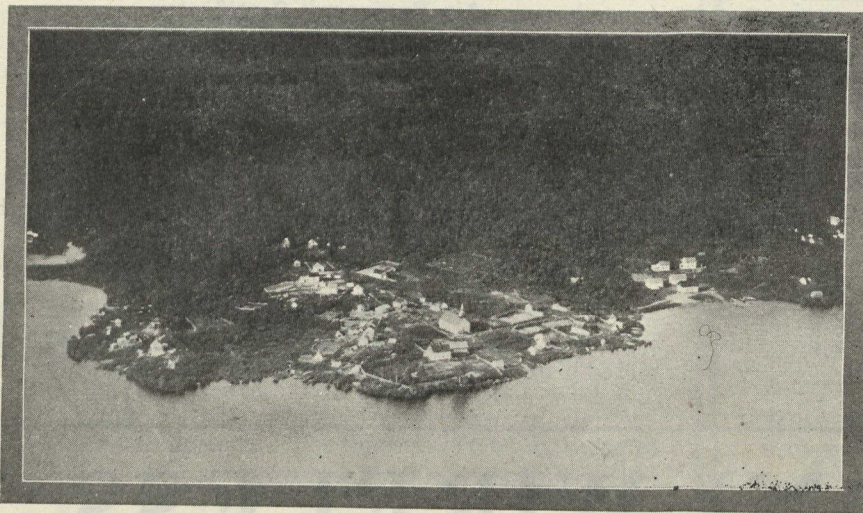
A VERY important part of the work of the Topographical Surveys Branch of the Department of the Interior is the mapping of the main waterways of the northwestern Canada and the establishment of monuments along these waterways in areas of promising mineral or economic value to which claims

of the Forestry officials it was possible to combine a large part of the trip with regular forestry patrols.

The flight consisting in the neighbourhood of 1,100 miles mostly over unmapped territory commenced at Victoria Beach on Lake Winnipeg and ended at the Pas. No mishaps or delays occurred and the trip was

usually the whole season and would have been expensive.

The first survey party to be visited was engaged in the surveying of the Manitoba-Ontario Boundary. No reports had been received from this party and as they were in unexplored and unmapped territory only an approximate idea could be formed as to their location. A very conservative estimate of the time which would be required in reaching this party by ordinary means of travel would be somewhat over two weeks and would have entailed considerable hard paddling and searching out routes and portages, the usual endless contest with mosquitoes, the difficult task of finding the party and a very restricted view of the country traversed. The trip was actually made in one hour and forty-five minutes and permitted of the sketching of the main topographical features and examination of the forest growth and by flying low, an unobstructed view of the completed boundary line was obtained and an estimate made of the difficulties encountered. The camp was located without any difficulty by the smoke from camp fires and a very easy landing was effected



AERIAL SURVEY IN CANADA'S NORTH LAND

Pelican Narrows Settlement, a trading post of the Hudson's Bay Company and Revillon Frères northwest of Pas, Manitoba.

may be tied. The surveys made for this purpose form the basis for all maps of the districts and a control for other surveys which may be required locally. The maps issued as a result of these surveys are used by all travellers and prospectors in the north and by captains of steamers navigating these waterways. For these reasons every effort is made consistent with economy to attain great accuracy and to show all the details of shore lines, islands, shoals, rapids, portages and anything which will tend to make travelling safer or will assist in developing the resources of the territory.

With a view to ascertaining definitely how sea-planes could be utilized in extending this work and in making the maps more complete, the Air Board arranged to take me on a flight to carry out experimental work and to inspect several of the survey parties in Manitoba and Northern Saskatchewan. With the co-operation



Wood Lake, Northern Saskatchewan, an old canoe route from Cumberland House to Mackenzie River.

made in ten days including six days spent at surveyors' camps. By ordinary methods of travel this inspection work would have taken practi-

ending with the plane tied to trees less than twenty feet from the tents.

After a few days spent on inspection work, an exploratory flight was

made along the boundary yet to be surveyed in order to decide upon definite plans for producing the line and transporting supplies. A knowledge of the available water routes for transportation in a case of this kind is invaluable and saves considerable expense and time and avoids much worry.

Perhaps the most interesting and the most useful part of the trip was north from Pas to the Churchill river and to the camp of the surveyor mapping the waterways of the district; the most interesting because of the wonderful views obtained of this country of lakes; the most useful because of experimental photographic work which we were able to do. Flying over the course of the survey oblique photographs were taken by the K2 camera at intervals of about two minutes. In some of the photographs the survey pickets are clearly discernible and in all of them the prominent land features surveyed can be accurately located. Using the survey of these main features as a control the details of the shore line, the intricate mass of islands can be filled in from the photographs with accuracy consistent with the requirements. The surveyors were obliged to spend considerable time mapping

the shore-line details and islands and even then could only obtain what was confined between the two shores. With the plane, the time required to get in the details, can be estimated in minutes instead of hours and some cases days, and the scope of the camera widens the survey to several miles on either side of the waterway and includes lakes and topographical features which otherwise would be left unmapped.

As a result of this trip I am of the opinion that invaluable service to surveying in unexplored and unmapped territories will be rendered in the future by the seaplane; in transporting supplies and men, thereby saving for the work many days of the working season, which is already short enough; in permitting reconnaissance and exploratory flights for purposes of planning surveys; in keeping in communication with the surveyors during the season; and in taking photographs along the course of the survey for filling in detail. To these who have a thorough knowledge of the ground conditions and experience in sketching and mapping such as surveyors have, the value of flights over the districts to be surveyed can scarcely be overestimated.

During the course of this flight we flew over a series of base lines and meridians which I had surveyed years ago. At that time very little was known about the country in the immediate neighbourhood of the line and considerable difficulty was experienced in determining the best locations for the caches and the lines were produced with no knowledge of what was to be expected ahead. Considerable time was necessary to locate and map the waterways and important topographical features. This year in approximately one hour in the plane all these features were observed clearly and many more within the reach of the survey. Had this flight been possible before the survey had been taken much time and expense could have been saved and considerable worry eliminated and what is true of this survey is equally true of all other surveys of this nature.

USING OLD HORNS

The cast-off horns of deer, elk and moose which annually fall off are gathered in the forests of the Northwest and manufactured into napkin rings, umbrella and knife handles.

VICKERS "VIKING" AMPHIBIAN

Brief Specification:

"VIKING" MARK IV, Six passengers and baggage or 1,360 lbs.
 Freight RANGE: 340 miles, SPAN: 50ft. HEIGHT: 15ft. 1 in.
 LENGTH: 35 ft.

The 'Viking' was the winner of the First Prize of £10,000 for the Amphibian Class of Aircraft entered for the British Air Ministry Competition, Sept., 1920.

VICKERS LIMITED

HEAD OFFICE: Vickers House, Broadway, London, S.W.I.
 Canadian Representative: R. S. Griffith, 225 Beaver Hall Hill, Montreal.



Vickers "Viking" Amphibian on the Thames.

Edward P. [Signature]

Forest Research in Eastern Canada

Some Developments that have Occurred in Various Experimental Plots
East of the Rocky Mountains

In two parts—Part I

By T. W. Dwight, Assistant Director of Forestry, Ottawa

IN every province of Canada there have been four stages of development in the conservative use of our forests. First, the necessity of reducing the toll levied each year by the fire fiend has impressed itself on the public mind. Heavy palls of smoke obscuring the landscape after every period of drought brought this home to even the city dwellers who did not see the actual devastation wrought by the flames. Organizations were developed to cope with the evil and in most of the provinces the work of the first professional foresters was in the main confined to fire protection for a time.

The second stage has been the securing of an inventory of the forest resources; not a careful cruise such as is necessary for the sale of timber or the detailed direction of lumbering operations, but a stock-taking on a comprehensive scale of the timber resources of the province for the purpose of assisting in the proper development of public policies respecting the management of the timber.

The third stage of development has been the placing of the practical administration of the cutting of timber under the direction of the foresters. This step was usually delayed until the forest service established for fire protection had developed a field organization and had shown itself efficient in tackling practical problems. The incentive in this case was the prevention of careless waste of timber resources, more efficient collection of revenue, and the desire to take such steps as were economically feasible to ensure continuous production from our forest areas.

