December 1920 15¢

Illustrated Canadian Forestry Magazine

The Winter Woods at Rockcliffe, Ottawa.

Bureau of Canadian Information

The Canadian Pacific Railway has established a Bureau of Canadian Information as a branch of its Department of Colonization and Development, with the object of disseminating reliable and up-to-date information as to agricultural and industrial openings in all parts of Canada.

WESTERN CANADA FARM LANDS

The Company has yet for sale several million acres of choice farm lands in Western Canada, at low prices and on long terms of payment. In certain districts lands will be sold without settlement restrictions, but the Company is prepared to grant special concessions to those who will settle upon and develop their farms.

IRRIGATED FARM LANDS

In its irrigation districts in Alberta, the Company has irrigated lands for sale at reasonable prices and on terms extending over twenty years. Under certain conditions, loans for improvements will be granted purchasers of irrigated lands in amounts up to two thousand dollars, to be repaid with land instalments.

EASTERN CANADA FARM LANDS

Lists of selected improved farms, available for settlement in Ontario, Quebec and the Maritime Provinces, with the names and addresses of their owners, may be obtained on application at any office of the Department.

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Investigations, looking to the utilization of undeveloped natural resources and waste products and new industrial processes, are being carried on by the Research Section of the Department. Inquiries as to promising fields for investigation in this connection are invited.

INDUSTRIAL OPENINGS

Reliable information as to sites for new industries in all parts of Canada, and of special business openings in the growing towns and cities along the lines of the Canadian Pacific Railway in both Eastern and Western Canada, will be gladly furnished on request.

CANADIAN INTELLIGENCE SERVICE

Well equipped Canadian reference libraries have been established by the Department at Montreal, New York, Chicago, and London, England. These libraries contain the fullest information on all matters relating to Canada and her undeveloped resources, and are kept supplied with the latest information pertaining to new developments through the medium of a news service organized through the co-operation of the other departments of the Company's service. The information on hand in these libraries is available without charge to those interested, and inquiries addressed to any office of the Department will receive prompt attention.

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Stop the Fires or Lose Our Game!

By Maxwell Graham

Director of Park Animals, Dominion Parks Branch

"If we are to preserve our fur bearers, we must preserve our forests"

"In taking stock of our national resources and considering ways and means for their conservation, it should not be overlooked that an important part of the national assets consist of our insectivorous and game birds, our splendid game animals, and our native fur bearers."

Thus stated Doctor C. Hart Merriam, former Chief of the United States Biological Survey.

If the above is true in regard to the United States, it applies with even greater force to Canada. Because, as a nation a greater percentage of our population follow farming and fruit growing; further, our timber industry is also of greater relative importance than is that of the United States.

It may be assumed that the settled opinion of all well-informed persons is that the game, in its limited sense, both birds and mammals, of a country, has a four-fold value to its people, viz:

(a) The value of birds, game and non-game, to all the people as insect, rodent and weed-seed destroyers, thus assisting our vegetable and other crop producers and preserving our fast diminishing forests.

(b) The value of game quadrupeds certain birds, and fish, as food assets.

(c) The value of all game as an incentive and inducement to an out-door life whereby man may recuperate his powers and renew his health.

(d) The value of game in an economic and financial way to a country because of the tourists and sportsmen's travel attracted thereby.

Many varieties of game animals and game birds, and practically all of our fur-bearers, are products of our forests.

Among big game, Moose and Woodland Caribou are essentially products of our forests.

It is in forested areas, in the more northerly districts, that the densest and finest of our furs are to be found. But the ever expanding area of human settlements have caused many districts, formerly the haunts of fur-bearers to be now entirely denuded of them. The clearing away of the forests and the grazing of natural coverts by domestic

animals have destroyed their haunts and exposed them to their enemies, and to quote a report from our Commission of Conservation, "Draining swampy areas has destroyed the homes of the muskrat, the mink, the otter and the beaver. The fisher and marten never seem to exist long near man's habitation. Even the fox, which appears to increase near settlements, will decrease if the forests are wholly removed or burned."

How Forests Affect Fur.

As showing the effect of a forest environment on fur, timber or forest wolves have finer fur and of darker colour than those living on exposed prairies.

The herd of buffalo maintained at Elk Island Park, near Lamont, Alberta, though from the same stock as those at Wainwright in the same province, have noticeably become darker in colour since their sojourn in Elk Island Park, this latter being largely a forested area, whereas Buffalo Park is in the prairie district.

If we are to preserve our fur-bearers we must preserve our forests, and in order to safeguard the future of fur-farming it is imperative that more fur-bearers' sanctuaries be established in forested areas before it is too late.

Our Need of Sanctuaries.

In such sanctuaries, fur-bearers, game animals, and wild life generally would, under proper supervision, increase and multiply unmolested, with the increase overflowing the surrounding country to the profit and recreation of all the people. While from time to time permits could be issued to capture alive fur-bearers in such sanctuaries for needful infusion of new blood in fur-farms, the stock in which for lack of such infusion would soon deteriorate.

Generally speaking, only a small percentage of all our forested lands are owned by private individuals. In the East, the forests are under the control of the respective Provinces, while in the Prairie West and part of British Columbia the forested areas are controlled by the Dominion Government. Our national parks, whose value to the country as game sanctuaries cannot be over-estimated, are situated in the West, but a large portion of the East is covered with vast stretches of forest and swamp lands covered with cedar, portions of

In the game sanctuary of Rocky Mountains Park, Alberta.

which might well be set aside as sanctuaries.

Northern Ontario's Loss.

And, in this connection, the prime disaster to the game resources in Northern Ontario and Quebec has not been due to improved firearms or such access of direct destruction as swept away the buffalo and other western game, but was incidental to tremendously destructive forest fires.

It has been estimated that from the north shore of the Gulf of St. Lawrence to the barrens, three-fourths of the country, formerly forested, has been laid waste within historic times. Most of this area having only a thin mat of organic soil, this latter has been entirely destroyed over large areas, leaving only rock and sterile subsoil. Where the soil remains, gradual replacement of the forest goes on, but when cover is destroyed, such low and swampy lands as were spared can support but little game, and afford little protection from the hunters to such as survive.

Many such areas formerly abounding in game, which supported a considerable number of Indians, are now sterile and contain no game. The lesson this teaches is obvious: namely, that the strictest supervision of all forested areas with a view to minimizing fire hazards is imperative if our forests are to be preserved and in them the game that is dependent on the forests.

MAXWELL GRAHAM,
Director of Park Animals.

Will Learn From Sweden

The Canadian Pulp and Paper Association has decided to send Mr. Edward Beck of its executive staff to Sweden early next year to make a study of Swedish forestry methods and report upon them. Mr. Beck, who is a trained newspaper man, will go in the capacity of an observer and not as a forestry propagandist. His reports will be syndicated to a number of leading Canadian newspapers and trade journals.

This constitutes one of the most far-seeing and beneficial enterprises yet undertaken by the Canadian Pulp and Paper Association. Sweden provides the closest analogy to Canadian forest and industrial conditions. The co-operation of the State and the wood-using industries in schemes of forest conservation far exceeds any development along these lines in the Dominion of Canada. Mr. Beck's reports on Swedish forestry will therefore possess not only popular interest for Canadians, but valuable information calculated to assist us in formulating our own forest policies.

