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Canadian Forestry Journal

June 1919



THE FIRE HAWK.

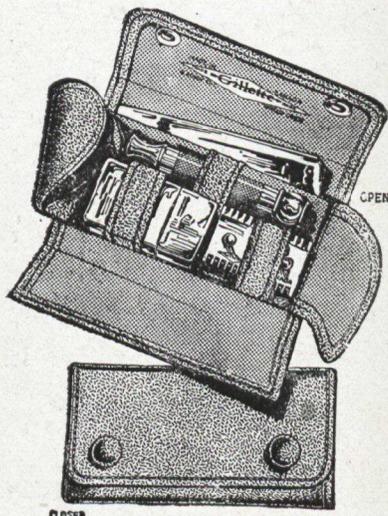
Gillette

Safety Razor

The Shaving Service for Every Man
—Everywhere

THE POCKET EDITION
GILLETTE
BOUND IN
SEAL-GRAIN LEATHER

THE NEW
KIT SET
No. 20



"If I was buying another Gillette Safety Razor," said one enthusiast when he saw the new Kit Set, pictured above, "I would certainly want that one!"

"It not only preserves all the good points of my old morning friend, but it is as compact as any razor set I have ever seen, and takes the least room in the travelling bag.

"And then the black, seal-grain case is so dignified—so appealing to any man who is particular in his appointments. I suppose you are asking a pretty price for that set."

No; merely— **\$5.00 the set.**

MADE IN

CANADA



The Gillette Safety Razor Co. of Canada Limited
Montreal, Canada

Canadian Forestry Journal

VOL. XV.

OTTAWA, CANADA, JUNE, 1919.

No. 5.



Stuart Graham, aviator, with his wife as navigatrix, and the mechanic, ready for a flight over St Maurice Valley, Quebec.

THE FIRST FLYING PATROL OF FORESTS

By Stuart Graham, R. A. F.,
in charge of hydro-aeroplane experiments in Central Quebec for
St. Maurice Forest Protective Association.

From Halifax to Three Rivers in 9½ Hours Flying Time.— Dodging Storm Clouds an Hourly Pastime

Leaving the waters of Halifax harbor at 2.25 p.m. with a 10 knot south-east wind blowing, we struck a magnetic course for Cape Blomidon and crossed the North Mountains forty-five minutes later. In the Bay of Fundy the wind changed to a fifteen-mile north-easter which

brought us a heavy fog when ten miles from St. John. We had been flying at an altitude of 1,000 feet, and as the fog gradually forced us downwards we sighted St. John harbor below and landed, making our time in the air two hours and eight minutes for the 145 nautical

miles covered.

Owing to the fog we were obliged to spend the night in St. John.

On the following day the fog had not improved, but knowing it would be clearer inland to gain altitude. Then taking a north-west course with a twenty-knot head-wind blowing we flew until we reached the International boundary where we altered our course to north. Several times during the afternoon we sighted storms ahead, but in each case we easily circumvented these; until, passing over Eagle Lake, Maine, we encountered a larger storm with low clouds which forced us to land for the night. We had flown for 3 hours and 23 minutes, and covered a distance of 160 nautical miles.

We were then only 38 miles from Lake Temiscouata, where we hoped to obtain a supply of gasoline, so although the clouds were still low and threatening the next day we took the air at 11.40 and arrived at Temiscouata forty-five minutes later. Here our hearts sank for our order of gasoline had not arrived. We had been obliged to fill with second quality gasoline at St. John, but here the only thing obtainable was motor boat gasoline, but we decided to try some anyway as Riviere du Loup was only 35 miles ahead with chances of obtaining some proper gasoline. We got away at 5.5 p.m., and having the wind in our favor reached the coast in thirty minutes.

The St. Lawrence was just recovering from a storm and when we had taken an extra large load of fuel aboard, we were unable to get off the water owing to the cross sea running.

Sunday morning with a strong north-east wind blowing proved excellent weather to continue, so we made our take-off at 1.5, arriving in Three Rivers, 170 miles away, in 2 hours 25 minutes. Here we were met by the president and directors of the St. Maurice Forest Protective Association and the mayor of the city, the Hon. Tessier. The mayoress presented a bouquet to Mrs. Graham, to whose hard work as navigator the success of the flight was greatly due.

Leaving Three Rivers at 7.15, we proceeded up the St. Maurice valley to Lac la Tortue, a twenty-five minute flight, thereby finishing our six hundred and fifty mile (land miles) flight with a flying time of nine hours and a half.

The machine is a Curtiss flying boat, H S2 L, fitted with the famous Liberty 12 cylinder motor which deserves a special word of praise for ab-

solutely no trouble was experienced either with the motor or the plane.

We have a second machine to bring from Halifax, and we will probably leave about June 21st, making the complete trip between sunrise and sunset.

ASKED IN PARLIAMENT

Questions

1. Has the Government received any complaints with regard to the Forest Products Laboratories of the Department of the Interior?
2. Have certain of the leading officials of these laboratories left, and are others about to leave, owing to the fact that wholly inadequate salaries are being paid?
3. Is it the intention of the Government to increase the salaries of trained experts in this Department in order that its value to the lumbermen and paper makers of Canada may be increased?

Answers

1. Representations have been made that a higher state of salaries should be paid to the technical staff.
2. Certain officials have resigned intimating that better opportunities were offered outside.
3. The matter of salaries is being dealt with by the Civil Service Commission in connection with the reclassification of the Civil Service.

TREES FOR PRAIRIE HOMES.

Since the inauguration of tree distribution by the Forestry Branch of the Department of the Interior, 45,357,146 trees have been distributed for planting on the farms in the prairie districts. All these trees were planted on farms, and 85 per cent of them are growing successfully, but there is room and necessity for as large a distribution for many years yet, according to the report of the Director of Forestry, which is a part of the annual report of the Department of the Interior for the last fiscal year, which has just been issued.

The number of trees distributed to farmers in 1917 was 8,400,000, the largest in the history of this work, and these were distributed to 4,561 applicants. Owing to poor seed conditions in 1916 and an unfavorable year in 1917, the supply available for distribution in 1918 was considerable smaller.

FORESTRY PROGRESS IN NEWFOUNDLAND

By J. D. Gilmour, Chief Forester and Logging Superintendent,
Anglo-Newfoundland Development Co.



How Lord Northcliffe's Company Aims to Maintain its Forests as a Permanent Crop



About 15 years ago it was first realized that Newfoundland's forests, comprising about 8,000,000 acres on the Island itself, were better adapted for pulpwood than for saw-logs only. Previous to this time sawn timber had been shipped to Europe and South America. The superior adaptability of these forests for pulp and paper manufacture is due to several reasons. Among these might be mentioned the predominance of spruce and fir over white pine in quantity, the most accessible of the latter having been logged to a considerable extent. The comparatively small size of the spruce and fir made its utilization as pulp more economical than sawing it into lumber. Large rivers, with good power sites and extensive drainage basins well watered with drivable streams, afforded a choice of several mill-sites with ample power and with plenty of timber tributary to the mills by water. Newfoundland is 1,000 miles nearer Europe than are the chief Canadian ports.

One of the companies earliest in the field was the Anglo-Newfoundland Development Co., Ltd., which obtained its charter in 1905. This company was organized by Lord Northcliffe and associates, who chose the valley of the River of Exploits after obtaining reports on several alternative locations, both in Eastern Canada and

Newfoundland.

The A. E. Reed (Newfoundland) Company, Limited, about the same time located at Bishop's Falls, on the lower Exploits, nine miles below Grand Falls, the site selected by the Anglo-Newfoundland Development Co., Limited.

These two companies are both financed by British capital, and are the only pulp and paper companies yet operating in the colony.

When Fire-Fighting Began.

It is safe to say that the inception of any forest laws in the colony was due to the efforts of these two companies. At the very beginning of the pulp and paper mill development it was seen that the colony's annual fire losses were disastrous in the extreme, and that, in short, another 20 years of unchecked fire losses would practically complete the total destruction of all the timber in the country. Fires were especially extensive after the completion of the cross-country railway in the '90's. These two companies brought this matter strongly before the Government of the day, with the result that the Forest Fires Act was passed. This Act was admirable in itself, but at first was not very successful, because of insufficient patrols and lack of inspection. Later, again at the suggestion of these two pulp and paper concerns, and other



The London Daily Mail in the making. Lord Northcliffe's pulpwood pile at Grand Falls, Nfd.
(Courtesy Natural Resources Intelligence Bureau.)



Into the teeth of the saws. At the foot of the jackladder of the slasher mill, Anglo-Newfoundland Development Company, Grand Falls, Nfd.

timberland owners whom they had interested, a voluntary association was formed, consisting of the limit-holders, and of the Government, to institute a patrol on the railway through forested lands. The expense of this patrol is borne by the Government which contributes about half, and by limit-holders who contribute the balance, roughly in proportion to their timber holdings.

The fire patrol system is administered by a Commission, consisting of the Minister and his deputy, and five or six resident representatives of the limit-holders. No serious losses have occurred on lands patrolled by this committee's appointees, since its inauguration in 1910. The cost to limit-holders averages about 60 cents per square mile annually.

This is a comparatively small expense, and is explained by the absence of interior roads, consequently there is not much travel in woods far from the railway. Lightning fires are unknown. Each operating company must control its own woods employees, such as loggers and drivers.

Operate for Permanency.

In any paper on forestry progress, forest fire prevention is entitled to the first place which has been given it here. If sweeping and soil-destroying fires cannot be first prevented, the expenditure of money on forest planting, or on logging for a sustained yield, must be poor business. It may be stated that fire patrols henceforth will be adequate to meet conditions as they arise.

Regarding progress in forestry in other directions, the writer can only speak definitely for the Anglo-Newfoundland Development Co., Limited. The policy of this company is certainly to handle their limits for permanency, not to cut over once and close down. A forest survey was started before the war, and has been recommenced. This will eventually give a complete topographic and forest survey of the entire limits, nearly 2,500,000 acres.

Volume tables for computing strip surveys have been made locally. Growth tables, showing increment in volume, D.B.H., and height, for the different species and types have been made, although in some cases they require strengthen-

ing by further data. These so far are based on complete stem analysis. Regeneration studies, to determine what new growth has followed clear cuttings, and partial cuttings, and old burns, have been made. A number of sample acres have been laid out for permanent observation, and have been logged in various ways, different diameter limits, etc., with a view to finding out whether any logging system which will give a better second crop, is commercially feasible in the pulp business. This study will take some time, but seems the only way to get really reliable data, necessary for determination of policies.

Burning of Slash.

Burning of slash in spring will, from observations made on burns, give a better proportion of spruce than is obtained by clear cutting and leaving brush to rot. Burning during logging seems to be more expensive; broadcast burning in early spring, when fire will scarcely run between the piles, gives results that promise well.

The hardwood problem is less serious here than on the mainland. White birch is the only hardwood, and hardly ever forms a pure stand, the natural types being mostly coniferous. Budworm injury has not been reported in the colony.

In logging, considerable progress has been made in close utilization, through cutting stumps low, and leaving no merchantable wood in tops. Practice usually will compare favorably in this respect with that in vogue in pulpwood cutting on this continent.

At the present time, no branch of forest investigation promises larger returns than studies directed towards solving problems of management of pulpwood lands for permanent use. In starting work on these problems, one is struck by the lack of practical, exact knowledge so important to the permanence of the pulp and paper industry. This industry should be a permanent one in Eastern Canada, and its importance in maintaining the prosperity of that section can scarcely be over-estimated.

PIGEONS AS FIRE MESSENGERS.

Carrier pigeons used in fire protection on the forests in Oregon and Washington is the latest. Forest Examiner W. J. Sproat will inaugurate the experiment on the Deschutes Forest. He has five pairs of birds. Similar experiments will be tried on the Cascade. The plan is to use the pigeons as a means of communication in emergencies and for carrying fire reports.

SEED TIME AND HARVEST.

(*Brockville Recorder*)

"It is sometimes argued that we do not need to concern ourselves about the forests of the future because the forests we now have will last us for 50 or 100 years, or even longer; that it is futile to worry about the matter, so long as we have wood. Of course, it is possible to estimate the length of time our present supply of timber will hold out, assuming certain fixed domestic and foreign demands (demands, incidentally, which are by no means fixed). This question has no direct bearing on the problem of keeping forest lands productive. Let us suppose, for example, that under certain estimated demands our present forests will last us for a hundred years. That is no reason at all why we should allow cut-over lands to become wastes or near-wastes. In the first place, it takes a hundred years, let us say, for a seedling to grow into a respectable tree, fit for the saw. The trees we are now cutting are, on the average, much older. The time to start our new forests, therefore, is now—not a hundred years from now—for otherwise we should have a long period during which we should be without adequate supplies of timber."

GOOD WORK BY ROYAL BANK.

Many a helping hand is being extended these days to further the cause of forest protection. The Royal Bank of Canada has gone to much trouble and expense in issuing a large quantity of attractive blotters bearing the following legends:

CANADA CANNOT AFFORD
FOREST FIRES!

Most forest fires are caused by campers and settlers. Light a small camp fire on rocks, gravel, or sand, never against a tree or in a dry bog. Put the fire out completely. Leave nothing smouldering. Never throw away a match or cigarette end when in or near a stand of timber.