The actual administration of the timber lands has brought home to the foresters, and fortunately to many others as well, the presence of numerous problems on which exact information is necessary before they can be successfully solved. The solution of the problems is a necessity before the goal of continuous production from each area of timber land can be reached. This has

brought the fourth stage — the general demand for experimental work and study on an intensive but practical basis, to solve the silvicultural problems that are basic to the conservative management of the forests.

Developments East of Rockies

The developments that have taken place along this line east of the Rocky Mountains will be the subject of this article.

The first comprehensive plan for the carrying on of silvicultural research in Canada was outlined in a report prepared by Prof. W. N. Millar, of the University of Toronto, for the Dominion Forest Service in 1915. While several separate studies of silvicultural problems had been made such as those by Dean Howe in Nova Scotia, British Columbia and the Trent Watershed, this was the first effort toward providing for research to be conducted on the permanent basis essential to the successful solution of most of the important problems. It may therefore be considered to be the preface of the developments that this article is to describe.

Professor Millar outlined the general nature of the field of work, the facilities throughout Canada for carrying it on, and made practical suggestions for developing the work. He emphasized four things:

1. The necessity for co-operation.
2. The organization of special permanent research staffs.
3. The establishment of permanent experimental areas.
4. The formation of an advisory board representative of all forest services, public and private, to direct policies and secure co-operation in research work.

As a preliminary to securing definite action along the lines of the report, an advisory board was definitely organized consisting of six representatives of the forest schools, four of government services, and three of foresters in private employ. On account of the war, immediate

steps could not be taken in other directions, but the time has now arrived to reconstitute the board and to bring together all the agencies interested. It is hoped that definite progress can be made in this direction during the coming winter.

Central Research Staff.

Prof. Millar's report recommended that a central research staff should be organized in connection with the Dominion Forest Service, to carry on research for that Service, to co-operate with other services in carrying on research, and to assist in the establishment of uniform methods of carrying on investigations in all parts of the country. Such a staff is now in existence, consisting of six technical foresters and three non-technical assistants. A very competent forester, Major W. G. Wright, is in charge. He has had forestry training in Scotland, Germany, and in this country, and has shown great natural aptitude for this class of work. It is hoped with this staff, which will be strengthened as opportunity offers, to not only undertake investigations into a considerable range of silvicultural problems, but to keep closely in touch with investigative work done by others. It is expected that a freer exchange of data can be accomplished now that there is an organization to look after it systematically, and also that experimental work will be initiated by more agencies when plans for carrying it out and results of work previously done are readily available.

The research staff has up to the present been mainly occupied on the Petawawa Forest Experiment Station. This is a tract of approximately 100 square miles, lying on the Ontario side of the Ottawa river, about 125 miles above the city of Ottawa. It forms the greater part of the Petawawa military reserve, but as only the cleared portion of the reserve is used for military purposes, the wooded portion has been definitely handed over for forest investigations. A permanent house has been erected for the use of the staff, and it is

intended to add to the permanent establishment at the headquarters.

The tract is an old pine forest logged and burned over forty to sixty years ago. It is now grown up with exceptionally good second growth of white, red and jack pines, which reach a maximum size of around eight inches. Some areas of spruce and balsam and of mature hardwoods also occur. Conditions are fairly typical of cut-over pine lands. The pine is old enough to produce seed and young enough to show increased growth if thinned, and offers opportunity for studying a wide range of problems. Some work has already been done on timber limits in other localities when it was desired to carry on studies in mature timber and on recently logged-off areas. It is expected that the greater part of the detailed studies can be carried on at the Experiment Station.

Preparing Volume Tables.

One study to which a great deal of time has been devoted is that of the fundamental laws of the construction of volume tables. Up to the present time, thousands of trees have been measured and hundreds of tables constructed to show the volumes of trees of different diameters and heights. Practically no new principles have been developed for the construction of these tables. Methods such as the use of frustum volume tables and the construction of taper tables lighten the mechanical labor or increase the accuracy of the final figures to some extent, but do not offer any solution to the fundamental difficulty in connection with volume tables. This difficulty arises from the fact that no two volume tables for the same species agree. There has been no way of expressing the difference, and no way of determining what volume table is suitable for a new area, nor over how large an area, a volume table can be used.

The Tor Jonson form quotient, an invention of Swedish foresters, offers a very promising way of approaching this problem. The form quotient is the percentage relation between the diameter at breast height and the diameter half way to the top. As this quotient is expressed in per cent. it is independent of diameter and height, and an average form quotient can be determined for a whole stand.

It will now be seen that this offers a very direct method of expressing the differences found to exist in

volume tables for the same kind of trees on different areas. All that is necessary is to determine the average form quotients of the trees used in constructing the tables. To determine whether any table is applicable to a new area, the average form quotient of the trees in the new area can be found. As the form quotients are expressed in per cent, trees of all sizes can be averaged together and it is necessary to measure only a relatively small number of trees.

There are other ways of determining average form quotients which may prove satisfactory for use where felled trees are not available for measurement. The height of the center of wind pressure in the crown is supposed to bear a definite relationship to the form of the tree. This is being investigated carefully, as is also the relationship of the stand as expressed in basal area.

(To be concluded in an early issue)

SMOKE
OLD CHUM

"The Tobacco of Quality"



Buy the 1/2 lb. Tin

Prize Essay in Barnjum Contest

By P. SWANSON, TIMMINS, ONT.

In Two Parts—Part Two

The third major cause of forest fires is defectiveness in the screens of smoke-stacks, whether the stacks belong to a railroad locomotive or to a stationary engine in a saw-mill. Facts need not be cited to prove this. Take a trip from Hearst to Fitzpatrick on the Transcontinental during the summer months and ample evidence will be forthcoming. Every stack should be inspected by an inspector, at the commencement of the summer season, especially the stacks of railway locomotives that are often used at various points to shunt cars of pulp or ties; these are usually locomotives whose days of usefulness are almost past, and therefore not well equipped. The remedy is simply a matter of inspection and should cause no trouble. Under our present system the stacks are inspected once a year by officials appointed by the railway companies themselves. The unsatisfactory nature of such an inspection is obvious; moreover, the inspection is close only of those engines operating on the main "runs." The very engines that are used for shunting purposes at various points along the line of railroad should be most closely inspected. They operate in the very heart of the timber district. An independent inspector should be appointed answerable to the Government, with full authority to inspect all stack screens in a district, whether it be that of a railroad locomotive or that of a saw-mill. If necessary, each inspector should have one or more competent assistants.

Railway Construction.

Another cause of fires which is more or less of a temporary nature, is the careless burning of a right-of-way "slash" along the lines of a new railroad. A great number of fires can be traced to carelessness during railway construction. During such construction a special fire control should be put on the new line during the dry summer season. Close co-operation between the constructing company and such fire control will eliminate all danger.

Closely linked with the above causes and the remedies proposed for the specific misdeeds is an organization which has been built up primarily for the purpose of preventing fire, though, as a fighting force, it has proved its worth, namely, the fire-ranging system in vogue in Eastern Canada. Is the present system capable of improvement? In some respects, yes!

Each year about the first of May, men are sent throughout the country to act as fire-rangers. They stay on certain beats which they travel regularly till about the middle of September. These are the men that issue permits to settlers and are in constant touch with the summer intruders into our forests. A great number of these fire-rangers are students of our universities, and have no intimate knowledge of practical ways by which to combat fires; on the other hand, they possess intelligence, initiative, decision, and for the most part are thoroughly interested. To offset their lack of knowledge, it would prove of the greatest benefit, if the rangers of a district were called together by the Chief of that district one week before they go on their routes, during which he would give practical talks and illustrations of the nature of their work. He should impress on them the importance of knowing minutely the topography of the area they patrol. The knowledge of the positions of

lakes, creeks, sloughs, swamps, saves useless fighting and hard work. He should know when and how to back-fire, call out men, the benefit of early morning fighting, the special effort that must be made against ground fire, especially in our pulp areas where the fires eat through the muskeg till they reach good feeding ground when they burst forth again and destroy more timber. A week spent in such a way would be of tremendous advantage to every fire-ranger, student or otherwise.