Hardwood Bush Sells High

At the sale of the W. H. Woods estate, at Bayfield, Ont., J. E. Baechler, of the Goderich Manufacturing Co., Goderich purchased a property of 123 acres, including ninety acres of hardwood bush, at a price of $28,100. A parcel of 103 acres with the buildings thereon was purchased by Thos. McCurdy, of Stratford, for $5,700.

A Business Leader's View.

Jos. N. Shenstone, First Vice-President and Treasurer of the Massey Harris Co., Limited, Toronto, writes to the Canadian Forestry Association:

"I have received your favor of the 12th inst., advising me that I had been nominated for membership in the Canadian Forestry Association, and I have signed the card and sent it in."

"I feel that the Association has a distinct place in our national life, and ought to be supported."

High Bid for Spruce.

Fifty square miles of timber limits were disposed of by the Government of Ontario to J. T. Horne, Fort William, and a new record set for the price of spruce. Mr. Horne offered $6.10 a cord for spruce and 21 cents a tie for jack pine. A few days before $6.05 was the highest price paid for spruce, and previous to that $3.46 was the largest tender. The limits are situated near Jellicoe on the Canadian National Railways east of the Nipegon Reserve.

Photo by Clyde Leavitt

FORESTRY IN SCOTLAND.

At one time the whole of Scotland was covered with dense forest. When the Romans invaded in the third century they employed 50,000 men in destroying and opening up the forests in order to drive out the inhabitants. Later on, rival clans and sects endeavored to rout out their enemies by laying waste enormous tracts of forest.

During the next ten years the British Government Forestry Commission will plant 75,000 acres, and 25,000 acres additional may be afforested privately. Our photograph shows a stand of Scotch Pine,120 yearsold,atGrantown-on-Spey.

Photo by Clyde Leavitt

SCOTLAND REBUILDS ITS DEPLETED FORESTS.

A Douglas fir plantation, 14 years of age. It is questionable whether even the Pacific slope of Canada can show better results than parts of Scotland in the growing of coniferous trees.

Where do We Stand in Timber?

An interview with Senator William C. Edwards,

Chairman of the Committee of Forests of the Commission of Conservation

Few in Canada have done as much personal exploration of forest areas east of the Rockies, or have put under way so many investigations of the whereabouts and quality of commercial timber stands, as Senator Edwards, President of W. C. Edwards & Co., Ltd., Ottawa, the long-established lumber corporation recently absorbed by the Riordon Company Ltd. Twenty-five years ago, Senator Edwards repeatedly sounded a warning to the Canadian people regarding the persistent over-estimate of Canada's timber resources. At the time, and since, Senator Edwards has been accused of deep pessimism by those who seemingly prefer to hold their heads in a purple cloud of illusion even though their feet carry them to the edge of a precipice. The common cry of "inexhaustible timber resources" received little but protest from Senator Edwards many years before any of the provincial governments had considered making accurate inventories of their timber supplies.

"I am not one," said Senator Edwards to the editor of the Canadian Forestry Magazine, "who knows so little about actual conditions as to predict a timber famine within the immediate future. Forest exhaustion is not at hand in the sense that our mills in Eastern Canada will be obliged to shut down next year or the year after, because of a failing supply of logs. I am quite definite, however, when I prophesy that within fifteen years, Eastern Canada will be drawing the bulk of its sawn lumber from British Columbia and will be paying for it through the nose on account of high freight rates. The consumer, not the lumberman or the limit holder, is the man who will pay the price of forest exhaustion.

"The plain fact of the matter is that the cutting of timber limits has been so much more rapid than any new growth could offset, and over and above the waste of the limit through injudicious cutting forest fires have been permitted to strip thousands of square miles of our most valuable timber.

"In addition to complete fire protection which is the corner stone of any scheme of forest conservation, what would you suggest to counteract the present decline of the country's timber assets?" Senator Edwards was asked.

"I have almost given up considering a remedy," he replied, "as long as the mass of the Canadian people look upon their natural resources as the 'greatest on earth' and the degree of exploitation to date as a mere trifling percentage of what can be undertaken in future—I say, as long as this point of view persists (and it is common to the lumberman as to the man on the street) it seems quite unlikely that any public authority will take remedial steps in the presence of this absurdly cheerful outlook. I have not very much hope, therefore in face of the fictitious convictions of the Canadian citizen that any scheme of conservation will be put under way. To one in my position, who knows by firsthand evidence the true condition of the forest resources east of the Rockies, and who sees the present everincreasing tendency to over-exploit our timber areas, it appears that we must pursue our happy way until disaster is upon us. Then we will have no alternative except to satisfy our daily timber requirements by paying the bill of the British Columbia salesman."

"The only remedy for timber land depletion is to guage the cut by the ability of that particular timber area to sustain production. I mean that we should only cut the mature and diseased timber."

"That means a rise in the cost of logging and better prices for the lumber product?"

"Inevitably. How much better that is than to turn the greater part of our Dominion into a barren useless waste? If one were to consider the distance from coast to coast and the amount of agri-

cultural land available now or in the future, one would find that there is no more than a strip of farm land of sixty miles wide from Vancouver to Halifax. The remainder of the Dominion is natural forest land or lies in a state of permanent barrenness. Once the forest resources are killed on this immense domain, no crop can follow and it takes its place as a national liability rather than an asset."

"To operate timber lands, on a principle of sustained yield, the limits must be worked as units of the greatest possible size. If we are to inaugurate the restriction of log cutting to mature and diseased trees, automatically the small limit holder is closed out of business. He cannot make a living under such a system. I believe today, as I have always believed, that we have far too many mills to permit of continuous timber growing. I believe that forest conservation cannot be successfully practised unless the operations can be spread over large areas, allowing scope for methods of forest recuperation."