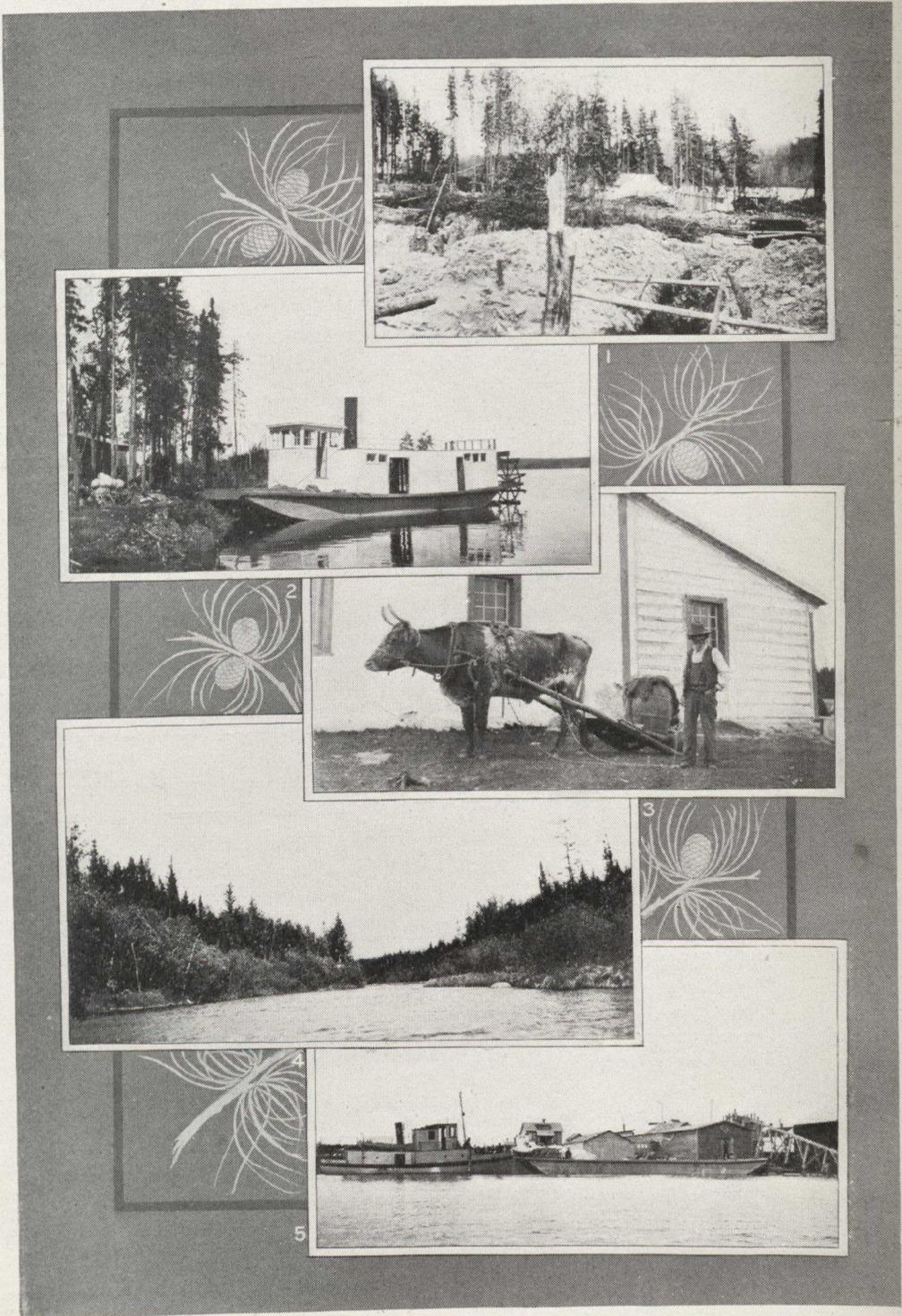
CANADA HAS NOT ONE ACRE OF COMMERCIAL
TIMBER TO SPARE!

With the Compliments of
THE ROYAL BANK OF CANADA.

CANADA CANNOT AFFORD
FOREST FIRES!

Make yourself a "Deputy Fire Ranger" whether in the woods this year for business or for pleasure and help to check the fire waste.
Three quarters of a billion dollars' timber loss since Confederation!

With the Compliments of
THE ROYAL BANK OF CANADA.



Picked up by camera in Northern Manitoba.

AIRSHIP SERVICE IN FOREST AREAS

By Captain John Barron, R.A.F.

Long Endurance of Lighter-Than-Air Machines a Point of Special Value.—Installation Costs.

I cannot give you information as to the work of aeroplanes for forestry duties, as my experience is entirely confined to airships, but for this particular work I would consider airships more suitable, amongst other reasons, owing to the fact that aeroplanes would have little opportunity of making forced landings in the thickly wooded districts, and the airship's facility in being able to hover or remain stationary in the air for purposes of inspection and on account of her long endurance.

I do not know if your intention would be to form a small service of your own men, or whether you would count on drawing from the personnel, supply and equipment of a Canadian air force. This latter would no doubt prove most successful, for as replacements were required, they could be drawn from such a service without causing any embarrassment, whereas replacements and other incidental expenses (always liable to crop up) having to be made good from a small organization might well strain the capital funds. I do not mean by this that it would prove impossible to carry out certain work with only a small capital available, but really that it would be more efficient to draw on nominal payment, from the resources of a larger Government-controlled service, the supply of which would not be felt by them, and the highest grade material would be available. This applies in particular to the early days of such an undertaking.

It might often prove a great temptation when not drawing from Government supply, to procure cheaper material, which in the end would result in loss in efficiency.

It is taken that the work necessary is forest protection and survey work.

28 Hours' Endurance.

The most suitable ship for these duties would be one known as the S.S. Twin Type. These ships have a cruising speed (40 m.p.h.) endurance of 28 to 30 hours, so that their radius of action would be 580 miles. Their dimensions are: length 165 feet, beam 36 feet, height 49 feet. A timber shed to take a ship of this

size might be constructed in the theatre of operations, but not being conversant with the conditions, I could not state the expense entailed by this.

If two or more ships were being used, it would no doubt be best to establish such a shed as a permanent base, and purchase portable sheds, which could be supplied with the ships for working further afield. I have never seen one of these portable sheds in process of erection, but understand they can be erected in a short time by a few skilled men and forty workers.

These portable sheds could then be transported north, south, east and west, with their respective tships, so as to cover a very large area.

If the question of expense did not permit the erection of a permanent base, then one or two portable sheds could be utilized as such, situated in the centre of the area to be worked, so that the radius of the circle would correspond to the radius of action of the ship or ships.

Portable Sheds.

If desired then to work further afield without shifting the portable sheds acting as a permanent base, mooring out stations could be established, but in this case it would necessitate their being situated near a road, in order to transport hydrogen from the permanent base, or to allow a transport of a portable Silicol plant. No definite policy can very well be advised as to the methods for supplying hydrogen, as for instance the proximity of rivers might allow water power to be used, and thus bring down the cost of hydrogen production.

The following prices are quoted, and according to Air Ministry calculation, are subject to a decrease of 40 per cent for peace time:

	War time	Less 40%
1 S.S. Twin-----	\$40,000	\$24,000

Twenty per cent of capital outlay is considered sufficient for all spare parts, envelope, etc., required in course of one year, keeping in efficient condition, and providing for rebuilding in case of accident.

Running cost of hydrogen per hour (S.S. Twin) -----	1.80
Portable shed to house 1 S.S. Twin -----	35,000.00
Quarters and subsidiary buildings (100 men) -----	6,000.00
Gas plant—depending on type and conditions -----	Unknown
	<hr/> \$41,000.00
Less 40 per cent -----	24,550.00

Personnel.

Complement for 4 S.S. Twin ships would amount to approximately:

Ships, 6 pilots; crews, 12 men; attached parties, 25 men; skilled men (trade classification), 50; unskilled labor, 30. Total, 6 pilots and 117 men.

In addition—commanding officer, landing officer, engineer officer, hydrogen officer, stores and accountant officer.

Estimated Wages and Salaries.

Commanding officer -----	\$3,000
Landing officer -----	2,500
Engineer officer -----	1,750
Hydrogen officer -----	1,250
Stores and accountant officer -----	1,000
	<hr/> \$9,500
Six pilots, \$2,000 each -----	12,000
Unskilled labor at \$8 per week, and skilled labor at \$15 per week -----	39,000
	<hr/> *\$77,140

The above prices are, of course, given concluding that such a service would not be drawn from a C.A.F.

I have endeavored to give more general information than advice as to organization, etc., as this cannot be given without knowing what the policy might be.

Editor's Note.—It is to be feared that Captain Barron's wage estimates are not based on present Canadian conditions. The amounts could be doubled with greater accuracy.

CANADA'S FUR ANIMALS.

Canadian fur-bearing animals constitute a resource which, in the last fiscal year before the outbreak of the war, provided exports valued at \$5,569,476, while even in 1916 the exports amounted to \$4,778,337. In addition to the furs exported, large quantities are used in Canada and the severity of our winters make it cer-

tain that this home demand will be permanent. Further, it will naturally increase with the growth of our population.

ONTARIO'S FOREST INCOME.

During the year ending Oct. 31, 1918, the Ontario Government derived a forest revenue of \$1,756,085 from its Crown lands. Of this, nearly half was derived from timber dues and approximately \$190,000 from the fire tax of one cent per acre per year for lands under license. The total revenue for the year is the largest since 1912-13, when the revenues closely approximated two million dollars. The area under license at the close of the fiscal year is reported at 16,888 square miles, or 574 square miles greater than for the previous year. These figures indicate the vital importance of Ontario's forest resources in furnishing revenue for the support of the provincial administration, as well as in furnishing supplies of raw material for the hundreds of wood-using industries of the province.

The permit system for regulating settlers' clearing fires is working out splendidly in practice. During 1918, 9,590 permits for the burning of slash by settlers were issued as against 3,486 for the previous season. According to the report of the Forest Service, the acreage covered by these permits amounted in 1918 to 39,683, as against 15,186 acres for the previous season. The permits are issued by members of the fire ranging staff, and the Provincial Forester reports that, generally speaking, the settlers co-operate heartily and appear to appreciate the wisdom of the new regulations. The maximum number of rangers and supervisors was 1,190.

QUEBEC FOREST OUTLAY.

The Legislature of Quebec has appropriated \$100,000 for the provincial forest service and the inspection of lands for the fiscal year ending June 30, 1920; also \$7,000 for the maintenance of the provincial forest nursery at Berthierville. These amounts are very materially supplemented by the expenditures on forest fire protection incurred by the Ottawa River, St. Maurice, Laurentian and Southern St. Lawrence forest protective associations, which patrol the great bulk of the licensed and privately owned timber lands in the province. The expenditures of these four associations on fire protection during the past year total \$177,729.

IN PREVENTION OF SHADE TREE BUTCHERY

Electric Linemen Charged With Inconsiderate Mutilation of Valuable Specimens—Is Rate of Compensation Adequate?

In response to requests from many residents of Western Ontario, the Canadian Forestry Association has taken up actively the question of the legal rights and practices of public utilities companies and commissions in the destruction or mutilation of shade trees along the public highways and on private property. Of the many complaints received by the Association from owners of shade trees, a few proved to be so obviously unfair as to supply poor material in seeking remedial action. For example, some complainants have taken a position that they would not have their shade trees altered in any particular, even though the lighting and telephone facilities of an entire community depended upon their acquiescence. Another case was encountered in which a shade tree owner strongly objected to any lineman touching an oak tree on his property. It developed that the oak tree in question was badly rotted in the trunk and several of the heavier branches were ready to fall into the highway during the first severe wind storm.

In a letter received on June 9th from the Hydro-Electric Power Commission of Ontario, the following statement is made:

"It is the desire of the Commission to do as little damage as possible to the trees and properties of the people along the line of Hydro construction and they have secured the best help they could get to take charge of the trees to be trimmed and cut. However, any suggestions that you may have as to more skilled people in this respect, or improved methods of doing the work, will be appreciated.

"When you have completed your investigation I would be glad to have a copy of the result and any suggestions that you may have that will improve the situation."

Watch for Infractions!

The Forestry Association affirms that if every reader in Western Ontario will keep close watch on the conduct of linemen when carrying wires through trees and will supply details of any instances that seem to violate fair play, these will be brought to the attention of the Hydro-Electric Power Commission without delay. As

the Ontario law now stands the rights of the individual property-owner to the trees on his own property as well as to those in an adjacent highway, has been superseded by the amendments to the Hydro Power Act of Ontario so that at the present time the "Hydro people" have ample authority to handle shade trees as they see fit. Major W. W. Pope, Secretary of the Commission, in writing to the Forestry Association, emphasizes the point that notwithstanding the power given to the Commission, every effort is made to convenience the owners of shade trees and instructions are given to the working parties that minimum damage shall be caused, consistent with the economy of line construction. Says Major Pope:

"In addition to this, tree trimming matters have been very carefully looked into and wherever the trimming or cutting of trees is found necessary they have employed the most skilled experts that could be got, so that in carrying on this work as little damage as possible should be done to the trees, and have sought in every case to inconvenience the owners and occupiers of land as little as possible, having regard at all times to the efficient and proper construction of the lines and to secure efficient operation. In support of this statement the Commission have some thousands of miles of high and low tension lines in operation in this province and respecting which only two arbitrations have ever been sought, respecting trees, and less than half a dozen respecting land rights. It does happen that in some districts, owing to the Bell Telephone and other company lines having been constructed and operated on one side of the highway, the Commission are confined to the other side for the purpose of their line. One of the principal requirements for good operation, is non-interference with the line by trees."

Policy in Cities.

The Forestry Journal believes, however, that a vast improvement is due in the system of cutting shade trees in advance of line stringing. In cities such as Ottawa, where an official tree

trimmer is employed, it is the policy of the public utilities employees to submit all questions of shade tree alterations to the judgment of the aforementioned officer. It would seem, therefore, that in some of the larger places the city engineer's department must answer for the instances of shocking maltreatment of valuable shade trees.

Is \$10 Enough?

As matters stand at present, the usual compensation paid owners of trees for their total destruction is a ten-dollar bill. This price may be adequate for some types of trees and will certainly be entirely adequate for Manitoba maples and horse chestnuts, which do not deserve encouragement in Ontario under any circumstances. Were the rate of compensation multiplied by five it is altogether probable that the shade tree trimmers would exercise more precaution, for presumably the engineer in charge of construction would be anxious to hold down his initial costs to the minimum. At a ten-dollar rate, however, it involves no serious outlay to condemn and destroy three or four hundred beautiful trees. Fifty dollars is little enough for a full-grown, well-shaped maple or elm. If a public utilities company or commission were compelled to put up that much money for every ruined tree, there would be more hesitation in applying the axe to fine old trunks. The United States courts have been accustomed to strike a higher estimate in shade tree damage cases than seems to be the case in Canadian courts thus far. Several instances

have come to the Journal's attention from the records of the Massachusetts Supreme Court. In one instance a tree butcher destroyed four maple trees and was forced by a jury to pay damages of \$100 a tree. Another case shows that an electric railway company paid \$1,200 damages for destroying fifteen tupelo trees. An assistant foreman of the street railway company cut down three sapling elms and mutilated one large ash tree. He was fined \$100. In Athol, Mass., a gas company, through neglect of gas mains, killed nine shade trees and was fined \$300. In Hampton County, seven trees were killed by gas and the company was fined \$700. Another company in Lowell on a similar complaint was fined \$900. Twenty-eight trees on one street in Springfield were damaged by gas and the company paid the property owners over \$2,000. A contractor engaged in moving a building in Lawrence cut off limbs of a shade tree standing in the way of his structure and his fine and costs amounted to \$400.

These instances seem to show a much higher valuation on shade trees than has yet been displayed in the compensation arrangements between Canadian public utilities bodies and private tree owners. United States court cases indicate that \$100 is by no means a high valuation upon a shade tree.

The Forestry Journal would welcome further evidence from readers in all parts of Canada as to the practices of linemen. This should comprise, wherever possible, specific details as to the age and condition of trees and the degree to which they were injured.