In every fire district the Chief Fire-Ranger has his headquarters at some central point but he is not in direct touch with his fire-rangers. This is a serious drawback once a fire has started. As soon as possible after a fire has started, a sufficient force should hasten to the threatened point to subdue it or limit its range. Under our system in Eastern Canada this is practically impossible. To remedy this there should be at least three stations, situated on commanding eminences which would be in telephonic communication with the Chief at headquarters. Their duty would be to detect fires and to report to the Chief where fires were starting. Equipped with range smoke-detectors, they would give the position of a fire to a nicety. The rest could safely be left to the Chief. Certain districts, in order that the whole area might be covered need more than three such stations. When this is so, build as many as the fire district demands, but there is hardly any district in this country that could not be well watched by five or six such stations.

The fire-ranging system has been discussed at length because it is the only system that can control the first two major direct causes of forest fires, namely, settlers' slash-burn and intruders' fires. A ground organization is imperative to cope with these two causes, and nothing else can take its place. It has been stated that the aeroplane will do away with all ground organizations. For reasons that are obvious from what we have said, this can never happen. As a means of preventing fire the aeroplane is useless; as a means of fighting fire, it is only one of many; as a means of detecting fire it is invaluable, especially in large virgin areas. The aeroplane has its place in forest protection but its sphere is limited.

It is hardly necessary to add that every fire district should be equipped with track speeders, power launches for rivers and lakes, and portable gasoline pumps. Their usefulness has been proved. A district without them is far behind the times.

Prevention of forest fires is the outstanding problem in all discussions of forest protection. Yet, it is an essential part of forest protection to eliminate every possible help to a fire once it has started, and to fight it as effectively as possible. Unquestionably, the greatest aid that a forest fire receives is the immense logging slash and debris that covers areas of our tree-covered soil. More scientific logging methods must be followed especially in our pulp areas. In these areas it is a common sight to see tops of from eight to ten feet in length with diameters of four, five and six inches left after a season's operations. This is a tremendous waste of wood. The fault lies that in most pulp areas in Canada the log lengths are twelve and sixteen feet. By the adoption of the four-foot length much wood would be conserved and an immense log slash eliminated. It is bound to come—why not adopt it now?

In the immense areas throughout which logging operations are carried on, the log slash lies, a veritable fire-trap, in which, if a fire once originates, all fighting forces are useless. Each province should pass legislation compelling every owner to burn his season's slash. Since the piling and burning of this slash would be done on the property of the owner, of necessity he would watch the slash burn with the utmost care. With the elimination of this slash, forest fires would never make the headway they do under present conditions.

Forest fires have written their name large on the map of Canada. From Atlantic to Pacific, tremendous areas have been devastated by the ravages of this ruthless monster. No more dismal sight presents itself to the eye of the spectator than the district forever rendered useless by the passing of a mighty conflagration. No government which has the interest of its people at heart, can afford to neglect the problem of forest protection. For this reason we have dealt at length with specific remedies and means of control to offset causes of forest-fires and forest-fires themselves.

Yet, forest-fire is not the only menace threatening Canada's forest heritage. Insect pests that visit certain areas periodically constitute a grave menace, chief of which is the spruce budworm. Facts have already been cited showing the destructiveness of these pests. The remedy lies wholly in inspection. It must be borne in mind that the bud-worm is a periodical pest. Rigid and careful inspection is imperative. Every timber district of each province should have an inspector with authority to secure such assistance as he deemed necessary. His duties would be, not only to watch carefully for the slightest evidence of the bud-worm and other pests, such as the black beetle which follows in the wake of the bud-worm, attacking the balsam fir beneath the bark and is therefore particularly pernicious—but he must, as well, inspect logging operations in each district to see that tops of too great size are not left, that logging slash is properly burned, and that all dead and straggling trees are cut during a season's operation. As is well known, these dead trees are veritable homes for the parasitic pests; yet we allow the operator to leave them standing year after year. These inspectors must be practical foresters and the salary must be sufficient to tempt the very best men. The government that would allow the appointments to become a reward for political service hardly understands the functions of government. Careful and rigid inspection is a prime necessity in safeguarding our timbered areas.

In any discussion concerning the Conservation and Preservation of our forest life, the large amount of pulp wood annually exported from our fee land holding to the United States must be regarded as a great menace to our future supply. We have cited the case of the money actually offered per cord during the fall of 1919. That one fact is significant of the eagerness and the need of the pulp-mill owners of the United States. Multitudes of facts, the words of the leaders in the United States industrial and political life can be arrayed to prove the need of the pulp-mills of that country for our wood, but the purpose of this discussion is not to establish a case. That is established beyond dispute. It is the purpose of this discussion to suggest practical and effective means of forest protection. To protect our country from suffering from this great annual flow to the United States, there is only one remedy, namely, an export duty heavy enough to keep our own fee land wood in our own country.

(To be continued)

Just a dash improves the hash

A teaspoonful of Bovril greatly enhances the excellence of a dish. Not only hashes, but soups, stews, beans, gravies, meat pies, are wonderfully improved in flavour and enriched in nourishment.

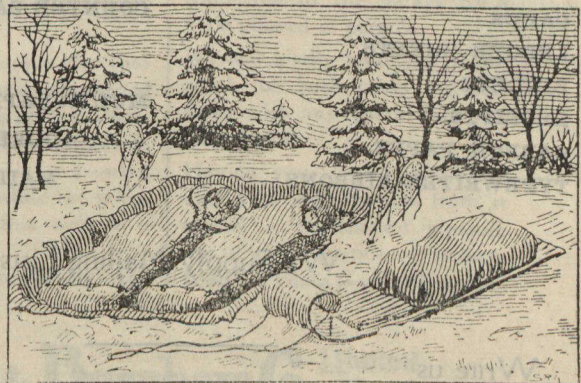
To add Bovril to your cooking is to add the goodness of beef.

BOVRIL

GRANT-HOLDEN-GRAHAM

LIMITED

147-153 ALBERT ST., OTTAWA, ONT.



THE G. H. G. POLAR SLEEPING ROBE

Warm Light and Compact

The Ideal for Sleeping Out in all Weathers

Blankets and Lumbermen's Supplies of all descriptions kept in stock.

TENTS, TARPAULINS, ETC.

LES FORÊTS DU PORTUGAL

Par Noël Le Bressant

(Suite)

LES rares forêts de montagne appartenant à l'Etat sont criblées de grands vacants qui interrompent la continuité des massifs, et les gros pins ont presque tous été saignés en délit. Les forêts communales, depuis peu soumises au régime forestier, sont dans le même état. On s'occupe cependant de leur restauration, et la surveillance commence

à être assurée par des gardes logés dans des maisons doubles. Quant aux forêts des particuliers, leur destruction s'effectue avec une rapidité vertigineuse. Les causes de leur disparition sont le germinage abusif, les incendies, le parcours dévastateur. Dans la Sierra de Cuenca, une compagnie résinière a loué, pour une durée de dix ans, tous les pins des

particuliers en vue de l'exploitation de la résine au prix de 0,25 pesetas par arbre et par an. Si le pin vient à périr d'épuisement avant la dixième année, la compagnie fermière doit payer une indemnité de 1 fr. 75 par arbre mort, en plus du prix de location.

La saignée est conduite habilement, en ce sens que les pins sont ménagés les premières années pour qu'il n'y ait pas de déchet, mais la compagnie se rattrape les dernières années en multipliant les carrés. Il n'est pas rare de rencontrer des arbres de 2 mètres de tour et plus, entamés sur tout leur pourtour jusqu'à l'aubier ou même jusqu'au cœur. Les paysans achèvent l'œuvre de ruine commencée par la compagnie. Les pins centenaires sont élagués de leurs branches en hiver. Ces branches sont répandues sur le sol de façon à les faire sécher. On y met le feu en été. On laboure dans la cendre, et on obtient ainsi, grâce à ce maigre amendement, une récolte de blé ou d'orge. Après le feu, la charrue et la faucille, les moutons et les chèvres prennent possession du terrain.

Le peu de soins apportés par les Portugais à leurs forêts provient du revenu insignifiant qu'ils en tirent, en raison des difficultés de transport qui éloignent le grand commerce. Faute de chemins les arbres sont vendus à vil prix, et les intermédiaires réalisent de beaux bénéfices. Il y a donc, dans toutes ces montagnes portugaises, quelques belles opérations à faire; mais il faut se hâter; dans dix ou vingt ans au plus, les dernières pine-raies auront disparu.