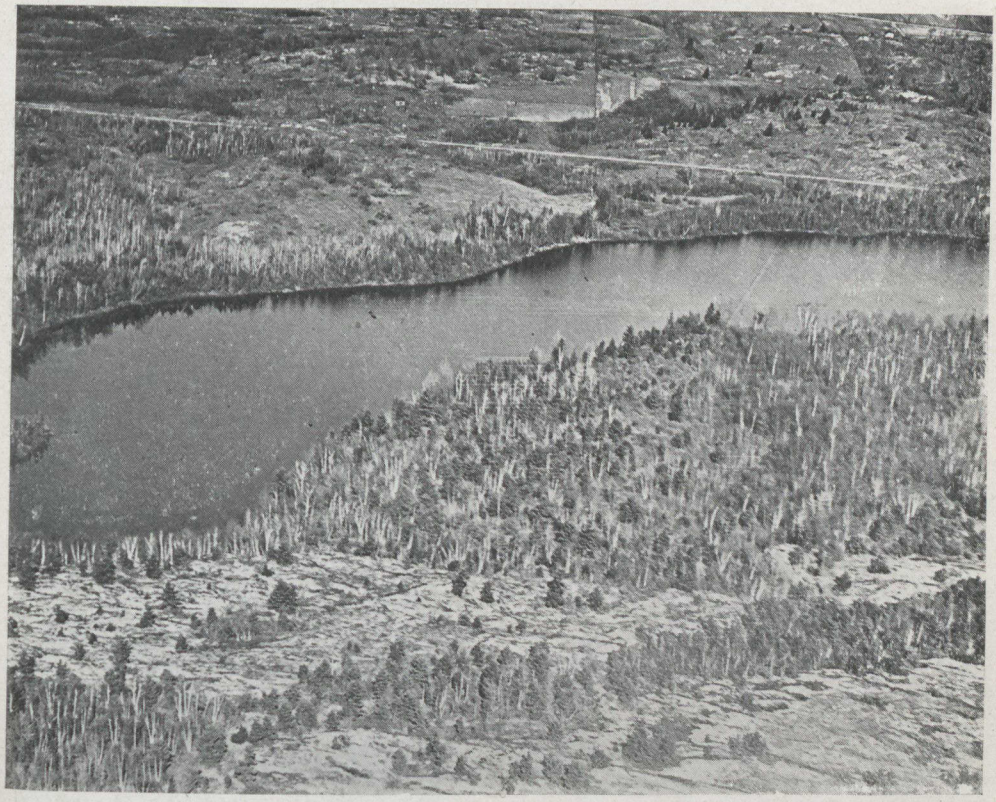
"Do you favor a plan of state management of timber lands similar to that in forests in Sweden?"

"Sweden did not come to its present policy of public supervision of all timber lands, public or private, until she was cutting timber considerably smaller on the average than what we are cutting in Canada. I find difficulty in developing any enthusiasm for a public forestry programme in view of my experience that the people of Canada are so misled regarding the limitations of their forest resources that any calmly-considered scheme for perpetuation of the country's forests would find the public either apathetic or supremely indignant at being disturbed from a happy dream."

The Old, Old Story of the Pine Tree

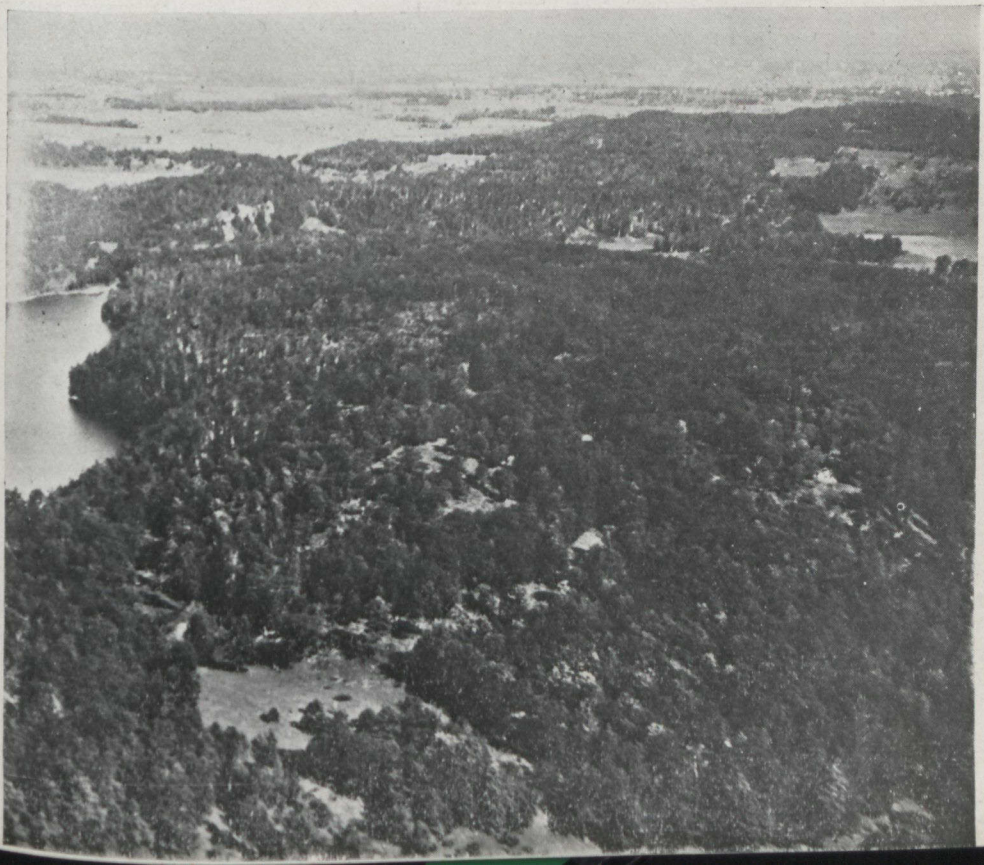
White-pine operations in the "Lake States" of America began with a single sawmill in 1832; eastern shipments were being made three or four years later; and the culmination was reached in 1892 with a cut of nearly 9 billion feet. Dreary wastes, dismantled sawmills, deserted towns, and an insignificant pine output of a single billion feet in 1918 are depressing reminders of the day when Lake States lumber supplied the markets of the country from the Rockies to the Atlantic Ocean and from the Canadian boundary literally to the Gulf.

The great development of the southern industry began in the seventies and increased rapidly to what was probably the maximum, about 16 billion feet, in 1909. In its turn, southern pine dominated the markets little if any less completely than white pine; but the South is following the course of other regions,, and the remaining supplies of virgin pine are only about one-fifth of the original stand. Within a single decade southern pine production promises to exceed by little, if any, the needs of the South.



Courtesy of the Air Board.

AERIAL PHOTOGRAPHS OF WOODED COUNTRY NEAR OTTAWA, CAN. NOTE THE CLEARNESS OF DETAIL.



Reforestation on Shifting Sand

By Arthur Herbert Richardson, M.A., M.F.,

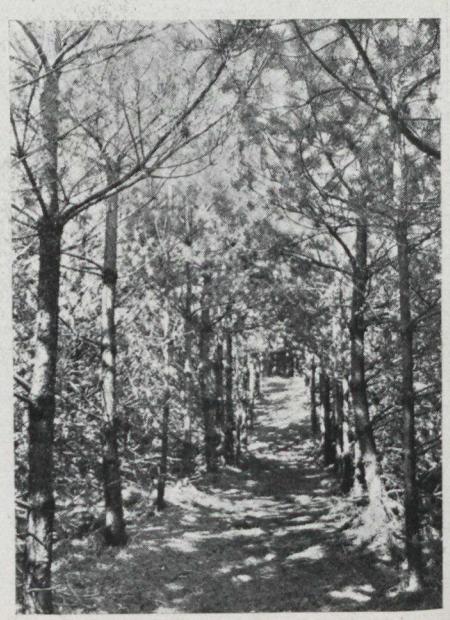
Ontario Forestry Branch, Toronto

One of the most useful purposes for which reforestation may be undertaken, is that of preventing shifting sand from becoming a menace to the crop producing sections of the farm. In many parts of Ontario this has been tried out so that such work is now well beyond the stage of experimentation.