SASKATCHEWAN'S PROTECTION

"The dry spell has been marked by an unusual number of prairie fires in Saskatoon district and provincial police officers have a busy spring-time tracking down careless farmers who neglect to plow fire-guards and otherwise endangered surrounding property. At provincial police headquarters here four 'crime reports' told of as many farmers being fined by rural justices of the peace in the last couple of days."—Saskatoon Star.

It will be interesting to learn of the Saskatchewan Government's efforts to track down any settlers responsible for the terrible forest fires of the last two weeks in May. Saskatchewan has a law forbidding the clearing of land by fire except under safe conditions and only by taking out a permit from a fire-ranger or municipal fire-guardian.

WATERLOO TO PLANT.

The Waterloo Golf Club will plant on its property, near Galt, 200 trees, the gift of E. J. Zavitz, Provincial Forester. They include 50 Scotch pine, 50 Austrian pine, 50 Douglas pine, 50 Douglas fir, 25 white spruce, 50 white cedar and 25 bull pine.

MR. A. L. DAWE GOING TO LONDON

Mr. A. L. Dawe, Secretary of the Canadian Pulp and Paper Association, is going to London as representative of the Canadian pulp and paper industry in connection with the work of the Lloyd Harris Commission. Mr. Dawe's sterling service during several years of critical pulp and paper history in Canada will ensure high efficiency in the new enterprise.

PRIVATE COMPANIES ENGAGE FORESTERS

One of the most interesting and striking developments in Forestry during the past few years has been the initiation of tree planting operations by pulp and paper companies of Quebec, New Brunswick and Ontario, accompanied necessarily by the engagement of professional foresters. Mr. Ellwood Wilson, Chief Forester of the Laurentide Company, has prepared, at the request of the Forestry Journal, a memorandum showing the number of companies already using foresters. With the name of each company given below, mention is made of the chief duties allotted to the forester's charge:

J. B. Snowball Co., Chatham, N.B., estimating timber.

Price Bros. Co., Quebec, P.Q., commencing a nursery; planting this year about 300,000.

Belgo-Canadian Pulp and Paper Co., Van Bruysell, P.Q., estimating timber; said to be starting a nursery.

St. Maurice Paper Co., Three Rivers, P.Q., estimating timber.

Brown Corporation, estimating timber and control of operations.

Laurentide Company, Limited, planted this

year one million trees; transplanted one million and a quarter; advisory to logging division; estimating timber; experimental work; classifying lands.

Riordon Pulp and Paper Co., planted 750,000 trees; estimating timber; advisory to logging department.

Canada Paper Co., Windsor Mills, P.Q., planted 350,000 trees; estimating timber and mapping.

Spanish River Pulp and Paper Co., advisory to logging department; estimating timber.

Anglo-Newfoundland Development Co., Grand Falls, Nfld., in charge of logging operations; estimating timber.

Canadian Pacific Railway, in charge logging operations; planting, landscaping and estimating.

Wayagamack Pulp & Paper Co., Three Rivers, P.Q., advisory to logging department; estimating.

Abitibi Power and Paper Co., Limited, Iroquois Falls, estimating.

Southern St. Lawrence Forest Protective Association; managers of both divisions are foresters.

BLOCKING SAND DUNES WITH TREES

Mr. G. C. Piche, Chief Forester of Quebec, writes as follows regarding the planting up of the drifting sand areas of Quebec.

"We have set there about 80,000 transplants of Scotch and white pine, also Norway spruce with a small amount of green ash and elms. The Scotch pine seems to have made the best show. Spruce appears to do well in some special corners. The hardwoods were only tried to fill up the gaps where there was a tuft of grass on the edges of the land to be restored. They have not proved to be very good though we met a few specimens apparently flourishing. The white pine has a delicate foliage and it will only make a good showing when its top is about two feet from the soil. We have covered nearly 45 acres which we consider as reclaimed. On the remainder of the area (250 acres) we have sown beach grass with great success. As you know this herb will grow vigorously in shifting sands, and it has been

used extensively in Europe for the holding of the frontal dunes along the sea shores. It is our intention to resume the plantations this spring as we have about 75,000 trees which have been transplanted during two years on the grounds from which we intend to distribute through the beach grass zone.

"We have done similar work at Berthier Junction, but we have used there a different and perhaps more efficient method, that is, we have employed only Scotch pines and planted them a little closer than at Lachute. Then, we have protected the surface against the carrying power of the wind by covering it partially with brush and debris from birch trees. The result has been very encouraging. We have set there about 40,000 trees covering 25 acres, forming little patches here and there throughout the sand. The beach grass was also used but found not to give prompt results as it takes about three years before it makes any show.

"I firmly believe that the method employed at Berthier will give quick results and the loss of individual trees is very small. Naturally if there are any dangers of fire the brush will increase the chances of same.

"The average number of trees shipped from

the nursery during the last five years is about 500,000 and the present stock of the nursery is placed at 4,750,000, of which $3\frac{1}{2}$ millions are spruces, half a million Scotch pines and the remainder consisting of various soft and hardwoods."

BEAUTIFYING QUEBEC SCHOOL GROUNDS

By T. G. Bunting, B.S.A., Professor of Horticulture.

The school grounds of many of the rural schools of the Province of Quebec as well as in the other provinces are anything but attractive. They have been considered simply from the standpoint of a yard or playground and have been kept free of flowers, shrubs and trees, with few exceptions, and the buildings themselves are often plain and unattractive. Here and there through the country are school grounds that have been attractively planted with native trees and shrubs taken from the woods or with plants purchased from a nurseryman. The school teacher and pupils as well as the parents can and do take a greater pride in the country school where it is attractively laid out with trees, shrubs, vines and flowers, without these interfering with the space set aside as a playground. That school children will respect and help care for these plants has been demonstrated many times where these plantings have been made.

The Horticultural Department of Macdonald College has undertaken some work in this re-

spect and has been growing trees, shrubs, vines and perennial flowers with a view to planting representative school grounds in various parts of the province. An offer is made to the school commissioners to provide them with a quantity of plants for this purpose free of cost. The commissioners are asked to forward a sketch of the school grounds, buildings, trees or any landmarks on the property and from this sketch a planting plan will be drawn to scale suggesting the position that the different plants should be placed in. The school commission is also asked to pay express charges on the shipment and to take care of the planting according to the plan and directions forwarded with the plan and directions forwarded with the shipment. Visits will be made from time to time to these school grounds and instructions given as to the future care of the plants and assistance will also be given in pruning them and where necessary plants will be replaced.

Already a number of school grounds have been planted under this arrangement.

SCHOOL PLANTING IN SASKATCHEWAN

By Augustus H. Ball, M.A., LL.B., Deputy Minister of Education.

It has been the policy of the Department of Education for many years to encourage the planting of trees and shrubs on school grounds in Saskatchewan. In 1915, when two directors of School Agriculture were appointed, arrangements were made with the superintendent of the Forest Nursery Station, Indian Head, whereby any school district, whose grounds were reported by the directors as having satisfactorily cultivated, would receive a large number of young trees of varieties suitable for shelter-belts or ornamental planting. Since that time about 300 districts have been supplied with ap-

proximately 800 trees each, and in most cases the trees are well looked after and consequently a considerable improvement in the appearance of the school grounds has been effected.

To successfully develop a good shelter-belt on the prairies of this province is not an easy matter and thorough preparation of the ground is absolutely essential. Very careful summer-fallowing is necessary and no trees are sent out until the superintendent of the Forest Station is assured that such preparation of the soil has been given.

HELP FOR ONTARIO SCHOOLS

By A. H. Tomlinson, B.S.A., Lecturer in Landscape Gardening.

The Ontario Agricultural College, through the Division of Landscape Gardening of the Department of Horticulture, is giving special attention to the beautifying of rural home and school grounds.

Any rural resident or organization may write and procure advice free in connection with the

location of buildings, as farm or school, the planting of rural home and school grounds, churchyards, cemeteries, village parks, greens or playgrounds.

When plans are necessary for the laying out of grounds, those seeking help may send to the Department rough sketches of such.

PLANNING A PRAIRIE TREE PLANTATION

(Courtesy, Dominion Forestry Branch)



Shelter Belts of Inestimable Value Can be Grown by Any Careful Farmer.



To obtain the best results it is essential that there be a definite plan in mind before any actual work is begun in the way of tree-planting. The majority of farmers on the prairies have the intention of planting trees at some time or other, but very few stop to consider what would be the best location and arrangement for the proposed plantation. Too often this lack of any definite plan of planting results in inconvenient and unsatisfactory home surroundings.

Where there is an initial plan drawn up, a portion of it may be completed each year, or as often as conditions will permit. It is known just where each belt will ultimately be established and the ground can be broken a season or two before planting and put into the best condition possible.

It may take a number of years to complete the plan, the length of time depending upon the extent of the plantation and the time and planting material available for distribution.

Cautions Worth Noting.

A great number of farmers do not consider the amount of labor necessary to properly care for a thousand or more trees under prairie conditions, and very often plant a larger number than they have time to attend to. If the trees are planted and then cultivation is neglected, there is a loss of both time and money. A few

hundred trees well planted and thoroughly cultivated for the first three or four seasons will produce a better shelter than several thousand trees poorly planted and neglected.

A common mistake made on the prairie is the planting of trees on land which is insufficiently cultivated. Perhaps a piece of ground has been broken for a fire-guard, then at a later date it is decided to plant trees. Frequently this old fire-guard is chosen for the plantation without any thought as to the condition of the soil or the effect the plantation will have if located on that site.

Formulating a Plan.

1. Make convenience your first consideration in arranging the farm buildings and grounds.
2. Establish the shelter-belt to protect the home and stock against the prevailing winds.
3. Allow sufficient room between the buildings and the shelter-belt for the extension and addition to buildings, threshing space, and collect snow-drifts in winter.
4. Allow space for lawns and ornamental planting.
5. Allow for the extension of the plantation for woodlot purposes.

Convenience Has First Call.

Convenience should be the principal thought when erecting the farm buildings and laying

out the grounds. There is nothing which decreases the efficiency or value of the farm more than a cramped and inconvenient arrangement of the home and its surroundings. With every farm there is an approach to the road allowance which is used more than any other, and this should be kept in mind when locating the driveway in order that there will be no time lost when leaving or entering the premises. The same will apply to the entrances from the barns to the adjoining fields or vegetable garden. In nearly every case on the prairie farm there is a sufficient amount of ground which will allow the tree-plantations to be so located that they will not interfere with the convenience of the place and yet will provide shelter for the home and barnyard.

Prevailing Winds.

In every locality there is generally some one direction, or perhaps two directions, from which the severest storms approach. It is on these sides of the buildings that the shelter-belts should be established first. Many tree planters in the West endeavor to plant their trees so that they will serve as a wind-break and at the same time provide shelter for the buildings. It should be remembered that the main object of a wind-break is to afford shelter for the buildings and stock, and therefore it should be established on the sides which are subjected to the prevailing winds. Later, a few standard trees, such as the ash, elm and maple, may be planted individually near the buildings to provide shade.

Spacing the Shelter Belt.

There should be a minimum distance of one hundred feet allowed between any buildings and the wind-break. Where this requirement is disregarded, there is always a great deal of inconvenience experienced later from snow-drifts in the winter. If possible, it is better to allow a greater distance than one hundred feet. As the farm becomes better established there will be need of additions and extensions to the buildings, such as the construction of implement sheds, etc.

Ornamental Planting.

That the attractiveness of a place can be greatly increased by the planting of shrubs and flowers is known to all. But on the prairies there are certain conditions which determine the success in growing ornamental plants. It has been demonstrated at the Experimental Station at Indian Head that many shrubs which winter-kill in the open are quite hardy when sheltered by a belt of trees. Therefore, it is until sufficient shelter has been established by

the wind-break. On the ordinary homestead or new farm in the West there are many things, such as erecting buildings and fences, which are of more importance than ornamentation. But as the farm grows older there will be greater opportunities to plant shrubbery and improve the appearance of the place. That these conditions will arise at some future time should be kept in mind when arranging for the planting of trees.

Allow sufficient space between the buildings and the trees to make improvements in the future.

The Woodlot.

There is no expanse of territory where the scarcity of fuel and small timber is felt so keenly as on the plains. If properly managed, two or three acres of land planted with the proper species and in proper mixture will furnish a portion of the fuel used on the farm and will supply a quantity of posts and small poles. The area to be used as a woodlot should be included in the initial plan, and, at least a season in advance, a portion of this area could be prepared to accommodate the planting material available. Trees should not be planted in large blocks unless there is a narrow belt of trees previously established some distance away on the sides of the prevailing winds. A great deal of damage will occur unless there is a trap to collect the snow and keep it from banking up in the centre of the plantation.

Suggested Plans.

The plan here presented is offered merely as a suggestion as to what might be considered necessary to allow for in preparing an original plan for any farm home. Local conditions must necessarily affect the general arrangement of buildings and shelter-belts, and, therefore, no set plan can be given suitable to all cases. As a general thing from seven to twelve acres should be included in the plan; any area smaller than this will undoubtedly result in cramped quarters in future years.

The plan includes ten acres and is designed for a home site placed in the south-west corner of a section. It embraces practically everything that might be considered necessary in the way of gardens, ornamental grounds, barnyards and shelter-belts for a farm or from a quarter section to one section in area. It will be noted that the main belt on the north and west sides is planned for fifteen rows. It might with advantage be made even wider than this. It may be taken for a general rule that any belt containing ten or more rows should be protected by

a snow-trap or space to hold snow-drifts in winter. This space can be utilized to advantage for many purposes during the summer season. The outside belt on the north and west may consist of either one or two rows of such trees as maple, willow or caragana. Trees like cottonwood or ash, which do not grow thick at the bottom, should never be used for this outside belt.

Such a plan may require several years to complete, the ornamental grounds being possibly the last portion to be developed. To plant according to this plan the owner would require to use from 5,000 to 6,000 seedlings and cuttings, besides such shrubs as might be needed later for the lawns.

It must be clearly understood, however, that,

though these suggestions are made by the Forestry Branch, it would be an impossible task for the Department to supply sufficient trees to complete such a plan as above outlined.

A limited number of trees and cuttings are sent out each season from the Nursery Station at Indian Head, permitting of an average distribution of from 700 to 800 trees to each applicant in two successive seasons, making a total of from 1,400 to 1,600 plants. Beyond this the farmer must rely upon his own resources for further developing his plantation. Planting material may now be purchased at reasonable prices from common nurseries operating in the West, or the farmer may quite easily grow his own stock from seed or cuttings taken from the older belts of trees.

THE PEOPLE'S RIGHTS IN WESTERN FORESTS

(From Report on "Forestry on Dominion Lands", by J. H. White, M.A., B.Sc.F., Commission of Conservation's "Forest Protection in Canada.")