Ci-dessous quelques données fondamentales sur les prix pratiqués dans la Sierra Cuenca.

La vente des coupes domaniales se fait par adjudication publique. Les lots à abattre sont délimités par les ingénieurs forestiers et approximativement cubés sur pied. Ce cubage s'effectue de la façon suivante: on mesure le diamètre à hauteur d'homme, on apprécie la hauteur de service et on déduit de ces deux chiffres le cube à l'aide de tables ou de tarifs. Ces indications sont ensuite rectifiées, après abatage, et c'est le cube nouveau, ainsi trouvé, qui sert à l'établissement du règlement définitif.

L'adjudication se tranche généralement au prix de 12 à 12.50 pesetas par

Office Managers,

Club Secretaries,

Accountants

We wish to announce that we can supply on short notice and to any part of Canada the following:—

COMMERCIAL PRINTING:—

LETTER HEADS

ENVELOPES

STATEMENT FORMS

BILL HEADS

INVOICES

TAGS

CARDS

LEDGER SHEETS

BINDERS

RECEIPTS

CARBON PAPER

TYPEWRITER RIBBONS

BOOKLETS

FOLDERS

CONSTITUTION & BY-LAWS

BLOTTERS

CIRCULARS

DODGERS

CERTIFICATES

COUNTER SALES BOOKS

MULTIGRAPH LETTERS

ADDRESSING

MAILING

We Supply Mailing Lists

Write us

SAMPSON OFFICE SERVICE
LIMITED

Printers and Multigraphers

317 LISGAR STREET

OTTAWA, CANADA

mètre cube. L'abatage et le façonnage se font à la pièce, à raison de 0 p. 02, 0 p. 03, 0 p. 04, 0 p. 05, pour les catégories suivantes de diamètre: au-dessous de 24 centimètres, de 24 centimètres à 42 centimètres, de 42 centimètres à 84 centimètres, au-dessus de 84 centimètres. Toutefois, pour certains arbre très gros, on établit des prix spéciaux.

L'adjudicataire est tenu de brûler tous les résanants des exploitations sur des emplacements désignés par le service local. La valeur de cette charge est estimée à 0.25 pesetas par mètre cube de bois utilisable.

Le transport des grumes se fait tantôt sur roues, tantôt par eau. Les bois, attachés par une chaîne au joug de deux mulets, sont traînés de la coupe jusqu'au fleuve ou jusqu'à une route carrossable. Si la pente en forêt est assez forte pour justifier ce mode de dévestiture, les arbres de longueur sont débardés par lançage, au moyen de ressort tendu, agissant comme l'arbalète sur une flèche. On estime le prix du transport à 0.50 peseras par 50 kilogrammes, pour une distance moyenne de parcours de 20 kilomètres.

Quand les arbres sont trop gros et que les difficultés de transport deviennent trop considérables, les pins sont débités sur place en madriers de 15 et de 18 pieds et de 4 x 6 pouces d'équarrissage. La façon est de 0 p. 20 pour les madriers de 15 pieds et de 0 p. 25 pour ceux de 18 pieds.

Chacun de ces madriers qui, rendu à Cuenca, ne revient pas à plus de 1 pesetas, est ensuite revendu de 3 à 4 peseras 50. L'opération est donc plutôt lucrative.

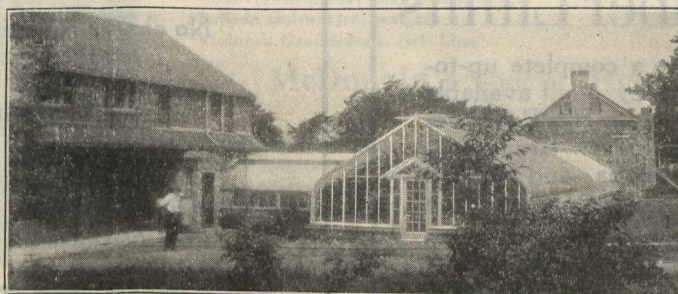
Parmi les obligations imposées par le cahier des charges aux adjudicataires des coupes domaniales et communales, il en est une qui mérite d'être signalée: c'est celle qui les oblige à construire un chemin permettant aux chars d'accéder jusqu'à la coupe. Je me hâte d'ajouter que cette prescription reste toujours lettre morte.

Dans le dernier article, j'ai mentionné qu'il avait été fait de nombreuses plantations en essences exotiques, particulièrement dans la région de Coïmbre. Sous ce climat très doux et sur un sol de conglomérats, frais et fertile, les eucalyptus et les acacias prospèrent avec vigueur. J'ai lu, je ne sais plus où, que les essences exotiques se vendaient à des prix fous. Ça doit être sûrement pour faire des échelles à perroquets. Malheureusement ou heureusement, suivant le point de vue où l'on se place, tous les bipèdes et tous les volatiles ne

montent pas à l'échelle. Je crains donc que ce débouché ne reste fort limité. Sans doute, on peut éviter le gercement de l'eucalyptus en mettant les arbres à l'ombre, en recouvrant par exemple de suite après l'abatage les troncs de branchages. Mais la dureté de ce bois et la résistance aux outils le feront toujours écarter des ouvrages de menuiserie, comme son poids de la charpente. Aussi bien, je ne sache pas qu'il soit utilisé autre-

ment que pour le débit en poteaux de mines et en traverses, quand on veut bien accepter ces dernières, ce qui est loin d'être le cas général, même en Portugal.

Je ne puis donc m'empêcher de sourire à la lecture de tous ces récits merveilleux de nouveaux Christophe Colomb, et je me remémore la réponse que me fit un jour M. Ferreira Borgos, auquel je faisais compliment de ces reboisements. 'Sans doute, ils



An Unique Greenhouse Well Worth Considering

There is nothing particularly new about having your greenhouse adjoined to your residence. Or attached to your garage.

But when the greenhouse forms a link between residence and garage as has been done in such an interesting way with this subject, then you are promptly interested.

Just such is the unique idea that Mr. S. E. McKinnon has carried out on his grounds at St. Catharines, Ontario. The main portion next the residence is for growing all his favorites, while the wider house next it, this way, is a grapery.

The portion connecting the

grapery and garage is a little general purpose place for doing propagating, and growing plants not dependent on an abundance of direct sunlight.

In Hamilton, Ontario, we have an interesting instance of the residence conservatory being connected to the garage by a little glassed-in pergola.

We will gladly send you photograph of both these subjects along with any particulars you may desire.

Having your own greenhouse and your own flowers from it means a **continued** pleasure out of all proportion to its cost. Send for Glass Garden Circular.

Lord & Burnham Co. Limited of Canada

Builders of Greenhouses and Conservatories

Main Sales Office:

HARBOR COMMISSION BLDG., TORONTO

FACTORY: ST. CATHARINES, ONT.

sont beaux, mais qu'en faire?" Cette utilisation tant cherchée jusqu'à ce jour, je la lui ai donnée. Et mon aimable interlocuteur voulut bien me remercier de la précieuse indication, ajoutant qu'il avait appris quelque



Timber Limits

We have a complete up-to-date survey of all available properties in the Provinces of Quebec, New Brunswick, Nova Scotia and British Columbia. Before investing in timber limits consult us. Reliable surveys and estimates procured. We have in hand practical lumber and pulpwood limits.

Canada Woodlands AND Pulpwood Agency REGISTERED

600 McGill Bldg, Montreal, Canada

CABLES: "GEFORT, MONTREAL."

TELEPHONE: MAIN 3281



Bureau of Canadian Information

THE Canadian Pacific Railway through its Bureau of Canadian Information, will furnish you with the latest reliable information on every phase of industrial and agricultural development in Canada. In the Reference Libraries maintained at Montreal, Chicago and New York, are complete data on natural resources, climate, labor, transportation, business openings, etc., in Canada. Additional data is constantly being added.

No charge or obligation attaches to this service. Business organizations are invited to make use of it.

Canadian Pacific Railway

Department of Colonization and Development

165 E. ONTARIO ST., 335 WINDSOR STATION, C. P. R. BUILDING,
CHICAGO MONTREAL Madison Ave., at
44th St., New York.

chose en venant voir un vieux praticien de la forêt. Cela se voit quelquefois, soit dit sans faux orgueil.