Three illustrations of the necessity of such work have come to the notice of the writer during the past month. The first is in Renfrew county where many farms border on the Ottawa river, or on lakes formed by its widening. On one of these farms bordering a lake four miles in width, there is a finger shaped ridge of sand, which, not only is useless as regards agriculture, but which also threatens to make useless the good land nearby. At one time this area was covered with large pine which the owner, thinking only of prompt returns, had clean cut, thereby removing the vegetation which had kept the sand in a staple condition. The only record now of what was once a splendid pinery is a few large stumps standing, as it were, on stilts above the surface of the sand. Good soil lies on either side of the ridge, but that which is on the leeward side is being covered continually with sand. Consequently, in order to repair the loss to this farm, which foolishly was created by the one who stripped the sand portions of its tree growth, one thing only can be done; namely, replant the area with trees, which was the crop it was intended to grow. This is what the farmers in that part of Renfrew are doing, with the result that in a few years such trouble will have ceased for good.

A Barrier of Trees.

In Grenville county a section of a man's farm had been denuded similarly of forest growth, and an area of approximately two acres was in a continual state of flux and slowly but surely was being moved toward the better part of his farm. One whole acre of sand had been moved literally a quarter of a mile from its original position. The owner of this farm was enterprising enough to plant trees on this area and thus retard the work of nature and save the more valuable soil from sand inundation.



A stand of Scotch pine planted in 1908, photographed in 1920. These trees, now averaging 20 feet high, were originally placed on a farm in Grenville County, Ontario, to stop the onward sweep of sand dunes, and have splendidly accomplished their task.

The third illustration is also in Grenville Co. and was set out for the same reason as the foregoing. This plantation is also one of the oldest in the province and shows what may be expected of plantations after being set out for a few years. The accompanying photograph was taken in a section of the stand which was planted with scotch pine. It shows the remarkable growth which this species will make on pure quartz sand. With a little play of the imagination one can easily suppose that this potential forest is much older than it really is. The trees shown were planted in 1908, and consequently are now nearing the completion of their thirteenth growing season after planting. They are approximately five feet apart

Is this a record load? There are 306 logs on the sleigh. The job was done by an A1 crew in the camps of McFadden and Mulloy, near Webbwood, Ontario.

which will give a comparative idea of their size. They average twenty feet in height and three and a half inches d.b.h. (diameter breast high). A few of them are twenty-five feet high, and one noticed in passing measured eight inches at the butt.

In these three examples of reforestation, the owners have not only prevented worse than useless soil from injuring the better parts of the farm, but they have also the beginning of a stand of timber which in their own day will yield them valuable returns.

Forests are the regulators of our water powers. The view shows the Saskatchewan River at Grand Rapid.

A NEW USE FOR THE HUMBLE GOAT.

The Forestry Division of the Laurentide Company utilizes Angora goats in fields where it is desired to clear out all hardwood sprouts before planting the spruce seedlings. The goats perform this task with great thoroughness and meekness of spirit. No other automatic machine has been found to equal the goat for this particular job.

IS JACK PINE DESTINED FOR A NEW ROLE?

Experiments by pulp and paper companies have shown that Jack Pine can be used for paper manufacture quite as well as spruce and balsam. It requires special and separate treatment in the pulping process. The proof of the value of Jack Pine may alter the planting programmes of the pulp and paper companies, for this species is a phenomenally rapid grower. Our illustration shows a plantation of Jack Pine set out in 1918 at Proulx, Quebec, on the Laurentide Company's nurseries. The growth is remarkable.

Quebec's Way of Protecting Forests from Fire

By B. N. O'Hara,

Assistant Superintendent Forest Protection Branch, Quebec

Forest fire protection in the province of Quebec is provided for by:

(a) The Forest Protective Associations.

(b) The Limit-Holders who are not affiliated to the Associations.

(c) The Provincial Government's special organizations in different sections.

(d) The Railway Board.

(e) The Public Utilities Commission.

The whole coming under the supervision of the Provincial Government. The Associations are subsidized by the Government, to whom they make monthly reports of their activities and submit all claims for forest fire fighting. One half of the amount of said claims—if approved—being paid by the Government, the other half being paid by the Associations.

The Limit-Holders who are not affiliated to the Associations, also file all claims for fire fighting on licensed lands, to the Government, who pay one half of the claim, if it is approved, the limit-holder paying the other half.

All Fire-Rangers are chosen and paid by those who employ them, but they are appointed by the Government, who supplies them with a badge, forms of reports to be sent in monthly, cotton and other posters. The Rangers employed by the Associations report to their respective Associations. All other Rangers report directly to the Government.

The fire organization of this Province applies to Government owned lands.

The owners of free-hold lands are expected to protect their holdings at their own expense, though in certain cases, where fire occurs on privately owned lands, if such fire appears to be a menace to the Crown Lands in the vicinity, it is fought by those entrusted with the patrolling and protection of the Government lands of the locality and the expense of same is paid for by the Department of Lands and Forests.

How the Associations Work.

There are four Forest Protective Associations in the Province of Quebec. Each Association having its own Board of Directors. The territory protected by each Association is subdivided into districts under Inspectors who take their orders from the Manager, or Superintendent of the Association and who also allots a certain number of fire-rangers to each district, these rangers coming directly under the instructions of the Inspector. These Associations are:

THE OTTAWA RIVER FOREST PROTECTIVE ASSOCIATION, employing one manager and two hundred and twenty inspectors and fire-rangers to protect 26,614 square miles.

THE ST-MAURICE FOREST PROTECTIVE ASSOCIATION, employing one manager and sixty-eight inspectors and fire-rangers, of which ten are employed on R. R. fire patrol, to protect 13,301 square miles.

THE LAURENTIAN FOREST PROTECTIVE ASSOCIATION, employing one manager and eighty-five inspectors and fire-rangers, to protect a territory of 11,163 square miles.

THE SOUTHERN ST-LAWRENCE PROTECTIVE ASSOCIATION, is divided into the Western and the Eastern sections. The West part contains 2,290 square miles and employs one manager and forty-four fire-rangers. The East part contains about 6,000 square miles and employs one manager and 120 inspectors and fire-rangers.

The unaffiliated Limit-Holders, employ 156 fire-rangers.

The Provincial Government employ one Inspector and 26 fire-rangers in the Abitibi District, and in the Lake St-John District, 2 Inspectors and 9 fire-rangers. At Rawdon 1 special fire-ranger. In the Gaspé Pensula 1 Inspector and on the North Shore 3 Inspectors, whose work

is to see that the rangers employed by the unaffiliated limit-holders, do their duty.

The Abitibi service was organized two years ago and has given satisfactory results.

In Lake St. John Region.