"License conditions agreed to each year provide for renewal 'subject to the payment of such rental and dues and to such terms and conditions as are fixed by the regulations in force at the time renewal is made' This is a yearly warning, and changes have been made from time to time in the conditions attached to Dominion licenses. The enforcement of cutting regulations in the interest of the next crop would be no hardship, considering Dominion timber charges in comparison with other parts of Canada, and the increased value of stumpage since purchase. Besides, in the case of berths held for increment in value, the operator, through the natural growth, becomes the owner of wood product which was not on the berth at the

time of purchase, and which was not represented in the original bonus he paid

"What may be done is necessarily a financial compromise between what is best for the forest and the market conditions of the lumbering industry. At the outset no changes are needed in the license conditions. All that is necessary is to take advantage of them. The modern viewpoint in timberland administration is a working for continuity of crop, and the Dominion timber regulations make ample provision for this, as was shown in the discussion of the license clauses. But the carrying out of cutting regulations requires an adequate trained force in the woods, and not a handful of men with multitudinous office duties as well."

BETTER DAYS FOR THE MERIT SYSTEM

In an article by Dr. C. D. Howe on "A Land of Forests Without Forestry", in the May issue of the Forestry Journal, the evil of political patronage in the forest services of Canada was discussed in such a way as to give readers an impression that patronage still held sway in the field service of the Dominion Forestry Branch. As the Journal has previously pointed out, the patronage evil was effectually uprooted from the Dominion Forestry Branch many months

ago by placing all appointments under authority of the Civil Service Commission. Since then, the keenest critic of "pull" in public appointments has had little cause to complain. The spirit of the new legislation has been closely followed. The Journal believes that the Dominion Government ought to be excluded from the sweep of Dr. Howe's criticism, as regards patronage interference.

RAGING FOREST FIRES IN THE NORTHWEST

Damaging forest fires in Saskatchewan and Alberta have been reported during the last two weeks of May. While details of losses have not yet reached Ottawa, newspaper and other reports indicate that the timber loss will be considerable. Eight Indians were burned to death in the reservation north of Onion Lake and Lloydminster, Saskatchewan; other Indians were severely injured and food supplies and equipment destroyed. In a report in the Regina Leader, of June 4th, it is stated that the Indian settlements in the path of the fires passed through a terrible experience and that the people were forced to flee for days at a time to escape destruction. Aid was despatched from Regina by the Department of Indian Affairs.

Reports reaching the Dominion Forestry Branch show that more or less serious fires have occurred along the Big River in North-east Saskatchewan and on the Pines, Fort a la Corne and Porcupine Forest Reserves with some troublesome fires in the Peace River country and on the Bow reserve, in Western Alberta. The field staff of the Dominion Forestry Branch has been constantly busy in organizing fire-fighters and endeavoring to restrict the zone of destruction. On May 23rd the air in Prince Albert, Sask., was so dense with smoke that lights were turned on in the majority of offices and residences. Had it not been for the energetic co-operation of the population along the Cana-

dian National Railway on the Big River line, many of the towns and villages would have been wiped out. Four hundred railway employees were engaged at one period in fighting fire in the district about Prince Albert. A stiff fight occurred to save a million feet of lumber piled in the yards of the Ladder Lake Lumber Company at Big River. One thousand men in the employ of the company were organized in fire-fighting units and by energetic work kept the conflagration in control. Reports state that several hundred head of cattle were burned to death on various ranches along the Big River line. No mention has yet been made of loss of life in this section. The continued absence of rain created the greatest anxiety throughout the whole district north and west of Prince Albert. On the night of May 22nd a veritable gale prevailed and the horizon in every direction around the city was illumined by the glare of hundreds of conflagrations creating dense clouds of smoke.

The municipal authorities and people of Prince Albert made prompt and most generous preparation for the care of any refugees of the burned area. One example of this fine spirit was seen in an order to all hotels and restaurants to furnish free meals at the city's expense to any fire fugitives. The Regina Post states that the fires about Prince Albert are the most extensive in the history of the country.

MAKING NORTHERN ONTARIO SAFE

One would think that after the terrible forest fire experiences through which Northern Ontario has passed, the agitation for free-running fires in order to clear off the land for settlement would have been somewhat discouraged. As it was after the 1911 disaster, so since the 1916 catastrophe, alleged friends of the Northern Ontario settlers are writing columns to the newspapers asserting the right of the struggling farmer to fire his slashes in any way he pleases.

The latest of these newspaper pleas appears in the Cobalt Nugget of recent date signed "Settler". In two columns of complaint regarding the hardship of having to take out a permit before lighting his land-clearing fires,

"Settler" never once mentions the fact that unbridled freedom in setting fire to forests in Northern Ontario has on more than one occasion established a chain of graveyards from New Liskeard to Cochrane. In countries with the peculiar conditions of Northern Ontario no method has yet been discovered for "burning off the country" without burning up the people. The 1916 disaster which supplied columns of anguishing details was the product of unrestricted **settlers' fires**. Any modification of the present provisions would deliberately withdraw the chief safeguard thrown about the thousands of men, women and children now resident in the Claybelt.

PAYING OUR DEBTS WITH SCENERY

(By Robson Black in Toronto Globe)

If Canada Can Draw 10 per cent of Europe's Tourist Travel Income Will be Half-Billion.

The Magnet of Outdoor Canada creates more national income and more employment than the Canadian fisheries, probably five or six times over. It is to be counted as a natural resource of such present profit and potentialities as to rank with the mines and forests. And yet it seldom wins even a corporal's stripe in the blue books of this Dominion's business. We have figured out the pulpwood and the sawlogs and mink skins, but the hidden gold of recreational splendor somehow looks too intangible for mention. With marvellously varied charms of Nature to which processions of restless trampers would find their way if they only knew, Canada retains the distinction of the world's shyest advertiser.

Good ideas and pretty scenery seldom get anywhere "on their own legs". What reader has not heard of Denver, Colorado, and yet Denver recently spent \$75,000 to introduce herself to you and me, and is on the way to reap \$50,000,000 returns from motor travel alone. We may be a self-governing people, but we leave the details of food, clothing, politics, charity and travel to the autocracy of the advertiser. So habituated are millions of folk to picking rail and boat tickets according to brain pictures painted by advertising science that only those lands maintaining a first-class ballyhoo have been able to turn tourist footsteps into large national income.

Thousands of our own people hitch up for San Diego and Los Angeles who never yet have conjured a curious interest in Algonquin Park or Banff or Rideau Lakes or Vancouver Island or Laurentides Park or southern New Brunswick. The sort of export traffic that transfers millions of Canadian dollars to Yellowstone National Park and New Hampshire and the New England coast can be countered and redirected almost as easily as to change the public's whim to another good brand of tooth paste. We must start right now to "sell" Canadian scenery to Canadians.

A World's Industry.

Tourist business, travelling, fishing, sight-seeing, have grown into one of the world's really great industries. Because it is, consciously, a quite unorganized idea with you and me to buy a ticket to Mosquito Inlet does not mean that your notion of travel is not as ponderable, commercially speaking, as a shipload of spindles. To turn 50,000 Canadians from the American border to a rollicking good time in the glorious outdoors of the Dominion, is, from the shocking viewpoint of trade and commerce, a profitable and really easy thing to accomplish. The country must advertise itself to itself. That would cut off a large slice of needless cash export. Simultaneously we could advertise the creational novelty of our country to others, to the millions of others with their pockets bulging full and a ready ear for the call of the wild, when the wild does its calling in a universal key. We could then settle down to something that has a more exhilarating motive—to teach Canadians how to play, how to build big business on last week's recreation. Just now we Canadians are in the way of thinking that a "month's rest" means a membership in a Gaspé salmon club. That is because we react according to the mental pictures we have formed from absurd data. It is also accounted for by the fact that almost nobody in any Canadian neighborhood, without a commercial interest to advance, does any picture painting for the fellow with a fish-pole and thirty-two dollars.

Department of Tourist Travel.

If some Cabinet Minister at Ottawa brought in a bill to create a Federal Department of Tourist Travel, would he be showered with flowers or flower-pots? It might help him to mention that the American tourists spent in France before the war about \$250,000,000 a year. The Rhine River brought to German coffers \$100,000,000 annually. Prior to hostilities 300,000 well-to-do Russians spent the summer at German and Austrian resorts and left

behind them something over \$200,000,000. Along the Baltic and North Sea 113 resorts held forth in 1913 and entertained over 800,000 visitors, who spent nearly \$100,000,000. Berlin picked up \$50,000,000 of foreign tourist cash, and Vienna considerably more in a twelve-month. American sources claim that 120,000 passages have been booked for France as soon as shipping is available, and so engaging are the possibilities of American traffic that the French Government has brought into being a new Cabinet portfolio, to be known as the National Office of Touring. Automobile services are being arranged, with new hotels, etc., to handle the swarms of spenders. With a possibility of \$500,000,000 a year from American pockets, how long will it take France to re-establish her financial power?

The Canadian Pacific Railway estimate that if Canada could secure just 10 per cent of Europe's tourist travel she would collect \$500,000,000 a year—the value of the wheat crop of 1916. The creation of a National Bureau for Tourist Travel has been put before the Dominion Government by the Commissioner of Dominion Parks, Mr. J. B. Harkin, an official of constructive outlook.

Can travel habits and travel routes be altered at will? The United States Government succeeded in the summer of 1915 in diverting to the National Parks over \$100,000,000 of the money that formerly went to European innkeepers and milliners. The total number of visitors to the American parks that year was 278,000. Canada's splendid group of National Parks in Alberta and British Columbia entertained 121,000 persons in the same year. They started for Canada from forty-five different nations and hit upon that particular part of Canada because the pictures painted by friends or by ad. writers or by the movies had settled their sense of direction. People who figure out that sort of thing reckon that they spent twenty or thirty million dollars with us while having a ripping time. But nobody comes unless someone mixes and paints and gives them, far and wide, a sketch of what's new, what's big and gripping. Along with that primeval tang the modern traveller expects at the very least a room and bath and valet service. He is willing to meet Nature and battle with her in all her moods—but he must do it comfortably.

Motherhood of the Forest.

The forest, of course, is the thing men go to meet when they quit the town for the un-

fenced playgrounds of the semi-wilderness. The forest is the mother of the pure stream and the crystal lake. It provides cover for the birds and food and shelter for animals. Granite ledges and boggy flats make hard fare for the recreation-seeker, unless every lifeless acre is instantly dissolved from sight by ten acres of life-renewing woodland. Canada will always be a country of enormous forests. Don't bother with these statistics much, but we have five hundred million acres in this good land covered with trees. Only a trifle of it is of any use for farming, so we will always—barring forest fires—have a snug little camping ground on 780,000 square miles—big enough to camp every living soul who feels the chumminess of living trees.

NEWS PAPER IS 92 PER CENT WOOD.

By way of explanation of the relative use of these factors it may be said, of Power that the energy required to produce one pound of newsprint is equivalent to one h.p. per hour and that about four-fifths of this is obtained from hydraulic power and one-fifth from coal: Of wood that is 92 per cent of the finished product, the remainder (with the exception of a fraction of 1 per cent of vegetable and mineral matter) is clean water."—W. H. V. Atkinson, in the Spanish River News.

MORE PAY FOR NOVA SCOTIA RANGERS

A Bill was introduced in the Nova Scotia Legislature recently to increase the daily wage paid to forest rangers and sub-rangers. The Bill was opposed by Messrs. Armstrong, Corey, Hall and Parsons, but succeeded in passing the House. The increase in wages will doubtless be regarded by all Nova Scotia members of the Forestry Association as a move in the right direction.

A RAILWAY IN PLANTING WORK

The Delaware and Hudson railway sets out annually 250,000 trees, mainly Scotch pine, spruce and red pine. The company has 17½ acres of nursery. Planting costs have increased \$2.50 per 1,000 trees during 1918, over the cost of the preceding year. It now costs about \$12 per acre for planting 6 x 6 feet or 1,110 trees per acre. On this basis the company believe planting to be a good investment.

TWO SIDES OF BOUNDARY: IS THERE A PARALLEL?

Is there danger of timber exhaustion in America?

Ten years ago, it was the forester who raised the alarm. He was rated a visionary and a guesser.

To-day the forester is noticeably conservative in his point of view of timber exhaustion.

It is the commercial operator, official heads of great lumber associations, particularly in the United States, who seem to have taken the rostrum to rouse the people to a knowledge of dangers ahead.

Leading officials of the southern pine manufacturers state that the bulk of the original supplies of yellow pine in the South will be exhausted in ten years and that within the next five or seven years more than 3,000 manufacturing plants will go out of existence.

President Dodge of the International Paper Company, states that east of the Rockies, south of the Canadian border, there are only two stands of spruce that would justify the erection of two fifty-ton pulp mills.

Now comes further interesting evidence, this time from John H. Kirby, president of the National Lumber Manufacturers' Association of the United States, who makes the remarkable admission that of 202 sawmills in Texas, reporting to him as lumber administrator for the Shipping Board at New Orleans, ninety per cent had a shorter life than five years.

Since Mr. Kirby's address was delivered the United States Government has compiled, from the returns of the questionnaires which were sent out to the southern mills, supplemented by information furnished by the Southern Pine Association, data which shows that of the 2,043 mills reporting: 538 will cut out in 1 year; 539 will cut out in 2 years; 221 will cut out in 3 years; 120 will cut out in 4 years; 249 will cut out in 5 years—a total of 1,667 mills whose timber holdings will be exhausted within five years, representing eighty-one and six-tenths per cent of the mills reporting and twenty-one and nine-tenth per cent of their timber holdings.

Of the remaining mills covered by this census, 280 will have exhausted their timber holdings within the next five-year period; of which—47 will cut out in 6 years; 35 will cut out in 7 years; 48 will cut out in 8 years; 17 will cut out in 8 years; 133 will cut out in 10 years—leaving but 96 mills of the 2,043, or four and

six-tenth per cent of the mills reporting, that have a life of more than ten years, and of these all but four will have exhausted their timber holdings within the next twenty years.

Canadians Should Heed.

What meaning has all this for Canadians?

Exhaustion of southern pine timbers which does not mean the clearance of the last tree, but the reduction of dense stands below the point of profitable operation, will automatically transfer the pressure of public demand to the white and red pine forests of Canada. The latter are supposed, on evidence none too secure, to contain sixty billion feet, board measure, most of which is confined to Quebec and Ontario.