Mais, et je signale le fait en passant aux grainetiers français, si les propriétaires portugais sont embarrassés de leurs bois d'eucalyptus, ils ne le sont pas des graines qui en proviennent et qu'ils font récolter avec soin. Ces graines ont donné en Europe de bien meilleurs résultats que celles

d'Australie; et elles coûtent aussi beaucoup moins cher. Leur germination, plus facile et plus assurée, est due à un phénomène bien connu d'adaptation et de sélection, sur lequel je n'insisterai pas.

D'une façon générale, en dehors des madriers destinés au sciage et dont j'ai indiqué les dimensions les plus usuelles, les pins portugais sont débités en poteaux de mines de 2 m. 33 de longueur. La valeur de ces poteaux est d'environ 1 peseta le mètre courant rendu sur le carreau de la mine.

Un pin de 0 m. 20 de diamètre hauteur d'homme, mesurant 7 mètres de hauteur utilisable comme service et cubant à peu près 0 mc. 175, donne 3 étais de 2 m. 33. Il a coûté:

Achat: 0 mc. 175 x 12 p.	2 p. 10
Transport à raison de 0 p. 25 par 50 kilogrammes: 0.175 x 0.8 x 5 p.	0 p. 70
Abatage et écorçage: 7 x 0.03	0 p. 21
Tronçonnage, 3 traits de scie à 0 p. 02 l'un: 3 x 0 p. 02	0 p. 06
Total	3 p. 07

Il est vendu sur le pied de 7 pesetas, ce qui laisse une belle marge pour l'imprévu et les faux-frais. Pour les arbres d'un diamètre supérieur, le bénéfice est évidemment beaucoup moins considérable. Il y a, pour toutes les marchandises, un débit optimum, que l'exploitant doit toujours chercher à dégager, s'il veut tirer le meilleur profit possible de ses bois.



Big-Game Hunting—CANADA

Pack your rifle and your kit, and come to the big-game country. Make this year's trip "worth while."

NOVA SCOTIA offers Moose, Deer, Caribou and Bear

NEW BRUNSWICK offers Moose, Deer, and Bear

QUEBEC offers Moose, Deer, Caribou and Bear

ONTARIO offers Moose, Deer, Caribou and Bear

MANITOBA offers Moose, Caribou, Lynx, Wolf

BRITISH COLUMBIA offers Moose, Deer, Caribou, Bear—grizzly and brown—Mountain Sheep and Goat.

"Where to Hunt, Fish and Paddle in the New North" describes fully the wonderful possibilities of Northern Ontario and Quebec. Write W. E. G. Bishop, District Passenger Agent, Cochrane, Ontario, for detailed information.

For descriptive literature and full information as to fares, open seasons, etc., write

C. E. HORNING,
District Passenger Agent,
Toronto, Ont.

E. C. ELLIOTT,
District Passenger Agent,
Montreal, Que.

"Of all Nature's handiwork there is no flower which can approach the Peony in gorgeousness of bloom and beauty of coloring"



MMAGNIFICENT, gorgeous, beautifully colored flowers--hardy in growth and easy of cultivation. McDonald's superb Peonies are ideal for Canadian gardens. There are hundreds of varieties to choose from--all grown at our Maplewood Nurseries. And now is the time to plant them.

McDonald's Superb Peony Collection

	Each	
Albert Crousse, salmon-pink	\$1.00	} One of each for \$3.25 carriage prepaid.
Festiva Maxima, one of the best whites50	
Felix Crousse, brilliant red75	
L'indispensable, immense pink75	
Mons. Jules Elie, deep shell pink	\$1.00	

McDonald's Superb Iris Collection

	Each	
Caprice, rosy red, handsome30	} One of each for \$1.00 carriage prepaid.
Jacquesiana, coppery crimson and maroon20	
Mrs. Newbronner, deep golden20	
Pallida Dalmatica, lavender30	
Viola Grandiflora, rich blue30	

McDonald's Special Hyacinth Collection

Admiral Courbet, deep violet-blue	} One of each for 90c postpaid.
City of Haarlem, bright golden yellow	
Grand Maitre, dark lavender-blue	
Lady Derby, beautiful soft pink, lighter centre	
L'Innocence, pure white, very early, compact spike	
Queen of the Pinks, the best pink in our list	

Kenneth McDonald & Sons Limited
Seeds Ottawa, Can.
 66 Market Sq.

Send for our Fall 1922 Catalogue full of illustrations and descriptions of Peonies, Irises, Phloxes, hardy shrubs and vines and imported bulbs, such as Tulips, Hyacinths, Crocuses, Daffodils, Lilies, and the like.

The Thrift of Grandfather's Day

"We whittled shavings by the camp-fire the other evening, in the woods--something dry with which to start the fire in the morning; for the mornings were cool. I doubt if there is an old-time New Englander living, wherever he may be, if it were a neighborhood of thrift, who does not recall seeing the man of the house sitting by the stove in the kitchen, after dark, whittling shavings for the morning fire. He would rummage the wood-box for a cedar shingle; for a piece of dry, seasoned pine; for a bit of birch-bark, and with these for a basis, he would draw out the jack-knife and have a good time curling the long, fragrant wood into shavings or taking a stout stick fitted for the stove and whittling it into a short of chevaux de frise of bristling shaving still attached to the stick. These little lighting rods stuck out all over the stick and invited the flame as the lightning rod was supposed to invite the fluid.

"Grandfather had all this to do every night. He made it a sort of evening sacrament. He seemed pleased when the wood seemed to be difficult. It was more of a job. He had another economy of note--the making of cedar "spills" for pipe-lighters. This was a steady job.

In Grandfather's Day

"A cedar post sawn into nine-inch lengths; dried in the shop under cover until it fairly shone with its tawny color! The sections split into sizes sufficiently small to be handled with the jack-knife! And then an evening by the fire in the cool of the day, splitting these pieces into long and slender "spills" about the size of a lead-pencil

or smaller! They would turn out as straight and even as though machined. They had a fragrance of fine old cedar and lavender. They suggested linen for the bride. A hundred of them stuck in a blue pitcher without a handle, its front turned around so that it somewhat resembled a delft vase, stood on the mantel, where one had to stand to reach it--those old-fashioned, very high mantels over kitchen stoves, up where there could be no danger of over-heating from the stove and where a boy could not reach, except by standing on the wood-box behind the stove and then only on tip-toe and with much stretching and perhaps the aid of the family Bible, surreptitiously used.

"So far on the back-tracks. Now to turn around a bit and look ahead. Are we so far relieved of necessity that we can waste as we do now? You once saw in every home a lot of paper spills for lamplighters. We children used to roll them out of the Weekly Journal. They saved matches. And if one could be used twice, so much the better. Now we burn forests every day lighting cigarettes and cigars and pipes."

MR. GEORGE MCKEE RESIGNS

MR. GEORGE MCKEE has resigned as managing director of the Donnacona Paper Co. He is succeeded by Mr. Robert S. Kernan, who has been manager of the Woods Department, and who is chairman of the Woodlands Section of the Canadian Pulp and Paper Association. Mr. McKee, who has been the main spring and balance wheel of the Donnacona Paper Co. since it was only an idea, and who laid out, built, and developed the magnificent plant at Donnacona, is president of the Association. He retains an important connection with his company.



BUSINESS AND PROFESSIONAL DIRECTORY

BUSINESS OPPORTUNITIES

EARN \$5 to \$10 A DAY gathering evergreens, roots and herbs in the fields and roadside, book and prices FREE
BOTANICAL, 18 WEST HAVEN, CONN.

FORESTER WANTED.—A young forester, by birth Canadian, fully qualified and having some practical experience, who wishes employment as junior forester on probation, in a first class firm in the paper and lumber industry in Quebec. Small salary offered to start. Apply, giving full particulars of University career and subsequent experience, to Box 3, Canadian Forestry Magazine.

FORESTER WANTED

A well established firm in the U.S. (Consulting Forester 25 years in business) wants the services of a Canadian Forester with business ability to do cruising work and assist in selling timber lands; must be able to put capital in the business. \$12,000.00 a year for the right man.