The Lake St. John organization was inaugurated on a small scale only this year, but the results have been so satisfactory, that it will be much increased next season, if the necessary grant is obtainable, as there is a vast territory of timber lands beyond the Northern settlements, which should be protected from the fire menace, for unfortunately our forests are by no means inexhaustible though many seem to think they are. This system will probably later on be joined by an organization for the protection of the unsold limits of the North Shore, on the one hand and with the Abittibi organization on the other hand. As however these organizations are canoe ones, it will be an expensive system under existing conditions, but it is hoped that the development of the hydroplane service with which the Department is experimenting in the Lake St. John District, will prove sufficiently efficient to warrant their employment on a much more extended scale, in the near future and at a cost which will bring this patrol within reasonable limits.

The Railway Board, in conjunction with the Forest Protective Associations and the Provincial Government, have 3 speeder patrols along the railways, where they run through Government Lands. Where the lands are under license, the Railway, the Association and the Provincial Government each pay one third of the cost. Where the lands are not under license the Government pays two thirds and the Railways pays one-third of the cost.

The Public Utilities Commission, on the railroads coming under their jurisdiction, work along similar lines to the Railway Board.

Trying Out Aerial Patrol.

The Provincial Government, in connection with the Air Board of Ottawa, have been experimenting this season in the use of hydroplanes in the Lake St. John District, with the object of determining to what extent this method can be used for reporting on our forest through photography and sketching, as also for reporting forest fires and carrying men and equipment to the scene of the fire. Enough, however, has not yet been accomplished to warrant passing a final judgment on this method of Forest protection.

Both the Government and the Forest Protective Associations, use the Fairbanks-Morse portable Forest Pumps under certain circumstances have found them of great service, but there are places where they cannot be brought into action and one must rely on the old means of fighting fire with shovels, grub hoes, picks, buckets, etc.

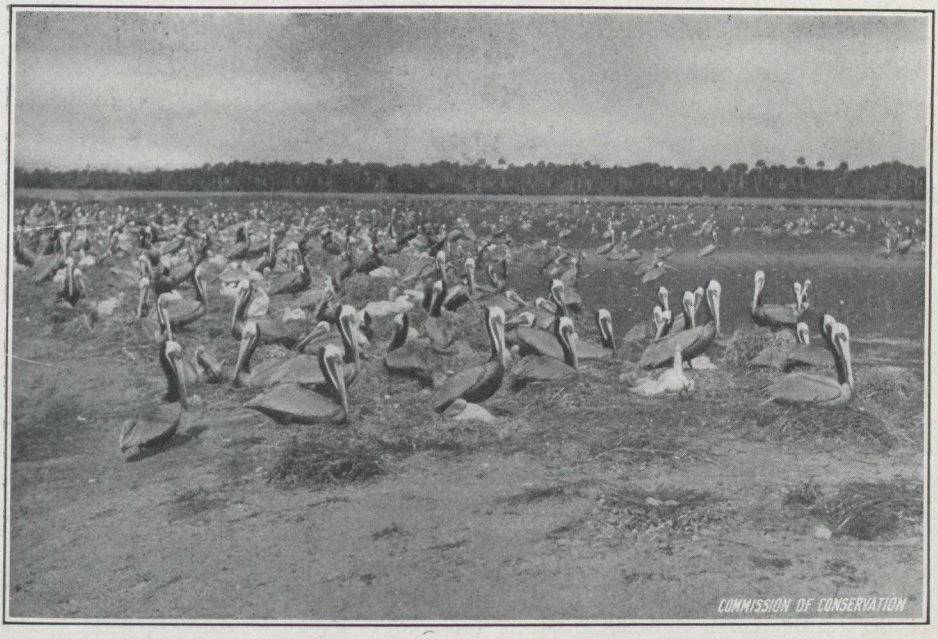
The Provincial Government, during the present season, purchased a number of small garden pumps, which can be easily carried in a pack with the object of "trying them out" in low running ground, or brush fires, but before they were received, the drought in the Abittibi and Lake St. John Districts was over, so that it will be necessary to wait for another season, to pass judgment on the practical utility of these little appliances.

The telephone is of great use in connection with forest protection and some hundreds of miles of line, have already been constructed by the different Protective Associations and by large limit holders who are not affiliated and this mileage is being continually added to. These telephone lines are in most cases connected with the regular telephone system of the locality and by their means, much valuable time is saved in summoning assistance, when a fire occurs in the interior of the limits.

A Policy of Vigilance.

Some fire lookout stations have already been built and the Department contemplates seeing the whole of the timbered area of the Province, under observation of such stations, linked up by telephone.

A start has been made in plotting the burnt areas, but this will be a work of time. When completed, however, such maps will be of great use to the lumbermen, as well as to the Department, as will be seen, when it is stated that 25 per cent. of this year's cut, will be of burnt



Where the Pelican thrives in a government bird sanctuary. Pelican Island, Florida.

timber. It is the policy of the Department to have all burnt over areas logged when possible, with the double object of saving the timber and of reducing to a minimum, the fire menace from such burnt areas.

B. N. O'HARA,
Asst. Supt. Forest Prot. Branch.

A Few Uses of Wood.

Lumber and timber products, planing mill products, sash, doors, blinds, and general millwork, window and door screens and weather strips, wooden packing boxes, cigar boxes, barrels and kegs, turned and carved woods, lasts, wooden furniture, including rattan and willow, show cases, billiard tables and materials, looking glasses and picture frames, sewing machine cases, baskets and rattan and willow ware, coffins and burial cases, rules, matches, pulp woods, wood carpet, charcoal, treated and preserved woods, carriages and wagons, aeroplanes, agricultural implements, dairymen's, poulterers' and apiarists' supplies, wood for engraving, musical instruments and materials, paper and wood pulp, phonographs and graphophones, tobacco piles, refrigerators and kitchen cabinets, ships and boards, toys and games, turpentine and rosin, washing machines and clothes wringers, wood distillates, artificial limbs, professional and scientific instruments, handles, clocks, playground equipment, printing material, trunks, shuttles, spools and bobbins, firearms, pulleys and conveyors, patterns and flasks, pumps and wood pipe, tanks and silos, bungs and faucets, brooms and carpet-sweepers, paving materials, pulpers' woodwork.

That list will give some idea of the importance of the campaign for a national forest policy.—Chas. Lathrop Pack.

A County to Replant.

York County, Ontario, is preparing to go into reforestation on a large scale. The committee in charge of reforestation plans, headed by Reeve Geo. B. Podget, of Markham, waited on the Government, and succeeded in getting a promise of assistance. The county will have to buy the land, but the Government has promised to plant it and look after the trees for forty years, when it will turn it back to the county.

A GREAT BEECH TREE

MARY PRESCOTT PARSONS

(The Outlook, October 27, 1920.)

It spreads a circle of cool shade around,
And spatters bits of sunlight on the grass.
Some people, walking softly as they pass,
Will hear, high up among its leaves, the sound
Of little, summer winds;—and some have found
It is a tree to look through at the stars—
And thought how light its fretted patterns are
Against the moon, above a snowy ground.

In times of special wonder, when soft snow
Bends down its branches, or ice storms make bright
Each glistening branch and twig, or in the glow
Of sudden lightning-flashes in the night,
Almost it seems a poet among trees,
Interpreting these ancient mysteries.