Some large mills in Ontario, specializing in pine, are already feeling very sharply the cutting out of white pine areas and the increasing inaccessibility of fresh supplies of logs. If such is the case to-day, when southern pine mills are yet able to operate and produce cheaply on the last of their forest capital, what will happen to Canada's pine when United States demand begins to bear heavily upon it? Are Canadians free to assume that a candid investigation of their own situation in respect to timber supplies east of the Rockies, would develop a showing much more comforting than what is now represented by American lumbermen? Or is it not nearer the truth to say that we have only the haziest idea of what pine exists in Eastern Canada, and have not taken the trouble to commence a survey or to ask the lumbermen for a frank opinion of the future outlook, and then, on the plain evidence, work out a plan of state investigation and co-operation in order to safeguard the future from calamity?

U. S. STARTS AIR PATROL

The air service of the United States army, in co-operation with the Forest Service, is now actively patrolling national forests in California for fires, and plans are in the making for the wide extension of this work as the fire season approaches in other sections of the country. On one patrol no difficulty was experienced in detecting fires, both large and small, in the timber at elevations ranging from 6,000 to 10,000 feet.

"LAISSER FAIRE" IN LUMBERING

"Despite the warning furnished by the United States, the prophetic utterances of leading timber cruisers, and the clarion calls of the Commission of Conservation, there are those who still seem to take little stock in the gravity of the situation and evidently think that all the agitation which has been raised on this question savors much of the character of an ordinary political discussion or a passing campaign propaganda which, from a party standpoint, is to be taken with a liberal discount," remarks Canada Lumberman".

"There is, however, a deeper meaning and a more intensive character to this problem and to many others, if Canada is to maintain her prestige and predominance as one of the great timber, pulp and paper producing nations of the globe. It was ably pointed out by Dr. Howe, Faculty of Forestry, University of Toronto, before a recent gathering of business men in Toronto, that it was part of patriotism as well as of elementary business sense to make an effort to sustain an industry that creates annually for the country forest products valued at over \$116,000,000 a year, and affords employment

to many thousands of people. Dr. Howe is not an alarmist and is not given to exaggeration or sensationalism. He strongly emphasized that forestry practice was to maintain unimpaired the capital stock of the forest wealth, and to increase the earning capacity of the capital invested in the forest. This is the object of every business organization and surely Canada cannot do better than to see that the yearly cut does not deplete the growth to such an extent that the inroads of time and industry will bear so heavily upon our national resources that, like the individual who fails to replenish his wardrobe, his larder or his stock of merchandise, from time to time, will wake up some morning to find, before we are fully aware of the true state of affairs, that all we have left of this great natural and national heritage is shreds and patches. The best time to take full advantage of the present situation and adopt wise, aggressive measures, is now. Otherwise Canadians will bitterly realize the fact that so far as our wooded wealth is concerned the saddest of all words are "it might have been".

U. S. PREPARES FOR FORWARD MARCH

On May 20 at Washington, D.C., was held the first of a series of conferences with a view to formulating a national programme of forestry. The conference was called and presided over by Henry S. Graves. Representatives were present from the states of Virginia, West Virginia, Maryland and New Jersey, and included state foresters, timberland owners, public men and representatives of the Federal Government.

In opening the conference Col. Graves sketched out the timber situation that exists in the country to-day.

State foresters and others presented informal statements regarding the situation in their states. These reports indicated the following facts: the original forest has been completely removed in New Jersey and Maryland. It is very nearly gone in Virginia and is rapidly being cut away in West Virginia. In spots of fires in the past reproduction has taken place in most localities, and extensive cutting is going on in second growth. In some of the older localities the third and fourth cutting is being made. Generally the cutting now under way is very heavy,

either cleaning the ground or taking the trees down to six or eight inches in diameter for uses such as mine props, box material, poles and other materials in which very small trees can be utilized. Many wood-using industries have run short of supplies and some have been compelled to close down their operations. Organized fire protection is being carried on in all the states represented. In those localities where carried on it is effective in accomplishing the renewal of the forest, but some areas have been so heavily cut and burned that they lie completely waste with only a covering of bramble and brush growth. Fire protection of itself does not provide for a highly profitable forest. Additional measures such as cleanings, improvement cutting, thinning and even planting are necessary to the development of a high-class forest.

Following the line laid down by the forester the thought of the afternoon session was directed mainly to the following subjects: the step most needed is complete fire protection for all forest areas whether cut over or not. Fire protection affords the basis for forestry.

Finally, it was the deliberate thought and conclusion of the conference that the timber situation of the country is so serious as to make an immediate necessity the inauguration of a broad and far-reaching timber policy which shall bring under some measure of public control all forests of the country.

The sense of the meeting was expressed in the following resolution which was unanimously adopted:

Resolved, that forestry questions are national questions, as well as state and local questions, and it is the sense of the conference that the National Government should assume leadership in these matters and aid and co-operate with the several states in furnishing adequate protection from forest fires, in perpetuating existing forests, and in reforesting devastated forest districts or regions, upon such conditions as may seem just and equitable.

OUR WATER POWERS AND REFORESTATION

The building of storage reservoirs for the conservation of water supply must be accompanied by wholesale reforestation, urges the New York College of Forestry in a special bulletin.

"The present interest in the development of water power in New York is emphasizing the problem of bringing about regular flow in streams for both power and domestic use. There is no question of course but that streams must be kept to a certain level throughout the year to be of value in the production of power. Where a stream fills its banks for a few months of the year and then dwindles to nothing, necessitating the use of steam power for the remainder of the year, these streams can be said to be of really little value to the state. There is no question but that the building of storage reservoirs at strategic points on water courses will assist in holding water back and allowing the streams to fill to a higher level through a longer period of the year, but the building of these reservoirs is only solving half the problem. If the forests are stripped off, allowing melting snow and rain to rush rapidly to the streams, this flood water will carry soil that will fill the reservoirs as rapidly as they are cleaned out. That this is the result of building reservoirs without proper reforestation of the headwaters of the stream has been evidenced repeatedly in the Alps in France and Italy, and in our own western mountains in California.

"Forests have a marked influence in conserving the water which falls in the form of rain and snow. The branches of the trees break the force of the rain, letting it fall to the ground and pass into the soil easily. The cover formed by decaying leaves and sticks is a sponge-like

mass called duff or humus, and this has a great water absorbing capacity. It takes up in proportion to its volume a vast quantity of water and gives it off slowly over a period of several months, thus maintaining springs and an even flow in the streams.

"General uniformity of stream flow in every section of the country will probably be brought about only as the result of widespread and intelligent reforestation combined with a limited number of large storage reservoirs at the headwaters of streams. If in connection with the reforestation of the barren areas, storage reservoirs are constructed so that the flood waters of spring may be impounded and given off gradually during the dryer seasons of the year, the combination of the two—the forest and the storage reservoirs—will come as near solving the problem of uniform flow in our streams as anything that can be contrived by man. Proper control of runoff is the only thing that will maintain a supply of water in streams upon which manufacturing industries are dependent and insure proper levels for navigation.

While forests act as protectors of the soil and conservers of water, they will be producing a crop of wood that will give increasingly large returns. There are, therefore, both direct and indirect benefits to be obtained from the reforestation of the non-agricultural hillsides and ridges which form so considerable a part of the great state of New York. There should be, therefore, constant co-operation between those who wish to develop the waterpower of the state or cities using water from our forests with the agencies carrying on reforestation. Without proper forest cover there can not be proper water supply.

THE GREAT FORESTS OF SOUTH AMERICA

By Percy F. Martin, F.R.C.S.



The World's Last Regions of Unexploited Timber—Immediate Protection the Antidote to Quick Action.



The twenty sovereign states of what is known geographically as Latin America are possessed of natural resources—as distinct from manufactured products—of which the world has but an imperfect knowledge, and makes but a restricted use. A country, or a series of countries, with a superficial area of something over 8,000,000 square miles, must, necessarily, contain within its borders a vast number of natural resources of different kinds and various degrees of usefulness to man; and even to-day the inhabitants of those regions are ignorant of the riches a bountiful Providence has bestowed upon them or how to put them—where known—to the most profitable advantage. Whereas to several of the countries many of these gifts are common—such as timber, minerals and precious stones—others are possessed of resources peculiar to themselves; for instance, the nitrate of Chile, the gayule of Mexico, and the quebracho of Argentina and Paraguay.

Let us consider the case of the forest-lands, a conspicuous feature in the majority of the Latin American states. If we except two small regions, the South American forests are composed of broad-leaved hardwoods. There is a close resemblance between these and the hardwoods of North America. Some are of between 10,000 and 20,000 feet board measure to the acre, and the common belief that tropical forests contain only very hard woods must be disabused, since recent investigations show these forests to be composed of soft or medium hardwoods which are as suitable for general construction as the pines and various conifers and hardwoods of North America and European forests.

The timber lands of Latin America—in which comprehensive term are included those of Central America and Mexico—can be roughly divided into four categories, more or less distinct, the species composing each varying from region to region, but the general effect of each type from Columbia to Argentina being much the same. Putting aside the employment of technical or botanic phraseology, these four principal types

of trees may be described as dry forests, temperate forests, swamp forests, and tropical rain forests. There are, of course, other and minor types, quite distinct in themselves, upon which further comment is unnecessary, since the object of this article is merely to show the character of the South American forests so far as they lend themselves to commercial exploitation.

The first or dry type of timber is to be found in the temperate or sub-tropical regions, and is met with at both high and low levels. Immense areas exist where the rainfall is either deficient or unevenly distributed throughout the year, thus occasioning long periods of drought. Such forest areas are usually covered with some form of growth which, at its best, is a dense mass of comparatively few species. The trees are short-boled, round-headed, often armed with spikes or thorns or short spur-like branches, and with harsh or bristle-pointed leaves. The trees do not usually exceed 50 feet in height, and in many regions the average is little over 25 feet. The commercial stem varies from 10 to 20 feet, with diameters of 12 to 24 inches common. These forests grade into chaparral on one side, and into tropical rain-forests on the other. Perhaps the best known representatives of this type are the quebracho-algarroba forests of Northern Argentina and Paraguay. These occupy the great semi-arid plain lying between the foothills and the Andes and the Parana and Paraguay rivers, known geographically as the Gran Chaco. Other representatives of this type are the Cotinga forests of Brazil, and the coast forests of Colombia and Venezuela between Cartagena and the Island of Trinidad.

Antarctic Beech and Conifers.

The second, or temperate, type is met with along the slopes of the Andes, where elevation and moisture combine with suitable soils to make growth of a temperate forest possible. This type is best developed in Patagonia, and reaches practically to sea-level in Tierra del Fuego. Here, in the south, the trees are rather stunted

and deformed by the violent winds that blow for the greater part of the year, but higher up in the more peaceful solitudes of the mountains to the north, and along the shores of the Patagonian Lakes, timber reaches a splendid development, and heavy stands are met with. These forests are of Antarctic beech and a few conifers, and it is estimated that three species of the beech would probably furnish 90 per cent of the cut. Average stands are between 10,000 and 20,000 feet per acre, exclusive of defects.

Unfortunately, many of the forests are over-mature and so defective as to be of little commercial value. The trees reach heights of 100 to 125 feet, and a diameter of between 2 feet and 5 feet. No reliable computation has ever been made of the timber in this part of South America, and the extension along the Andes region, drew on the forests for fuel and construction timber, and, no new growths having been promoted, only second growth, or scattered patches, remain. It has been found that these Highland people even worked down to the edges of the rain forests of the great Amazonian plain.

The third, or swamp, category forest can, again be subdivided into two classes: (a) The tropical forests occupying the salt-water swamps at the mouths of the great rivers; and (b) the forests of the fresh-water swamp and bottom lands. The tidal forests are typical mangrove areas, such as are to be found in other parts of the world, rather restricted in area and practically destroyed. The fresh-water swamps occupy great areas, and may undoubtedly, one day, become of some commercial importance. Among the best-known representatives of this type may be included the lowland forests that fringe the Amazon River in Brazil, the Orinoco in Venezuela, the Parana in Argentina, and the Magdalena in Colombia. These forests have similar characteristics, although they may differ in regard to the species of the trees found therein from north to south.

The forests of the swamp area are very irregular in age, often very open, and, maturing with extreme rapidity, only fast-growing species obtain a footing over much of the area. For the most part, the species in this type are soft wooded, similar to cotton-wood, basswood and yellow poplar, and many are quite colorless. The trunks reach to a height of over 100 feet in the best soil, and from 60 to 70 feet in the average, the ordinary diameter being between 2 and 3 feet. Certain of these species probably reached this height in a period of from 10 to 15 years, and their commercial diameters in much the

same time. The dominant stand from any given region is generally of very few species. In many cases four or five varieties of a tree will furnish 75 per cent or more of the commercial timber, and the yield will be between 8,000 and 10,000 feet per acre.

A Vast Storehouse.

Of all the types of South American forests the tropical rain forest is, perhaps, the most important and the least known. Here in these regions, almost untouched by the foot of man, are to be found mahogany, rosewood, Spanish cedar and numerous other classes of wood adaptable to commercial purposes. It is estimated that there is enough timber to keep thousands of lumber men at work without pause for hundreds of years, not even the Indians having, as yet, penetrated more than a mile or two into the jungle-like interior from the waterways.

This forest type in South America probably contains the largest and most valuable body of timber in the world, and, had shipping facilities permitted, vast stocks of some of the finest construction timber—the timber for pit props in particular—could have been brought over to Europe during the past four years, during which the scarcity of such material had been so keenly felt. Every care ought to be taken for the future that these regions be protected from possible destruction, and some kind of international agreement arrived at between European, North American and South American Governments for the institution of a strict forest administration. If these areas be destroyed, as the forests of Argentina, Paraguay and Southern Brazil are being wasted day by day, it would mean economic ruin, probably also absolute physical damage to land, climate, property, and continent. If, on the other hand, they are protected and properly utilized South America may become the centre of the world's lumber prosperity in the immediate future.

The tropical rain forests are composed of timber similar to that now generally in use. The woods are in the main soft or of medium hardness, and could replace yellow pine for construction, oak for finish and furniture, hickory for wheels and handles, and ash for agricultural implements. It has been said by a great authority upon timber, that from the infinite variety of these South American woods it is possible to find one for each industry more completely suited to its needs than those used to-day.

In working the forests, almost everything would seem to be in favor of the logger, conditions being almost ideal. Heavy stands are found over great areas absolutely level, and between ten and twenty thousand feet can be cut to the acre. Commercial diameters run between 2 feet and 3 feet, and the clear lengths to 50 feet or more. The total height of an average tree is well over 100 feet. In regard

to transportation, navigable rivers and streams reach nearly every part of the forest, and short hauls to floatable water are the rule. While much of the timber will float, it would probably be found more practicable and profitable to construct complete working plants close to the forests, dispose of low-grade products near at hand, and ship only the more or less finished products to the world's markets.

DO TREES IMPROVE GRAZING ?