Address:

Box No. 4, Illustrated Canadian Forestry Magazine

FOREST ENGINEERS

TIMBER ESTIMATING AND MAPPING BOUNDARY SURVEYS

Management of Forest Properties, Supervision of Lumbering Operations, Forest Planting.

P. T. COOLIDGE, Forest Engineer 31 Central Street
 BANGOR, Maine

HIBBERSON BROS.

FOREST ENGINEERS AND SURVEYORS

Cruising, Mapping, Logging Costs, Flumes, Logging R.R.'s Appraisal on Timber Holdings for Banking interests a Specialty. Information on B.C. Timber supplied at low cost. Sixteen years experience cruising British Columbia Timber

SUITE 701-5 BELMONT HOUSE, VICTORIA, B.C.

Lt.-Col. L. J. D. MARQUIS

Forest Engineer

Former Member of Quebec Forest Service. Member of the Assn. of Forest-Engineers. Twelve Years of Experience: Forest Cruising and Mapping Appraisal for Banking Interests, Insurance Losses. Supervision of Lumbering Operations. Management of Forest Properties. General Information and Maps on: Quebec Limits, Freehold and Crown Lands.

GIFFARD, QUE. - PHONE 5831 R. 11.

HONEST and SAFE TIMBER ESTIMATE S

At a cost of a few cents an acre

JAMES W. SEWALL

FOREST ENGINEER

Old Town, Maine. Davidson Building, Washington, D.C.
 Largest Cruising House in America

OUR ADVERTISERS WILL APPRECIATE KNOWING

PATENT ATTORNEYS

PATENTS, Searches, Applications, Etc.
TRADE MARK Designs Registered in all Countries.
 Technical and Industrial Research

HANBURY A. BUDDEN

ADVOCATE 712 Drummond Bldg., Montreal
 Reg'd, U.S. Pat. Atty. No. 1088 Cable Address "Brevet"

NURSERYMEN

Canadian Tree Seed, Northern Grown Forest Trees, Shrubs and Chinese Peonies.

EDDYE-DE-HURST & SONS, Dennyhurst, Dryden, Ont.

Shippers to H. M. Government

Telegraphic Address, - "Dennyhurst, Dryden, Ont."

INSURANCE



**FIRE:
AUTO:
RIOT**

Security
 \$48,000,000

Chief Canadian Office:

14 RICHMOND STREET EAST, TORONTO

ALFRED WRIGHT, Manager

A. E. BLOGG, Secretary

SIGN PAINTERS

SIGNS We specialize in and give special rates to Forest Protective Associations for every requirement along the line of banners etc.

Ottawa's Oldest Established Sign shop

Levey Sign Co. 234 SLATER ST.,
 Ottawa, Ont.

PHOTOGRAPHERS

KODAKS

AERO FILMS

GLADWISH & MITCHELL

Specialists in Kodak Photography

147 Peel Street - Montreal

LANTERNS

X RAY FILMS

THAT YOU READ THEIR ANNOUNCEMENT HERE



Pulp, Paper and Power Companies

Abitibi Power & Paper Company

LIMITED

HEAD OFFICE : MONTREAL, QUEBEC

Manufacturers

of

NEWSPRINT PAPER SULPHITE PULP

GROUNDWOOD PULP

MILLS AT

IROQUOIS FALLS, ONT.

Laurentide Company

LIMITED

Manufacturers of

Groundwood Pulp, Sulphite Pulp,

Newsprint Paper,

Cardboard

GRAND MERE, QUEBEC

Brompton Pulp and Paper

COMPANY, LIMITED

EAST ANGUS, QUÉBEC

Manufacturers of

Newsprint Paper, Kraft Paper, Fibre Paper,

Manilla Paper, Box Board, Sulphate Pulp,

Groundwood Pulp

AND

LUMBER OF ALL KINDS

Ontario Paper Company

THOROLD,

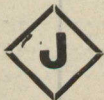
ONT.

Manufacturers

of

NEWSPRINT

PAPER



THE



JUST COMPANY, LIMITED

Pulpwood and Lath Purchased

Financial Assistance Given on Approved Operations

285 BEAVER HALL HILL, - MONTREAL

A FIRE ALARM—The prosperity of the Pulp and Paper Industry and of many other industries depends on the maintenance of OUR FORESTS

Fires annually destroy more timber than is used by all the industries depending on it. A moment's carelessness may cause an irreparable and national loss. This space devoted to the cause of forest conservation.

by



CANADA PAPER CO.

Windsor Mills, P.Q.

FOREST FIRES

TAKE AWAY JOBS!

Size up Every Timber Fire as Your Personal Enemy and get After Him; Put Out Your Camp Fires. Never Toss Away a Lighted Cigarette. There are hundreds of jobs in a live forest. Dead forests drive out population.

This advertisement inserted in the interests of forest protection by

The Spanish River Pulp & Paper Mills, Limited.

Sale of Burnt Timber

Tenders will be received by the undersigned up to and including Friday, the 15th day of September next, to cut the timber damaged by fire on an area in the vicinity of Jellicoe and Nezah Stations along the Canadian National Railway, partly in the Nipigon Forest Reserve and immediately to the East thereof, in the district of Thunder Bay, having an approximate area of 75 square miles more or less.

Further particulars may be obtained upon application to the undersigned or to Mr. J. H. Milway, Acting Crown Timber Agent, Port Arthur, Ontario.

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto,
August 11th, 1922.

N. B.—No unauthorized publication of this Notice will be paid for.

(Continued from page 1081)

Lands and Forests in a large way in scaling of pulp-wood and the cullers are, therefore, already familiar in a practical way with measuring wood according to its cubic contents. Its adoption for all wood measurements would quickly dispel the absurd belief held by many citizens that the lumbermen are a class of semi-professional robbers and that they are even aided and abetted by the Department itself. This absurd and exceedingly vicious impression has been the result of the using of a product unit instead of a volume unit in the measurement of its logs, plus the sad circumstance that the Doyle Rule, which has been the official rule in Ontario since October 18, 1879, is the very worst of its class in that it is less and less a true measure of value as the logs grow smaller. And the average logs coming to the mills of the province are apparently forever growing smaller, paradoxical as that may sound.

On the other hand, the Doyle Rule has been the official rule of the Province for many years, during which period many timber limits have been sold. And it must be clearly kept in mind that when bids were made for these timber limits at public auction or by sealed tender they were based on the scale the Doyle Rule would give under the conditions then obtaining. It is, therefore, of course, obvious that any change in the manner of measurement must have regard to the equities thus established. It should also be appreciated by the public that in maintaining these equities the lumberman is getting nothing but his own, and the Province is being paid the full value of the timber sold as determined at the time of sale by public competition.

If then the equities as between buyer and seller were correctly adjusted at the time of sale, why suggest a change to cubic measurement? The answer has already been given. The Doyle Rule, by virtue of its unscientific construction, is less and less a true measure of volume in logs as it is applied to the smaller and ever smaller logs that are being cut.

The following table shows the increasing volume of wood required to produce 1-M feet board measure, as scaled by the Doyle Rule:—

Diameter of logs in inches	No. of cubic feet required to give 1000 feet board measure as scaled by Doyle Rule	Additional per cent. of volume required as logs decrease in diameter
30.....	123	..
25.....	134	9%
23.....	139	12%
21.....	146	19%
19.....	155	26%
17.....	167	36%
15.....	185	50%
14.....	196	59%
13.....	211	71%
12.....	230	87%
11.....	256	108%
10.....	293	138%
9.....	349	184%
8.....	442	260%
7.....	621	405%
6.....	1,070	770%
5.....	3,140	2,453%

which all logs sold have been paid for. Had this been a stable unit (i.e. remaining essentially the same in practical effect from year to year) even though entirely unscientific, there would be no good reason for change. It, however, is not a stable unit—far from it, and for two fundamental reasons:—

- (a) The logs now cut on Crown lands average much smaller than formerly, and the tendency is still downward.
- (b) The Doyle Rule underscales all logs below thirty inches in diameter, and as the diameters decrease, the Doyle Rule becomes an increasingly unfair measure. When applied to logs of twelve inches in diameter or under it becomes a joke.

The decreasing size of the average log cut on all operated timber limits is a matter of record in vaults of the Department of Lands and Forests.