The Poplar Trees of Canada

(By B. R. Morton, B. Sc. F. Ottawa)

Some twenty-five or more species of poplar (Populus) are known and these are widely distributed throughout the northern portion of both the Eastern and Western Hemispheres. Seven or eight species are native to Canada, some of which are known as aspens and cottonwoods.

The native species include the Aspen (P. tremuloides) also called trembling aspen and white poplar; the Large-Toothed Aspen (P. grandidentata); the Balsam poplar, (P. balsamifera) sometimes called black poplar, balm poplar and tacamahac and balm of Gilead; the Cottonwood (P. deltoides) or Eastern Cottonwood; the Black Cottonwood (P. trichocarpa) or balm cottonwood; the Lanceleaf Cottonwood (P. acuminata); the Narrow leafCottonwood (P. angustifolia) and the Balm of Gilead (P. candicans) which by some authorities is considered a variety of the Balsam poplar rather than a distinct species.

The Aspen (P. tremuloides) has perhaps the widest distribution of any of our native poplars. It extends completely across Canada from Labrador and the south end of Hudson Bay to the north of the Mackenzie river and Alaska. It is found on a large variety of soils but makes its best growth on well-drained loam. It occurs most frequently in pure stands or mixed with the balsam poplar bluffs of the open prairie of the West.

A Short-lived Tree.

The Aspen is not a large tree, averaging about 40 feet in height and 8 to 10 inches in diameter. The growth is rapid but not persistent. The tree is not long lived since it is much subject to certain fungus diseases causing early decay. The tree is sometimes used in prairie towns and cities for shade tree purposes but is not as satisfactory for this purpose as some of the other poplars as it rarely develops into a well shaped tree.

The aspen is a prolific seeder and its downy seed is carried long distances by the wind. For this reason it is often the first tree to restock a burned area in the northern woods.

It can be readily distinguished from the other native poplars by the shape of its leaves which are almost circular in outline and from one and a half to two and a half inches long. The margin is finely toothed, whereas the Large-Toothed Aspen, as the name indicates, has its leaf margin very coarsely notched. The leaf stem of the aspen is very much flattened in cross-section and therefore lacking stiffness. The slightest movement of the air sets its leaves in motion. It derives one of its names, trembling aspen, from this fact.

The Balsam Poplar.

The Balsam poplar (P. balsamifera) has practically the same range in Canada as the Aspen and is frequently found in mixed stands with that species. It attains a greater size than does the aspen being a medium sized tree with a height of 50 to 60 feet and a diameter of 1 to 2 feet. Contrary to what might be expected, the balsam poplar does not reach its best development as a forest tree in the more temperate parts of its range. Its best development occurs in the northern part of the prairie provinces, particularly in the Peace River country of Alberta. This is perhaps due to the fact that in that region it is occupying better soils with less competition from other species than it could further east and south.

The oval or egg-shaped leaves which are from 3 to 5 inches long readily distinguish the balsam poplar from either the aspen or Large-toothed Aspen. The leaf stem is round on cross-section or only the lower half is flattened. The winter buds are large and coated with a sticky, fragrant gum.

The Large-toothed aspen (P. grandidentata) is confined largely to Eastern Canada, being found scattered from Nova Scotia and New Brunswick throughout Quebec and Ontario south of the height of land, dividing the waters of the Great Lakes and Hudson Bay extending into southeastern Manitoba.

It is a medium sized tree from 40 to 50 feet in height and 1 to 2 feet in diameter and occupies very much the same soils as the aspen but appears to prefer moist, sandy slopes on borders of streams. It is sometimes found in small, pure stands, but is often mixed with balsam poplar, aspen and birch. It is sometimes used as firewood but seldom cut for saw timber.

As pointed out above, this tree can readily be distinguished from the other poplars within its range by its leaves. The winter buds too readily distinguish it from either the aspen or the balsam poplar. They are not so pointed and narrow as those of the aspen and not so large or sticky as those of the balsam poplar. The buds are dull with the margin of the scales grey and somewhat downy.

The Common Cottonwood.

The Common Cottonwood (P. deltoides) is found in Eastern Canada from Quebec westward throughout southern Ontario. In Western Canada is found throughout the southern part of the three Prairie Provinces. It is mostly confined to the banks of streams and bottom lands of rivers since it is a tree that requires considerable moisture. The tree is a rapid grower and fairly hardy, and is, therefore, used extensively for planting on the prairies. Its rapid growth has also caused it to be planted to a considerable extent for ornamental or shade purposes in Eastern Canada. It has many objectionable features which rapidity of growth does not offset and which make it undesirable for a street tree where better trees can be grown. In a short time it becomes too large for the average street. It soon reaches maturity and begins to decay. Many roots are sent out near the surface and this as they thicken will often raise and crack concrete sidewalks. The pistillate or female trees produce large quantities of white cottony material which is blown about by the wind and sticks to ones clothing as well as filling up the meshes of door and window-screens. However, if care is taken to plant only the staminate or male tree this latter objection is done away with. The cottonwood is one of the largest of the poplars, averaging 75 to 100 feet in height and 2 to 4 feet in diameter. It is readily distinguished from our other native poplars by its leaves. These are triangular in outline and coarsely toothed. The base of the leaves is square and their tip long and pointed.

The Black Cottonwood (P. trichocarpa) is found along the coast of British Columbia and is, for the most part, confined to the moist river bottoms. The trees are large, from 80 to 125 feet in height and 3 to 4 feet in diameter. The leaves are very much like those of the balsam poplar in shape but more leathery in texture. The stems are round in cross-section. The wood of this species, when cut, is chiefly used for boxes and cooperage.

The Lance-leaf Cottonwood (P. acuminata) in Canada is confined to the banks of streams in southern Alberta. It is not abundant and of no commercial value. It is a small tree from 35 to 40 feet high and 1 to 1 1-2 feet in diameter. Its habits and distribution are very much like the narrow leaf cottonwood for which it is often mistaken. The winter buds are longer; more curved, more resinous and the points more drawn out than those of the narrow leaf cottonwood. The leaves are 2 to 4 inches long and ¾ to 2 inches wide and more coarsely notched than those of the narrow leaf.

The Narrow-leaf Cottonwood (P. augustifolia) as pointed out above, has much the same characteristics and range as the lance leaf cottonwood. The leaf is one of its best distinguishing features. It resembles more the leaf of a broad-leaf willow than those of the poplar. The leaf stem is also shorter than that of the lance leaf cottonwood.

Our Exotic Poplars.

A number of exotic species have been introduced into this country of which the most familiar are the Silver poplar (P. Alba) and the Lombardy poplar (P. Nigra variety Italica). These have been brought in from Europe by the early settlers and are now found growing all through the older settled portions of Eastern Canada. More recently several species from Russia have been intro-

A "pole forest" of Aspen Poplar on the North Pine River, Peace River, Alberta.

duced into the Prairie provinces. These include the P. petrovski, P. certinensis and P. wobstiriga. They are difficult to distinguish one from the other and commonly all go under the name of Russian poplar. The silver or white poplar (P. alba) derives its name from the silvery velvet under surface of its maple like leaves which is in sharp contrast to the very dark green and shining upper surface. This downiness is not confined to the leaves alone but covers the buds and twigs and makes the tree readily distinguishable even in the winter. The silver poplar is a good sized tree from 40 to 75 feet high and a diameter of 2 to 4 feet and has been extensively planted throughout Eastern Canada and the New England States. In common with many of our native cottonwoods it has the bad habit of sending up root suckers and thereby proving itself a nuisance near a lawn or garden.