The Journal of Forestry has summarized a series of interesting observations carried on in Russia over a period of 25 years to determine the effect of trees upon the grazing value of land which formerly carried forest. An area of 110 acres was divided into 18 portions, some of which were kept bare of trees, while others were sown with grass and trees retained. The trees were deciduous, being birch and alder, the former a surface-rooting and the latter a deep-rooting species.

The observations showed finally that in two or three periods of great drought the value of the treeless lands fell off by from 12 to 50 per cent, while that of the grass land with trees increased to 16 per cent. In rainy years also the treeless grass lands were inferior. For the first 12 years the treeless areas carried the best grass, but

then their value suddenly depreciated and the clovers began to disappear, until after the lapse of 25 years the areas took on the aspect of moorland on which tillage, manuring, and sowing failed to make a permanent improvement.

On the areas planted with birch trees the grass continued to improve until about the twentieth year, when the meeting of the crowns and roots caused the grass yield to decline rapidly. It recovered rapidly, however, when the older trees were removed and a new crop planted. Under deep-rooting alders no deterioration was observed, the grass coming close up to the trunks without reduction in height or change in color. It is stated also that the beneficial effects of trees are to be expected not in wet but in dry climates.

WAPITI SAVED FROM EXTERMINATION

A recent act of the Saskatchewan Legislature has established an indefinite close season for the elk or wapiti. This animal is now permanently protected throughout its entire range in Canada. This result has been achieved by the continued activities of an ever increasing circle of persons who take a keen interest in the conservation of our wild life. Various conferences of those interested have been held from time to time and their recommendations have been gradually adopted by the various provincial legislatures. Moreover, these conferences have done much to arouse and increase public interest.

The elk or wapiti, one of the largest of North American fauna, once ranged nearly the entire continent in incredibly large numbers, but has now become so greatly reduced that to-day a

few scattered bands along the Rockies between Colorado and the Brazeau river and some isolated herds in the forests of northern Manitoba and Saskatchewan comprise the entire wild elk left in North America.

Although now almost exclusively found in forests, the wapiti, which was originally an animal of the open plains and park-like regions, is unable to subsist on browse alone and is dependent, therefore, upon grass and weed range for its food supply. This peculiarity introduces an important element into the problem of its conservation, as the animal is obliged to expose itself more to the hunter than those species which never need to come out into the open. Consequently, only very drastic measures taken at once will save the wapiti from extinction.

TAXING TIMBER LANDS TO EXTINCTION

At a meeting of the Society of American Foresters at Albuguerque, New Mexico, at the beginning of June, consideration was given to the reform of drastic tax laws applying to timbered areas. The following expresses the sense of the meeting:

"The passage of adequate timberland tax laws, with a tax on the land as real estate and another tax on the timber itself, but collected

only when the timber is cut or harvested. It was pointed out that all existing tax laws regard timber as a part of the real estate itself, instead of as a crop; that the timber is taxed continuously, although it takes two centuries in the southwest for western yellow pine to grow from the seed to the mature tree ready for cutting; and that it is therefore unprofitable for private owners to hold young timber for future cutting."

A WHOLESALE LAND-CLEARING EXPERIMENT

According to a despatch in an Edmonton paper, an experiment in clearing land of tree growth by a wholesale burning method is being undertaken under the direction of the Dominion Government in Northern Alberta.

"Several townships are included in the area, a large part of which is now covered with dead poplar, having been laid waste by bush fires a number of years ago. Enough men were taken north to serve as an adequate fire-guard force, and it is expected that the work will be completed in the course of another few days. The Alberta fire guardian's office has also sent a representative to observe the progress of the experiment and the degree of success with which it is meeting.

The purpose of the work is to ascertain whether or not the clearing of land by burning is feasible. In certain parts of the north country considerable tracts of potential farming land are now covered either with brush or dead wood, and the clearing of such land for agricultural purposes has hitherto been a slow and somewhat expensive process. The Department of Interior is therefore trying out the plan of controlled bush fires, and the party now at work in the Smokey River district will shortly submit a report as to whether that plan is practicable on such a scale and whether or not it is any improvement upon the old-fashioned method of cutting and piling for bonfires."

THE NEW DEFINITION OF FORESTRY

By *Dr. Hugh P. Baker.*

Stories brought back from the war areas and reports from Government bureaus in Washington show that France has suffered more than any other European country in the drain upon her forests. It has been well said that French forests bore the brunt of the war. Other raw products could be shipped much more easily from other countries, but the products of the forests because of their bulk and because of the shortage of shipping facilities could not be imported readily. Therefore, the French forests were called upon to supply the French, Belgian, and American forces in their operations along the entire western front. At the close of the war there were over 50,000 British, American, and Canadian soldiers cutting timber from the

French forests. This number was in addition to the French engineers and civil population and thousands of German prisoners who were used in getting out and transporting timber products.

Twenty Years' Growth Gone.

It will be some time before we appreciate fully what the drain upon the French forests resulting from the war actually means to France and to the countries associated with her. The war demands upon the French forests have been estimated at seven times the normal production of her forests. For the two years ending December, 1918, the total timber requirements of the associated Governments were approximately 600,000,000 cubic feet of saw log timber. This tremendous demand upon the French forests had

to come from a greatly decreased forest area, as over 1,230,000 acres of forest land was in the territory occupied by the Germans. The loss of the acreage of forest land meant an annual loss to France of approximately 17,500,000 cubic feet of saw log timber last year. It is estimated that the drain upon the French forests in the past three years in the way of timber is equivalent to the growth of twenty years. In other words, the growth of the next twenty years of the French forests has already been used.

It is probable that there was a heavy drain upon German forest areas throughout the period of the war, but the German policy has always been to make occupied territories pay the cost of war in every way. It is known that the Scandinavian peninsula and Russia were drawn upon by Germany for vast amounts of timber in the carrying on of her war activities. Even Spain and Portugal, which before the war were the least densely timbered countries in Europe—Portugal having but $3\frac{1}{2}$ per cent of her area in forests—were badly over-cut. It has been reported that the demand for timber was so great in Spain, of course for export to Allied countries, that even cord oak trees were cut down in numbers. It became necessary in countries of Northern Africa, in Greece, and elsewhere to pass rules forbidding the cutting down of olive trees.

Russia Out of Action.

It may be said, therefore, that outside of Russia and the Scandinavian peninsula European forest industries are so exhausted that years will be necessary to bring them back to the pre-war conditions. Russia, in her demoralized and disorganized condition, will probably not be able to regain in any large way the European markets for her timber for a decade at least. It is probable that Russia could pay much of her war debt through the utilization of her forests could she organize her Government and her railways.

Forestry is Growth Plus—

A hundred years of forestry in Europe have shown that nothing is to be gained by confusing it with engineering or agriculture or any other equally definite line of work. Forestry is defined as not alone the production of a crop of trees—and this phase has been the one emphasized in this country too long—but as the harvesting of the forest crop and its ultimate utilization. It means the production and propagation of the animal life of the forest and forest waters, and finally it means the marketing of the products—include certain recreational developments in the

duct. In the last decade forestry has come to forestry of this country, as evidenced by the recent activities of the United States Forest Service in the development of recreational possibilities of the national forests.

Not until foresters throughout the country look our forestry problems squarely in the face and define what we are attempting to do in a fair way will we be able to achieve what is expected of us in these years of reconstruction. Naturally a developing profession such as ours must go through a period of uncertainty of definition and be hindered by attempts to call things what they are not. Any one who is at all familiar with the development of medicine in this country will understand thoroughly the many difficulties and delays which have resulted from lack of clear understanding in the defining of the boundaries of the science and the practice of medicine.

This is a time when those of us concerned in the development of forestry should have vision not only in defining forestry but in appreciating its relation to every phase of our national life. The period when production—or silviculture—was the all-important phase of forestry has passed in this country and we are being conceded, though begrudgingly by some, that the utilization of the forest with all it means is a part of forestry. The field of utilization offers tremendous possibilities in the way of research and in the way of making the results of research of a very definite practical value to every lumber user.

Wild Life Included.

Again, it is becoming understood gradually that forestry should include the production and propagation of the wild life of the forest and forest waters. This very important phase of forestry work has been bandied about from place to place, settling for a time with one line of work or in one kind of an institution, but there is no question that long experience in Europe shows that the forester is the man who is most concerned with the development of the animal life of forest lands and forest waters. There is some attempt to include this line of work as a phase of agriculture. We will concede that agriculture is one of the great industries of the country and needs the loyal support of every citizen and every legislature, but agriculture has its hands very full in developing to the fullest extent the agricultural lands of the country with all that that means. Will you agree, then, that forestry is a land problem, a water problem, a raw products problem, a food

problem, and a recreational problem? It is a field big enough and roomy enough for all working for forestry in a state of this kind. . . .

In the problem of the supply of water for the state for both potable and industrial use the forester must play an important part. Because of tremendous industrial development as a part of our war activities, great interest is bound to be taken in the development of the water power resources of the state. The forester should assist in the development of these waters, but at the same time should emphasize the necessity for the carrying out of reforestation by the state of barren hillsides and ridges which form so large a part of many of our watersheds. Experiments in the Alps in France and Italy and in our own western mountains show that money

may be wasted easily in building storage reservoirs if reforestation does not go on apace and does not keep the soil on the hillsides and the mountainsides, preventing it being swept off by flood waters into these reservoirs. Instead of passing huge annual appropriations entirely for river and harbor improvement, we must show that it is good business and good forestry to put a part of these funds into reforestation of the watersheds, thereby making it annually less necessary to dredge and improve our rivers and harbors. The state is fortunate in having the greatest city in the world within its bounds, and we have an obligation to that city that those who live there shall have the best water and the best food and the best recreation that our agricultural and our forest lands can give them.

AN OPINION ON BRUSH DISPOSAL

"There are various methods in use for disposing of lumbering slash, varying in cost and effectiveness. No uniform system can be followed. The method used must take into consideration particularly the injury to the remaining trees, and whether the conditions following the manner of disposal are favorable to the seedling crop desired."

"As far as Dominion forests are concerned, with the exception of certain portions of the railway belt, lopping would be of very doubtful value, since decay takes place very slowly, owing to the dry climate."—By J. H. White, M.A., B.Sc.F., Faculty of Forestry, University of Toronto, in Report to Commission of Conservation, 1913, based upon field studies on Dominion Lands in Western Canada.

DOMINION RAISES TIMBER PRICES IN B. C.

Official intimation has been received in British Columbia that a new schedule of royalties on timber berths west of Yale and within the 20-mile limit has been sent from the department at Ottawa to go into operation May 1st. These new rates are an increase over those of 1918, but it is explained that the Dominion Government has found it necessary to raise additional funds to meet post-war obligations.

Mr. E. F. Stephenson, chief inspector of crown timber offices with headquarters at Winnipeg, was in Vancouver towards the end of April in connection with the matter. He told the "Western Lumberman" that all the timber lands of the Federal Government had been held very low so far as taxation is concerned and that, in comparison with the provincial holdings adjacent to the 20-mile limit, the Dominion timber is considerably below the rate and that further taxation can still be imposed without being an added burden.

Alluding to the policy of the Dominion Gov-

ernment in regard to the manufacture of pulp from Crown lands timber, Mr. Stephenson stated that there had been no definite policy, but that he anticipated this would be done at an early date. The new royalties on the Crown timber lands in the Yale district are as follows: ground rent lands formerly 5 cents per acre will, after May 1, be 10 cents; on saw logs the jump is from 50 cents to 75 cents per thousand; on shingle bolts the increase is from 25 cents per cord to 50 cents, and on poles piling and cribbing, from $\frac{1}{2}$ to 1 cent. On railway ties the advance is from $2\frac{1}{2}$ cents to 4 cents, and on cordwood 15 cents to 25 cents per cord. An ad valorem rate is set on all timber not enumerated at 10 per cent. This was formerly 5 per cent.

An increase has been made in the rentals east of Yale of \$5 per square mile, bringing the rate now up to \$10 per square mile. This is one-tenth of the rental charged by the provincial timber department of areas in the same district.

CANADA'S FORESTS AS AN IMPERIAL ASSET

By Robson Black, Secretary, the Canadian Forestry Association.
(From the University Magazine.)

In the light of war experience, one is not called upon to argue the value of forest supplies to a belligerent nation. The grave predicament in which the Allied armies on the western front would have been placed had Britain's home timber supplies been their sole reliance is not to be contemplated with comfort. Had France been unable to thrust into modern warfare at a day's notice the powerful, perfectly organized weapon of great national forests, no display of generalship or human fortitude would have availed against the German onrush. It is not surprising, therefore, to find not only in the British Isles, but in the overseas dominions a remarkable quickening of public interest in forestry policies, and new determinations that, despite the lethargy of the past, the notorious shortcomings common to the whole Empire shall not be imposed upon the future.

It may be that where the plodding foresight of the French and German silviculturist for a century past missed the Anglo-Saxon completely, the picturesque mass-play of forestry battalions in days of war will be the means of forcing the importance of national forest management upon his peace time policies.

Of a certainty, the citizen who persists through these grilling years in his traditional contempt for national supervision of timber production invites catastrophe upon his country even if nothing worse than a trade Armageddon lie before us. But there are bound to be considerations of physical safety taking priority to trade. In any future war, the conduct of military movements will depend probably, even more than in 1918, upon an unfailing supply of timber materials, which in turn must be anticipated far in advance by national forestry organization, with public sentiment and public resources patiently upholding its programme. We have lived through the unprecedented spectacle of nations mobilizing not only fighting men but women and boys, factories, mines, railroads, forests, and farms. Where shall one discover another such unprophesied enterprise as the transfer of 10,000 woodsmen from Ontario and Quebec and British Columbia to the forests of the United Kingdom and France? Or could one parallel in military history the hewing down of 30,000

French trees every day, and the transfer to the fighting front of 200 million board feet of timber a month?

To the British observer it may appear at first sight that the forests of Canada are but distantly related to the timber supply problem of the United Kingdom. In all treatments of this subject which the present writer has read, the probability of Canada engaging more extensively in the British timber trade is subordinated to other schemes having Russia, Sweden and Norway as their forefront and reliance. Admittedly these countries have in their favor a very much lower freight charge, and none will dispute that Russia, in particular, with 1,200,000 square miles of timber lands, is competent to stand the strain of any conceivable demand.

The British Viewpoint.

The Forestry Sub-committee of the British Reconstruction Committee has, however, struck a new note in its recent report. It has ventured to consider the possibilities of a larger trade in timber with Canada, and goes far in suggesting practical steps toward that goal. The effect of the report in Canada almost certainly will be to demonstrate to the Dominion and Provincial forest administrations that timber conservation has suddenly taken on a serious imperial aspect, demanding an immediate application of scientific guidance and statesmanship such as would redeem some of our overseas forest policies from their present low estate.