The practical effect of this decrease in size when the Doyle Rule is the measure is strikingly shown by the table above. For example, if the average log is 17 inches in diameter, 167 cubic feet are the equivalent of 1-M Doyle scale. If the average log be 10 inches in diameter, 293 cubic feet are required to scale 1-M. Doyle Rule. If the average log were but 7 inches, no less than 621 cubic feet would be required to yield 1-M by Doyle.

This is the demonstration that the Doyle Rule—by virtue of its unfair scale of small logs and its ever increasing unfairness as the logs become smaller, together with the established fact that our logs are smaller from year to year—profoundly disturbs the equities established between the lumberman and the Province at the time the timber was sold.

Fortunately the full and complete records of the scaling from year to year on all timber limits, available in the files of the Department of Lands and Forests, afford the means of readily determining the correct converting factor for translating the Doyle Scale into its cubic volume equivalent, which will preserve undisturbed the equities established by the sales contracts, for there can surely be no truer index as to what the purchaser had in mind to buy when he made his bid than what he actually cut after the bid was accepted.

For greater clearness, let us assume the case of a timber sale in 1906 at \$12.00 per M., Doyle Scale, (the \$12.00 covering both Crown dues and bonus.) Here the lumberman bids \$12.00 for the amount of logs that will scale 1,000 feet, board measure, by the Doyle Rule. By reference to the records of the timber cut on that limit during 1907 it will quickly be found just how many cubic feet of logs were required to yield the thousand feet, board measure, Doyle Rule, he was paying for. If a more conservative basis were desired, the converting factor might be based on the cut of the two seasons following the timber sale, thus in case of the sale in 1906, used as an illustration, the converting factor might be based on the returns on the timber cut on the limit during the two following logging seasons of 1907 and 1908. If the average log cut on this limit during the two years following the sale should prove to be 13 inches in diameter it would take 211 cubic feet of logs to give the lumberman his thousand feet as scaled by Doyle. Thus we find an exact parity between \$12.00 per M. feet as scaled by Doyle Rule, and \$12.00 for 211 cubic feet as measured by actual volume, and during the years 1907 and 1908 the amount of money paid the Province by the operator of this limit would have been the same whether paid on the basis of \$12.00 per M. feet, Doyle Rule, or \$12.00 for each 211 cubic feet, or in other words \$5.69 per hundred cubic feet. And if in all subsequent years the lumberman operating this limit had paid his Crown dues on a basis of \$5.69

Here is the crux of the whole problem of wood measurement. One thousand feet board measure scaled by the Doyle Rule has long been the unit of measurement by

per cubic feet, he and the Province would each be rightfully receiving what they were entitled to under the contract entered into at the time his timber was sold.

From this example it will be clear that a converting factor that gives equitable adjustment as between buyer and seller may quickly be worked out for every sale that has been made since the Doyle Rule was adopted in 1879, and once determined, this converting factor is valid as long as the contract obtains.

For timber limits disposed of before 1879 it would be equitable to accept the *then relation between Doyle Rule and its cubic volume equivalent* as determined by the cubic volume and scale of the average log cut during, let us say, the five-year period following the adoption of the Doyle Rule, namely: 1880 to 1884.

In its practical application to those old timber limits, a change from the Doyle Rule scale to a cubic volume scale as suggested above will increase the amount of Crown dues paid into the Provincial Treasury. It is evident, however, that it is equitable that an owner of these old timber limits should not receive more cubic feet of wood for his unit of crown dues than he did in 1880 to 1884. A change to cubic volume measurement with an adjustment by a converting factor (obtained as outlined) *merely makes a correction for the fact that the Doyle Rule requires so much more cubic volume of wood to scale one thousand feet board measure with our present small logs than it did with the larger logs 1880-1884.* In other words, under this adjustment the limit owner would again be receiving the identical volume of wood per unit of Crown dues which he received in the early eighties. The practical effect on the amount of paid-for logs cut from areas recently sold will be slight; in some cases possibly nil. In any event, any change obtaining will be, as has been shown, equally fair to buyer and seller.

(2) Re Checking Culler's Scaling.

The Timber Commission made a timely reference to the desirability of all cullers being employees of the department, and of the necessity of properly checking their work in the woods, and particularly pointing out the importance of marking all skidways so that the check scalers would have every opportunity to make a real check of the work of the cullers in determining the amount of wood cut on which Crown dues are payable.

These recommendations are obviously entirely sound, and I am very pleased to find that the matter of establishing a checking of the scale on all operations, and the closely related and very necessary detail of marking each skidway has already been adopted by the Department of Lands and Forests, and has been in effect during the past year. I would suggest as an additional aid to the check scaler, that the number of logs reduced for defect be noted for each skidway on the culler's report.

The discounting logs for defect is undoubtedly a procedure in which there now obtains a great diversity in judgment and method, with corresponding differences in the scale returned. An occasional—perhaps an annual—cullers' conference at a convenient milling point, which would provide facilities for practical demonstrations, would be most helpful in promoting accuracy and, therefore, uniformity in scaling methods and results. The discussions and exchanging of ideas on such an occasion would also greatly contribute to the same result.

(3) Re Shanty Books.

In time it may be found that the check-scaling of the culler's work which now obtains on all limits, is a sufficient check on the accuracy of the cullers' returns on which the Provincial forest revenue is computed. Until that is demonstrated, however, the "Shanty Book" record should be retained and made more effective than it has been in

Reducing Clearing Costs with C.X.L. Stumping Powder

Teams of horses and extra help are now replaced by C.X.L. Stumping Powder which removes stumps quicker and better with but a fraction of the cost.

Trees planted in holes made by C.X.L. Stumping Powder are more certain to take root and grow quicker than when planted by hand.

Write our nearest branch today for any information you may need.

CANADIAN EXPLOSIVES, LIMITED

Halifax Montreal Toronto Sudbury Winnipeg Vancouver

We announce the removal of our headquarters from
30 St. François-Xavier St., Montreal, to

307 ST. JAMES ST., MONTREAL

Where we can furnish fire-fighting equipment on short notice.

We have supplied several Forest Protective Associations, and can give excellent service.

Among our products are:—

Fire Hose	Fire Department Supplies
Fire Extinguishers	General Rubber Goods

The Canadian Fire Hose Co., Ltd.

H. R. MacMillan Export Company Limited

All Pacific Coast Forest
Products

Vancouver, British Columbia.

STEADY PROGRESS.—The Ottawa Printing Co. Ltd.,

which prints this publication, has a complete equipment and is capable of producing high class commercial, catalogue and magazine work.

3 and 5 Mosgrove Street Telephone Rideau 295
OTTAWA, ONT.

FISHERMEN AND CAMPERS—Quick Relief from the many minor accidents and bruises you receive on your vacation is afforded by **Minard's Liniment**. Put a bottle in your outfit.

Minard's Liniment Co., Ltd., Yarmouth, N.S. Branch Factory, St. John's, Newfoundland

the past. To this end I am glad to pass on the suggestion of the Provincial Forester that all shanty books be serially numbered so that they may be all readily accounted for at the end of the season. Also, they should be paged so as to prevent the possibility of removal of pages containing original records. The desirability of the record being made daily, and the affidavit being taken as provided by statute and Departmental Regulations has been forcefully pointed out by the Timber Commission.

(4) Re Measurement of Pulpwood.

Already a considerable proportion of the pulpwood of the Province is being measured by cubic volume because of the greater convenience to all parties of this method of measurement.

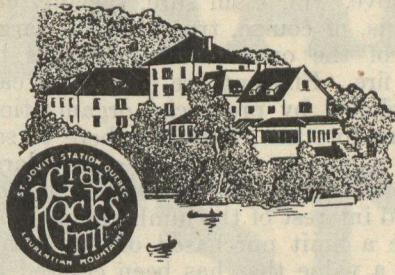
The determination of a converting factor which will accurately express the wood volume relation between the cubic foot unit and the standard cord of stacked wood measuring 8 feet long x 4 feet wide x 4 feet high, and containing 128 cubic feet of wood, bark and air spaces, is of course a simple matter, and can probably be obtained from measurements already in the Department. The writer made a number of careful measurements with different sizes of pulpwood in Northern Ontario some years ago, but has not now the results at hand. The study, however, indicated that a correct converting factor for different sizes of pulpwood ranged from about 85 to 98 cubic feet per cord; a converting factor of 100 cubic feet per cord would be a conservative and a very convenient converting factor. The 115-cubic-foot converting factor now in use is from 15 to 25 per cent. above actual wood volume.