The Lombardy.

The Lombardy poplar so named because it was originally believed to have come from Lombardy is now said to be a native of the high mountains of Afghanestan. It has been much planted in this country for ornament because of its vertical habit of growth which has given it the name of the exclamation point among trees. The spire like habit makes it readily distinguishable from all other trees. When young and vigorous it has some value in landscape planting but when older it often becomes unsightly because of the many lower dead and leafless branches which it retains.

The three Russian poplars are very hardy and in many sections of the prairies appear to withstand the winters even better than the native cottonwood. Their habit of growth and general requirements are very similar. When young their growth is extremely rapid, cuttings often reaching the height of 20 to 25 feet in from eight to ten years. Unfortunately, however, these trees are subject to early decay, particularly when growing on heavy clay land and this fact discourages the setting out of extensive plantations unless it is to obtain quick results as a shelter belt or to produce small sized material for fuel. However since they make rapid growth and are easily propagated from cutting, decayed trees can be replaced in a comparatively short time by younger ones.

B. R. MORTON.

How Regina's handsome legislative buildings are enhanced by a park of thriving trees.

Prairie Tree-Planting and Profits from Live Stock

(An Interview with Dr. Rutherford of the Board of Railway Commissioners, formerly Veterinary Director General of Canada)

The Canadian Forestry Association has been directing considerable attention to the subject of tree planting on the open prairies of Western Canada for shelter purposes for the crops and for beautifying and rendering more comfortable the homes of our Western farmers and ranchers. The importance of the relation of shelter belts to the live stock industry has perhaps not been sufficiently emphasized and the following remarks embracing the opinion of such a well-known authority as Dr. Rutherford should prove of interest and value to our Western readers.

According to Dr. Rutherford, there can be no doubt as to the advantage of judiciously planted windbreaks to live stock for their protection and for the growing of forage; and such windbreaks should, in his opinion, be planted around barns, outbuildings and corrals on the bald open prairie. Cattle, like most human beings, are very susceptible to the bitter cold winds which blow across the prairie in winter and an efficient windbreak of trees planted around the corral or cattle sheds is sufficient to afford the necessary shelter.

In Manitoba there is, as a rule, sufficient natural shelter in the shape of bluffs of Poplar, Willow, etc., to which the cattle or sheep can go for protection against the cold winds, but on the open prairies in Saskatchewan, and particularly Southern Alberta, the natural shelter is seldom available.

Protection from the wind in the shape of efficient windbreaks of trees is all that is necessary to maintain live stock in a state of health and contentment.

The relation of tree shelter belts for the growing of forage for live stock is also a very important one. It has been found extremely difficult to successfully grow corn without adequate shelter. Experiments with the growing of sunflowers conducted by Dr. Rutherford

Kananaskis Fall, Bow River.

many years ago in Southern Alberta are most interesting and bear directly on the tree shelter belt question. He sowed a row of sunflower seeds against the prevailing winds or to the westward of his crop of corn. Next to this shelter belt of sunflowers he sowed a few rows of corn, then another belt of sunflowers and more corn.

By increasing the density of the shelter belt or increasing the number of rows of sunflowers, it was found that corn could be successfully grown. This was how sunflowers came into use for siloage as Dr. Rutherford mixed the sunflowers with the corn and found that his stock thrived on the mixture.

Dr. Rutherford laid special emphasis on the importance of windbreaks around the farm dwellings, stating that the greatest argument in favor of the planting of windbreaks on the prairie was in making the home a comfortable place in which to live. "A home is not a home" said he "if, when one steps out the door, he is met with a strong biting wind. The chil 'ren can not enjoy a romp in the outdoors about the house and the live stock are devoid of the shelter they require." Contrast this state of affairs with a farm where the dwelling house, barns, outbuildings and corral are all strongly fortified from the cold prevailing winds, by an adequate windbreak of properly planted trees. There can be no doubt as to the substantial advantage of tree windbreaks on the bald open prairie to man and beast.

"Forests are the bit-and-rein of streams." The regulation of stream flow is the function of forest growth on the watersheds. Kill that forest growth by the plague of fire and you forfeit the reliability of the annual flow.

How Fast Does a Planted Forest Grow?

(By Ellwood Wilson)

There has been much discussion as to the practicability and cost of reforestation by planting and also of the time which must elapse before a crop could be expected. Unfortunately in Canada we have only made a beginning and sufficient time has not elapsed to give us much idea of the rates of growth of planted forest trees. The accompanying table of measurements made on Norway spruce planted at Axton by the Cornell Forestry School under the direction of Dr. Fernow, goes to show that the predictions for planted trees made by the writer are amply conservative. The table shows that on good soils a thinning of two or three cords per acre might be made at 25 years and that even on the poorest soils at twenty years of age the total wood per acre is above the average for what can be cut, under Government diameter limits in Quebec on Virgin Forest lands.

It may be interesting to note that on a Scots pine plantation made in 1913 by the Laurentide Co., on the poorest sandy soil spaced 6 x 5 feet now shows an average growth of seven and a half feet in height and 2.35 inches in diameter six inches above the ground, and a volume of 71 cubic feet or over half a cord of solid wood per acre.

Norway spruce planted in 1914 has an average height of 50.6 inches and average diameter six inches above the ground of 1 inch. The average increases in height for the past year has been 11.83 inches.

The Commission of Conservation is annually measuring the growth of planted trees on Laurentide Company's lands and this information will be regularly published for the benefit of those interested.

Summary Data on growth of Norway Spruce at Axton

All figures reduced to per acre basis.

Plot No.	Area Acres	Age Years	Aver. D.B.H Inches.	Average height. feet.	Site Quality Scale of 5.	Cords Yield Table.	Aver. Cords per acre per year.
X	.25	25	6.5	45.4	I	23.68	.95
202	.25	18	2.73	18.0	I	15.89	.88
219	.50	16	1.8	14.0	I	10.63	.71
216c	.30	20	3.1	14.0	II	13.03	.65
201	.30	18	1.5	14.5	II	13.03	.65
203	.50	18	2.3	14.0	II	13.03	.65
212	.25	20	2.3	13.5	II	13.03	.65
207	.25	20	1.4	9.5	III	10.16	.51
215	.275	20	1.7	9.0	III	10.16	.51
208	.50	20	1.3	9.2	III	10.16	.51
214	.50	20	1.3	9.8	III	10.16	.51
209c	.25	20	1.25	6.9	IV	7.31	.37

Plot X—Planted in 1897 with three-year-old transplants, spaced 5 x 5. The plots have been thinned at intervals for Christmas trees.

Plots 201, 202, 203—Waste pasture lands planted by students.

Plots 207, 208, 209c—Planted on land burned after logging in 1894 under cover of Aspen and Paper Birch.