The main object of the Forestry Sub-Committee, naturally, is the planting up of suitable areas in the United Kingdom so as to overtake in time the great discrepancy between coniferous timber consumption and home production. But the best-favored planting scheme demands patient waiting and heavy investments from the public treasury, either through direct payment for planting operations or by readjustment of taxation methods. Meanwhile timber must be had in undiminished quantities, and that means importation from mature forests beyond the British Isles.

It is one of the odd developments of the war that the forests of Canada were outlawed for military requirements by the need of eliminating timber cargoes from the shipping lists. For the

greater part of the war period more ships were being used for timber than for any other British import, and this continued long after American wood cargoes were cut off. Canada, therefore, was obliged to content herself with sending forest labor in place of forest materials. The exceptions are to be found in a considerable export from Canada of chemical derivatives, such as acetone, used as a solvent for the fibres in high explosives, and the Imperial Munitions Board's demand for 125,000,000 board feet of Sitka spruce (*Picea sitchensis*) for aeroplane construction. (Only 15 to 20 per cent of a spruce log is accepted for this purpose.) There has been at least one other tangible contribution to the Imperial cause: I refer to the undoubted development of public sentiment on forest conservation, the new determination of the Governments to antidote the havoc of forest fires, and the slow dawning—not more as yet—of the rudiments of silviculture in treatment of forest properties.

Meanwhile the past attitude towards Forestry, or "conservative lumbering", of most wood-using industries in Canada may be summed up in the old phrase, "Say nothing but saw wood". Much wood has been sawn, without doubt. The country has dipped deep into capital account and imperilled the sources of future interest. In a broad sense, this was inevitable. The forests have fallen victim to spread-eagle estimates, in which the lumberman was victimized quite as much as the public administrator. Scarlet calculations were wholly unopposed until very recent years; need one be surprised that public and private forest policies dragged at the tail of the procession? Our pioneer fathers' enmity for the blockading tree trunks stuck fast. We were at no time world travellers and students of foreign procedure. We did not see that timber possessions attend the highest state of civilization, and in the most efficient nations of Europe are the more jealously guarded as pioneer days recede.

(Continued in July issue.)

WHAT IS FORESTRY?

"This field of management of forests for continuity of crop passes under the name of Forestry. Forestry is merely the business of handling timberlands in an improved way for perpetual revenue. It is often considered antagonistic to the lumbering business, but this is erroneous, because forestry is completely de-

pendent on lumbering. Its intensity of practice is in direct co-ordination with the status of that industry. It is regulated lumbering, lumbering so regulated with the aid of technical knowledge that the forest may produce revenue forever."—J. H. White, M.A., S.Sc.F., in "Forestry on Dominion Lands."

HOW TO PRUNE YOUR TREES

Always use a pole saw and pole shears on the tips of the long branches.

Do not "head back" or cut off the top of a tree except where the tree is old and failing, and then under special instructions.

Be as sparing and as judicious in pruning as possible, and do not raise the branches so high as to make the tree look like a telegraph pole.

Commence pruning the tree from the top and finish at the bottom.

Make every cut as close and parallel to the

trunk as possible.

To make the cut perfectly smooth the saw must be well set and sharp.

Leave no stubs, dead and dying wood, or fungus-covered branches behind you.

Do not fail to cover every wound with coal tar, not allowing it needlessly to run down the trunk.

Do not remove several large branches on one tree at a time. They must be removed gradually, the work extending over several seasons.

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DESTROYERS OF THE FOREST

"The Canadian Forestry Association has a man's size, life long job on its hands in its work of protecting the future of Canadian industries that are dependent upon the forest and which are seriously threatened with extinction by carelessness with regard to fires," says the Pulp and Paper Magazine. "They have recently put out a booklet in which the story of a camp fire is given as a dialogue between the spirit of flames and a boy who went out in the woods for an adventure. This certainly should bring home to the careless camper not only the danger of leaving a fire that is not completely extinguished or allowing a camp fire to get too large, but it also contains some of the most pointed directions for extinguishing a fire that we have seen. The whole thing is presented in an interesting way that makes very good reading and can be made the basis of a very lively evening's meeting for a troop of Boy Scouts or Camp Fire Girls

or even for a reading lesson in a school classroom.

"Efficient forest protective organizations are necessary, but the most important of all considerations is to have an intelligent public whose conscience will not permit them to throw lighted matches or hot pipe ashes or cigarette butts promiscuously about the woods, nor to leave camp fires with a single live coal, or permit settlers to burn brush except under perfectly safe conditions. Railroads are pretty well regulated and the fires from locomotives are becoming quite infrequent while section hands are also taking more care in regard to the danger from fire. It is the general public and the individual conscience that must be appealed to in order to prevent fires from starting. It is only by keeping fires from getting a start that we can hope to make our forests completely safe from this danger."

LECTURES IN FRENCH SETTLEMENTS

Mr. A. H. Beaubien who last year made a success of a lecture tour in French-speaking districts on behalf of the Canadian Forestry Association, is again holding large public meetings in Quebec, this time with the aid of motion pictures. One of the best of the films is entitled "The Enemy of the Forest" and gives a striking illustration of the ordinary causes and effects of forest fires. The film was prepared by the Publicity and Exhibits Branch of the Depart-

ment of Trade and Commerce, under the direction of Mr. B. H. Norrish, and is regarded as the best educational film on the subject yet produced in Canada or the United States.

Mr. Beaubien's meetings have been in the French-speaking settlements along the Mont Laurier division of the C.P.R. and will be continued south of the St. Lawrence in the territory of the Southern St. Lawrence Forest Protective Association.



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TIMBER OWNERS SOON TO FLY.

Grand Mere, P.Q., June 11.—On last Sunday, at seven o'clock in the evening, the first flying boat that Grand Mere has ever seen, flew over the town at a height of 2,800 feet, and five minutes later alighted on the surface of Lac a la Tortue, where it dropped its small anchor for the night. In a few minutes, after securing the machine to her permanent buoy, the crew, consisting of Lieut. Stuart Graham, his wife, and his mechanic, Kehre, had been rowed ashore where they were greeted by an excited group of people. They were at once motored into Grand Mere, where Mr. and Mrs. Graham have their home and children.

This was the first commercial flight in Canada, and the first time that a flying machine has flown from Halifax to the Province of Quebec. It was the most successful of pioneer voyages in every way, and one which marks the opening of an epoch of commercial flying which is going to place Canada in the foremost ranks of aeronautic utilization.

Mr. Graham was most emphatic in saying that the trip could not have been done more

satisfactorily, and no engine could have worked better. It is an eight cylinder Liberty motor. He also says that his only wish is to be able to take as many of the officials of the association for a cruise over their timber limits as possible. There will, then, he feels sure, be no question whatsoever in any one's mind that this method of carrying on his future work is most efficient and practical. One ride in the "Bus" and you've fallen for the simplicity of the whole business; to use a slang expression. The future of aviation could hardly find a more immediate and valuable field for development.

This scheme has been made possible by the financial aid of Hon. Jules Allard, Minister of Lands for Quebec, and by the Hon. C. C. Balantyne, Minister of Marine, who made it possible to procure the planes. The work of patrolling the forests on days when danger from fire is great will commence directly Mr. Graham has returned from Halifax with a second machine. Aerial photographs and photographic maps of forest lands, and otherwise unmapped sections will also go on, and no time will be lost in widening the scope of work for which this project has opened up possibilities.

MACHINES TO FELL TREES

(Correspondence in *American Lumberman*)

"The waste from timber from our present way of felling trees is enormous and altogether out of reason. Hardwood and hemlock they invariably saw off 2½ to 3 feet from the ground and in a time like this when hemlock butt would go for pulpwood and bring \$8 per cord and hardwood butts would go into cordwood and bring the same price, or would make the butt log of the trees that much longer, it is astonishing that we should allow that waste to continue. A machine should be perfected in the way of a light gasoline engine that could be carried on handles by two men and set on the roots of the trees and dogged to the roots and a cross-cut saw could rapidly cut off the trees close to the ground. I should think the manufacturers of gasoline engines and machinery would have taken the matter up before this and I wish you would publish some kind of an article on this subject and see if you can stimulate some of them to do this."—Inquiry No. 106.

The above inquiry comes from an old-time Wisconsin lumberman and is interesting as showing an increased interest in this subject.

The development of a satisfactory power driven portable tree felling saw is a subject that has not entirely escaped the attention of inventors and engineers. One concern is working upon a motor truck carrying a saw at the end of a swinging arm which is adapted to be brought into action into the side of the tree to be felled. Presumably the truck would start off on its own power when the tree began to fall and thus get out of danger, although if the tree is properly wedged and particularly with a patent screw power wedge which has been devised for the purpose, it is quite certain to go in the direction that has been prepared. A German invention purposes to drive a wire around a tree (belt fashion) with sufficient speed to heat the wire by friction, so that it might burn its way through the tree. Another cutting device suggested has been a chain saw. The ordinary cross-cutting saw has been hitched up to a reciprocating piston to be driven by either steam or compressed air. A circular saw on a swinging arm is carried by a carriage running on a semi-circular track which is laid down about the base of the tree. This saw is driven by a small electric motor. Another invention uses a drill as the cutting tool, boring a series of connecting holes about the tree; and this can be done if desired at a sufficient depth below the surface of the soil to leave nothing

above ordinary plow level. No one has attempted thus far to invent a power axeman, using the familiar swinging axe as the cutting tool. No one seems to have studied the possibilities in this line for pneumatic reciprocating or rotating cutting tools, which have been widely applied to other uses. One of the large electric companies started in to investigate the possibilities in this field for electric power, but it does not seem to have gotten anywhere. If any of these developers have discovered a machine that entirely solves the problem of felling trees by power in a way that is portable, flexible and economical he has up to the present time "hidden his light beneath a bushel".

TO REFOREST CUT-OVER LANDS

Among the important propositions under consideration at Washington, to utilize cut-over timber lands in the south is one involving a survey with a view to extending the production of forage crops for livestock. A conference presided over by Assistant Secretary of Agriculture Christie has urged Secretary Houston to recommend legislation of this nature. The plan includes problems of reforestation with a view to utilizing large areas of cut-over lands for the reproduction of timber. It is pointed out that there are approximately 100,000,000 acres of cut-over lands in the south Atlantic, Gulf and lower Mississippi Valley States. The area is increasing annually. In Michigan, Wisconsin and Minnesota are 50,000,000 more acres which should be surveyed and utilized. If undertaken, the work would ultimately reach all sections where there are large areas of cut-over lands.

STOCK TAKING ON CROWN LANDS

An effort is being made to speed up the work of classification of New Brunswick Crown lands, and about six survey parties will be in the field this year, three in charge of land surveyors, who will run all control lines and boundaries between Crown land and granted land, three parties will be in charge of foresters, who will carry out the work of cruising and soil classification. A special party will work under the direction of Dr. C. D. Howe, of Toronto University, to carry out the study of annual growth and establishment of permanent sample plots, in order to establish what the annual growth of the province is.

FORESTS OF SIBERIA.

The great forest resources of Siberia have, up to the present, been exploited to only a very small extent. The development of the timber industry is essential for the future, if the normal trade of the country is to be restored. It is estimated that there are 810,000,000 acres of timber land in Asiatic Russia, two-thirds of which are accessible for commercial purposes. German and Swedish machinery has, up to the present, been chiefly employed for saw-milling purposes, but there is a good opening for the introduction of Canadian saw-milling machinery and logging appliances, especially in Eastern Siberia.

SHEEP VS. TREES.

"We have seen that forestry may give employment to 30 men as against one man on sheep, but this is with the proviso that the forest timber is close to its market. It cannot walk 1,000 miles to its market, feeding itself on the way like a flock of sheep."—D. E. Hutchins.

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DR. FERNOW, DEAN OF FORESTERS, RETIRES

Dr. B. E. Fernow, Dean of the Faculty of Forestry, University of Toronto, will retire on July 1st. It is Dr. Fernow's intention to return to the United States and, if health permits, to continue his labors in authorship which have already won him much distinction. The success of the College of Forestry at Toronto is mirrored in the success of so many of its graduates, as to be relieved of further complementary emphasis in these columns. Dr. Fernow has given of himself unsparingly for the advancement of forestry science in Canada. One cannot over-emphasize the discouragements attending long years of spade work in founding a new and unfamiliar branch of technical training, the youngest of the engineering professions. Through it all, Dr. Fernow has never lost faith that the utilization of the forest resources inevitably must be harnessed to sylvicultural principles and that the business sense of the Canadian people

would, in time, insist upon adequate forms of state regulation. For that reason Dr. Fernow, as a Director of the Canadian Forestry Association, was a great believer in educational propaganda and assisted it at every opportunity.

He became Chief of the Division of Forestry,

United States Department of Agriculture, in 1886, a position which he filled until 1898. In addition to his official work, he was a constant promoter of all biological investigations leading to a broader understanding of the principles of forestry. In 1883 he was elected secretary of the American Forestry Association, and later also held the position of chairman of the Executive Committee, and finally first vice-president of that organization. The degree of Doctor of Laws was conferred on Dr. Fernow by the University of Wisconsin in 1897. He took up his duties at Toronto University in 1907.

WESTERN AUSTRALIAN PUBLIC SERVICE PERMANENT POSITIONS UNDER THE PUBLIC SERVICE ACT.

Applications will be received until May 31, 1919, for the position of Working Plans Officer in the State Forestry Department.

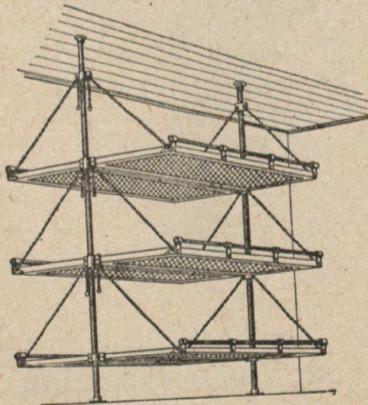
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Public Service Commissioner.