(5) Re Method of Selling Timber.

Prior to 1906 sales of timber limits were conducted on the basis of inviting bids for a lump sum, known as a "bonus" which was to be paid in cash at the time of the sale, this bonus being the sum which the purchaser was willing to pay over and above the regular Crown dues, which in all cases are paid as the timber is cut.

Since 1906, the bids have been invited on a per M. foot basis; the amount bid to be paid together with the Crown dues as and when the timber is cut. The payment of the entire purchase price as and when the timber is cut has many advantages over the former system. Perhaps the greatest advantage is the better prices which are realized under this plan of sale. The fact that higher prices may be realized is due, in part, to the fact that a much larger number of lumbermen can compete at a sale where the timber is to be paid for as cut, as purchases under this plan are much more easily financed. It also implies a much less expensive examination of the tract by the prospective purchasers in advance of the sale, in as much as this examination would confine itself chiefly to the quality of the timber and the cost of logging, a knowledge of the approximate amount of the timber being sufficient when the payment is to be made on a measured basis as the timber is cut.

It has been urged by some that the former system of a lump sum "bonus" was desirable from a standpoint of immediately interesting the lumbermen in a larger financial way in the tract, and thus enlisting his very especial interest in protecting it from fire; also that the comparatively small payment for the timber as it was cut presented but little temptation to improperly influence the culler in the measurement of the logs. As regards honest measurement, it may be admitted that in lessening the amount that a thief can get, one somewhat decreased the risk of theft. The thing to do, however, in the measurement of wood sold by the Province is to make it impossible for anyone to steal it and get away with it. The improvements suggested in this report in conjunction



Facing the Highest Mountain of the Oldest Range on the Globe, on the confines of the actual North Land, a Maze of Mountains, Lakes, Forests and Rivers Combines the Refined Comforts of Modern Equipment with "Old Time" Hospitality.

ALWAYS OPEN Every Seasonable Pastime from Rod and Gun, — Music and Dancing, — to Golf and Aviation.

Full information furnished on request. Ask for circular F.

GRAY ROCKS INN, Limited P.O. ST. JOVITE STATION
Province of Quebec
80 Miles N. W. of Montreal on the C. P. R.

CANADA'S LEADING HOTEL



Dominion Square, Montreal

750 Rooms; 500 with Bath;

EUROPEAN PLAN EXCLUSIVELY

Rates from \$3.00 per day up.

Headquarters for
Conventions, Banquets and Social Events

Operated by

The Windsor Hotel Company

D. RAYMOND,
Managing Director.

J. DAVIDSON,
Sec'y.-Treasurer.

**BLUE PRINTS and
PLAN REDUCTIONS**

We offer exceptional Facilities
for the Reproduction of Plans
to Reduced Scale.

Artists

Engravers

Blue
Printers

The
CRABTREE Co.
Limited
OTTAWA, ONTARIO.

with what the Department has already done during the past year, as noted above, will, I am sure, speedily end any such practice. It is, of course, true that the larger the financial interest of the owner, the greater is his interest in preventing fire. Efficient fire protection can, however, best be developed by provincial organization. There are many reasons for this. Sufficient here to say that the safety of any particular tract is in a very large measure assured by work done far beyond its boundaries. In any event, the added interest of the lumberman owner in protecting from fire a limit purchased on the lump-sum-bonus plan is not a value that has been created by the method of sale. The fire hazard, which the lumberman necessarily assumes under these circumstances, is a factor which he as a business man must have discounted for at the time he made his bid to purchase the tract.

(6) Re Selling Small Quantities of Timber.

The Shevlin-Clarke case has clearly shown that larger timber sales made in recent years without public competition were not legally so made. It would appear that there is not any essential legal difference between the lack of authority for the selling of these larger tracts and the apparent lack of authority for the granting of permits to cut small quantities of timber, cordwood, ties, etc.

It is, of course, in the best interests of the forests, of the settlers, and of all concerned that the department should have a clear legal mandate to sell such small parcels at prices adjudged fair by the responsible officers of the department *without public competition*, which in such small matters would be quite impracticable; such authority should, of course, be properly safeguarded as to the amount so sold and the time and manner of removal.

(7) Notice of New Operations.

A point which has been overlooked in the administration of the forests has been a failure to require operators to notify the department before a logging operation is begun. This is desirable from every point of view, and is especially necessary from the standpoint of the fire hazard, and for the proper supervision of the logging operations and the scaling of the log output. Wide publicity should immediately be given of an Order making such notice mandatory and immediately effective.

(8) Fire Protection.

Fire prevention, and the early detection of such fires as do occur, together with efficient fire fighting, form the very foundation of all forest management.

Much progress has been made in recent years by the Department of Lands and Forests in all these matters. Prevention of fires set by locomotives will illustrate the progress made in one detail as a result of persistent and intelligent work:—

Year.	Percentage of locomotives reported defective	Per cent. of fires caused by Railways.
1917.....	28.3	49.5
1918.....	32.1	46.5
1919.....	21.8	37.0
1920.....	12.8	23.9
1921.....	8.3	14.8

The disposal of the debris incident to logging operations promises to be one of the largest problems to be solved by the coming forest administration. It is my conviction that at best fire prevention and fire fighting will, from time to time—as the seasons vary—be a losing battle so long as the brush is left to litter the ground where the future forest must be grown. For the present I am confident that a requirement that all brush lying within specified distances of all buildings, machinery, tote roads,

railroads and other points of frequent human contact, be piled and burned, is immediately justified. Such cleaning up is obviously as much in the interest of the operator as it is in the interest of the Province. I understand that a start has already been made in this matter by the Fire Ranging Department. It should be made obligatory on all operators.

(9) The Records.

It appears to me that the testimony of Mr. Grigg, the former Deputy Minister, before the Timber Commission, gives a decidedly wrong impression as to the efficiency of the bookkeeping in the Department of Lands and Forests. I am confident that an investigation by competent parties will show that while it may not have been as thoroughly modern in its form as it might have been, it has always been done with scrupulous care. During the past year the system has been much improved by the introduction of more modern methods. Mr. Grigg's testimony in this connection to the effect that with proper reorganization the Department might become "a handsome money-maker," might, I fear, convey the impression that the bookkeeping methods were such as to cause the Province a monetary loss. While this implication might not have been intended, it may be reassuring to some people to know that not a penny of the Province's money has been lost in this way. A careful checking of the system now in use leaves me with but a single suggestion, namely, that the Audit Department should widen its sphere of activity to include an annual audit of the departmental records.

Exception has been taken to the failure of the Department to promptly collect all accounts immediately when due. I am not in a position to say whether there has or has not been undue leniency on the part of the Department regarding overdue accounts, but every business man must appreciate that there are many times when a creditor's best interest is served by reasonable leniency in regard to the collection of secured debts. And I can easily imagine that there have been times during the past few years of severe business depression when the public interest could have been very badly served by the Department seizing and selling the lumber of the delinquent companies, which, of course, they have a perfect legal right to do. This could only have the effect of making a bad situation very much worse. In extending reasonable leniency in the case of secured overdue accounts, the Department is simply following the best business practice.

The Timber Commission has pointed out that the rate of interest charged on overdue accounts, namely "6 per cent. simple interest," is unfair to the Province, and, in effect, makes the Province to some extent a banker to the lumberman. This point is well taken. I would suggest that the interest rate be made to conform to current banking usage, both as regards rate and the compounding of accumulated interest, plus perhaps an additional 1 per cent. in the rate.

(10) Forest Reserves.

Several large areas of Provincial forest lands have been set apart as Forest Reserves. The statute provides that timber may not be cut on these reserved areas except when mature or when killed by fire. I submit that this leaves them on a par with all other forest lands, except that such reserved lands may not be cut over for the purpose of opening up for agricultural settlement.

It will be the duty of the forest administration to prevent the cutting of timber on non-agricultural lands, except as and when it is silviculturally mature or has accidentally been killed by fire, just as it will be their duty to see that all silviculturally mature timber is sold and cut from time to time as the best interests of the forest and the markets for wood products require.