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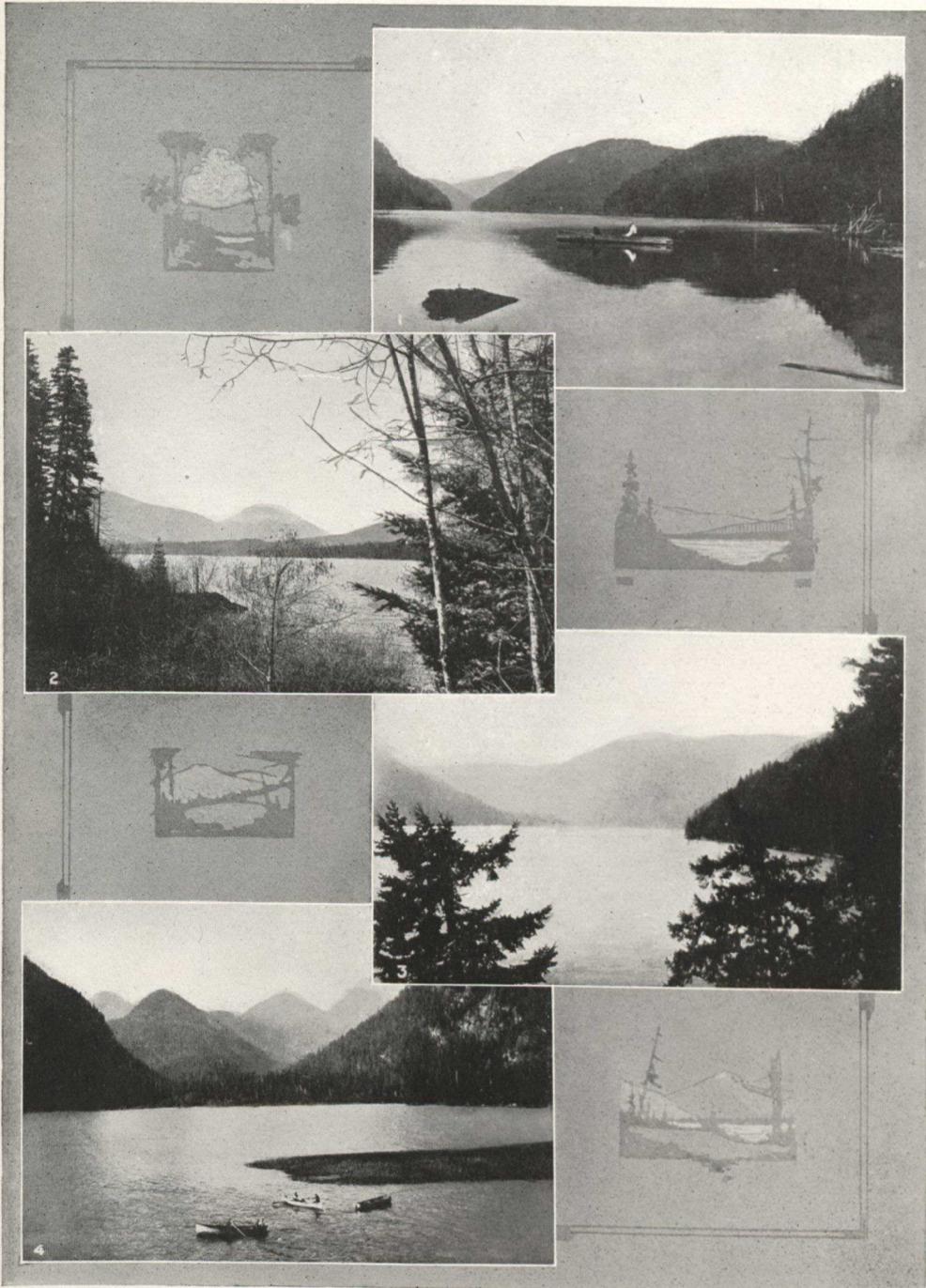
FOREST ENGINEERS

BANGOR

MAINE.

Timber Estimates**JAMES W. SEWALL**

Old Town, Maine.



(Courtesy Dominion Water Powers Branch.)

IN BRITISH COLUMBIA'S OUT-OF-DOORS.

1. Great Central Lake, B.C.
2. Looking up Sproat Lake, Vancouver Island.
3. Cameron Lake, Vancouver Island, B.C.
4. The Head of Great Central Lake, B.C.



(Courtesy Dominion Water Powers Branch.)
Lumbering in the Clearwater Valley, Athabasca Country.

A PERFECT DAY.*Douglas Malloch, the Lumberman Poet.*

I call just this a perfect day:
 To rise refreshed from dreamless sleep
 To hear the matin roundelay
 Of birds that by my window keep
 Their little homes and are so glad—
 And then to greet the morning sun,
 Forgetting all the woe I had,
 To find a new-born day begun.

To breakfast simply and go forth
 To lift again the daily task,
 Attempt again some work of worth—
 What more than this can mortal ask?
 Then all the day to toil beside
 Some new-found friend, or old and true,
 And life's ambitions to confide
 In someone who is dreaming, too.

And then at last to come to night
 Without a hurt, without a wrong,
 And find the stars are kindled bright
 And all the heavens lit with song—
 With sweet and well earned weariness
 Again my homeward way to wend
 And know a fireside and caress
 Await me at the journey's end.

I do not ask for idle ease
 Or hectic pleasures, ample wealth;
 I ask such simple things as these,
 As work rewarded, love, and health;
 Some hope to dream of, faith believe,
 Some friend beside me on the way,
 And love to greet me at the eve—
 I call just this a perfect day.

COMPANIES ENGAGE FORESTERS

D. C. A. Galarneau has resigned his position with the Algoma Central and Hudson Bay railway and has accepted a position as forester to the St. Maurice Pulp and Paper Company with headquarters at Three Rivers, P.Q. Mr. Galarneau is now conducting an extensive forest survey upon the limits of this company.

A. C. Volkmar has severed his connection with the Riordon Pulp and Paper Company, to become forester to the Canada Paper Company, with headquarters at St. Raymond, P.Q. Walter ab Yberg, who has been connected with the Riordon company for some years, and has lately been in charge of their cruising operations in the Kipawa district, has been placed in charge of the forestry operations of the company, including the nursery and planting work. Mr. ab Yberg is assisted by H. D. Jewett.

FORWARD STEPS IN NEW BRUNSWICK

Lieut. H. S. Laughlin, B.Sc.F., who recently resigned from the New Brunswick Forest Service to accept the forestership of the J. B. Snowball Lumber Co., will conduct a forest survey on their limits by a co-operative agreement, whereby the results will be available to both the company and the government. A somewhat similar arrangement has been made with the Randolph & Baker Co., of St. John, and 140 square miles in Madawaska county will be covered before August 1st, through their co-operation. The work will be done by the government survey parties.

TREES FOR MEMORIAL PLANTINGS



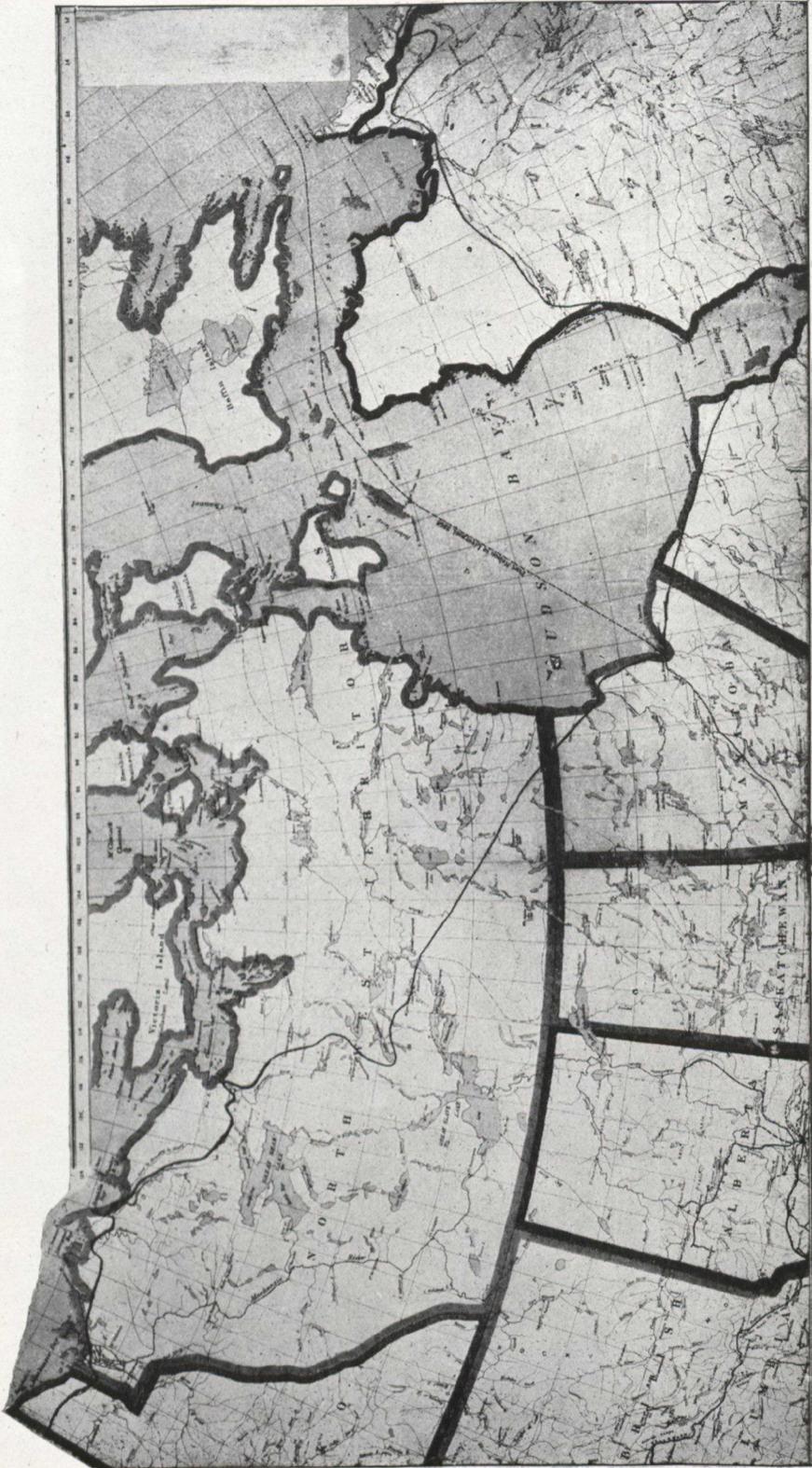
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VILHJALMUR STEFANSSON'S OWN MAP OF CANADA'S NORTHERN TIMBER LINE.

At the request of the Canadian Forestry Journal, Mr. Stefansson drew the thin black line from the Alaskan border to a point north of Great Slave Lake, showing the limit of tree growth. The remainder of the timber line across Labrador was filled in from standard maps. Heavy black lines indicate boundaries. Mr. Stefansson found a considerable growth of trees in sheltered spots of Victoria Land.

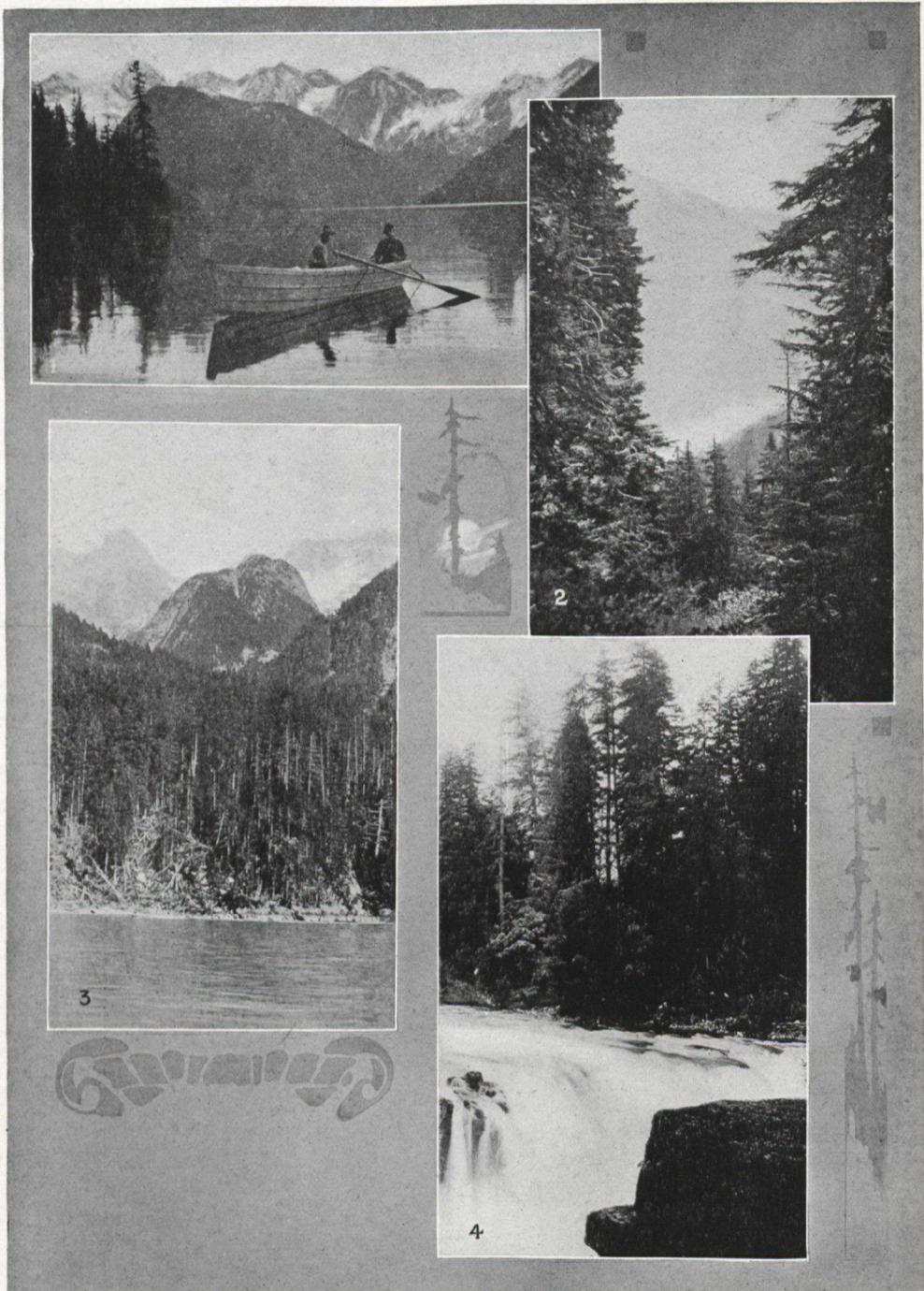


(Courtesy 'Canada Lumberman')

The splendid sort of timber harvest that the progressive forest policy of New Brunswick aims to make a perpetual asset. Photograph taken on the limits of the Bathurst Lumber Company.

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BRITISH COLUMBIA'S INLAND WATERS.

- 1. Jones Lake looking North.
- 2. Jones Lake from Tunnel Pass.
- 3. Bute Inlet, Showing Mt. Superb, 8,000 ft.
- 4. Stamp River Falls.



1. Irene Pool, Campbell River, B.C.
2. Elk Falls, Campbell River, B.C.

(Courtesy Dominion Water Powers Branch.)
3. Stamp River Falls, B.C.
4. Chehalis Lake, B.C.



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