Plots 212, 214, 215, 216—Planted under cover of Birch and Popple on an old Burn.

Plot 219—Planted on area clear cut and brush burned after logging.

Plot X—Located on the lands of C. F. Dietrich, at Millbrook, Dutchess County, New York.

Plots 201, 202 203, 207, 208, 209c, 212, 214, 215, 216, 219—Located near Axton, New York. (Cornell Plantations.)

Progress of the Empire Forestry Association

The Empire Forestry Association has become a working reality. The headquarters of the Society are in London, with Mr. M. C. Duchesne, a most capable representative, as Honorary Secretary.

An interim committee was elected, consisting of the following:—

The Earl of Plymouth, the Earl of Selborne, Sir John Stirling Maxwell, Bt., and Lieut.-Col. G. L. Courthope, M.C., M.P., representing the United Kingdom.

The Duke of Devonshire, Mr. Robson Black, and Col. Beckett representing Canada.

Sir Claud Hille, K.C.S.I., C.I.E., representing India.

Sir Mayson Beeton, K.B.E., representing Newfoundland.

Mr. H. R. Mackay, representing Australia.

Lord Islington, representing New Zealand.

Lord Buxton, representing South Africa.

The temporary offices of the Empire Forestry Association are at 17 Victoria Street, S.W., London.

The chief object of the Empire Forestry Association is to promote and develop public interest in forestry throughout the empire. The specific purposes may be enumerated as follows:—

1.—To create interest in and circulate information relating to Forestry amongst all classes in the British Empire.

2.—To bring about better public recognition of the identity of interest between continuous timber supplies, and systematic forest management, and to spread information relating to the commercial utilization of Empire-grown timbers.

3.—To form a centre for the Empire for those engaged in Forestry, and create a means of communication between the various sections in all parts of the Empire.

Membership is open to organizations and firms and individuals interested in forestry or in the commercial utilization of timber and other forest products.

The Canadian Forestry Magazine believes that the Empire Forestry Association, which has intentionally avoided identification with Government forestry bodies in the interests of greater freedom of action, is certain to perform a service of far-reaching importance. Not only will there be cultivated a popular interest in the necessity for constructive forestry policies in all parts of the Empire as a matter of mutual safety and prosperity, but the work of such an association is bound sooner or later to affect the trend of Empire trade in forest products and bring about closer commercial relations between the United Kingdom, which is the great consuming centre of wood products, and such fields of potential supply as Canada.

The abandoned farm, a familiar sight in many parts of the Dominion. This illustrates the double penalty of allowing settlers to take up land not previously examined and classified. It is a startling fact that Canada has more acres originally cleared for farming that must now be put back under timber than she has land under timber that can be made useful for agriculture.

Forest Fires--and Our Educational Patrol

Our readers who have followed the widespread programme of educational work carried on by the Canadian Forestry Association, will be interested in the news received as to our Forestry Exhibition car with a Lecture Car attached, which have been touring in Central Quebec. The work of the cars will be concluded in December, as weather conditions make a winter railway itinerary practically impossible. It is hoped to start the 1921 tours both in Eastern Canada and the Prairie Provinces in the month of May.

At Berthier: Car attended by over 300 in the afternoon; 200 students from Academy attending lecture and motion picture demonstration. A second lecture to one hundred children was given immediately afterwards.

In the evening the exhibition car was visited by about 500 people, two meetings being held in the lecture car with crowded audiences. Dr. Jervais, M.P., attended one of the lectures and gave a short address to the audiences.

AT THREE RIVERS, owing to the excellent co-operation of Mr. Henry Sorgius, Manager of the St. Maurice Forest Protective Association, large audiences were encountered.

During the first afternoon 700 people visited the Exhibition car. Mr. Valin assisted by Mr. A. G. Cooch, held a meeting of 400 pupils and teachers at LaSalle Academy. In the evening 500 people visited the Exhibition car and two motion picture talks were held in the lecture car.

On the second day at Three Rivers 500 people visited the Exhibition car and a forestry lecture with motion pictures was given to 500 students, and professors of the Seminary. The meeting was honoured by the presence of M. Le Superior, who addressed the audience after M. Valin's speech.

Evening lectures were given at 7 p.m. and 8.30 p.m., to 300 people and over 250 persons passed through the Exhibition car at the same hours.

AT SHAWINIGAN FALLS four lectures were given during the afternoon to relays of students from local schools and academies. The total attendance at the four lectures was 700. During the evening approximately 1,000 persons visited the two cars. On the following morning a special meeting was given to 100 pupils and teachers from the Brothers' School.

AT GRAND MERE in the afternoon, a motion picture lecture was given at the English school by Mr. Black, while Mr. Valin addressed some 600 pupils at the Brothers' School. In the evening a French lecture was attended by 300 people and this was followed by an English address to another audience. The attendance at the Exhibition car was large, more than 1,100 people passing through.

On Saturday morning November 20th, at Grand Mere, 600 students visited the Exhibition car; during the day another 800 people were present to see the exhibits and attend forestry protection lectures.

At Grande Piles the attendance at both the Exhibition car and the motion picture lectures in French was one of the heaviest yet recorded.

Other points yet to be covered at the time of going to press are St. Tete,, St. Thecle, La Tuque, Flamand, Windigo, Vandry, Parent, Greening, Joliette and Lachute.

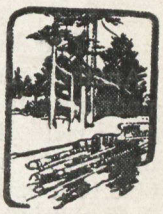
Annual Meeting

of the Canadian Forestry Association will be held at the Windsor Hotel, Montreal, Thursday, January 20th.

Hitching Science to Forest Management

By Ellwood Wilson
Chief Forester the Laurentide Company, Ltd.

Pulp and paper industries must maintain their woodlands on "sustained yield" basis



The whole question of the improvement of logging operations is more or less psychological; that is, it is a question of men's minds and men's way of thinking about things rather than any practical question of method or operations.

For instance, the men who have been operating in the woods in the past are men who have, to a great extent, grown up in the woods and they have been more or less supposed to have some sort of occult faculty, some sort of super sense which particularly fitted them for the work in the woods. In my experience, that has not proved to be true, and the time has come when the operations in the woods must be placed on the same basis as operations in the mill. Nobody would think today of running a big paper mill without trained chemists, without trained engineers, without trained cost accountants, etc., but up to this time we have not had this class of men in the woods. We are only just beginning to realize that logging, after all, is a branch of engineering, that it requires a certain amount of technical education, a certain amount of technical training without which nobody can be a successful logging operator. We have got to realize that fact, and with all due honor to the men who have kept our mills supplied with raw material, the day has come when we must change our methods and get more men with technical training in the woods.

Cheap Logs! Cheap Logs!

In the past the question has been to get out raw material at the lowest cost possible, regardless of anything else. The managers of the mills have said, "We want so many thousand cords of wood a year," and if logging costs went up the least bit, there was immediately a 'holler,' and the man responsible for getting the timber out of the woods and into the mill was hauled over the coals if his costs were a little more than in the past. Conditions under which labor has worked in the woods have been very difficult and we have come to realize today that the men who work in the woods must have the same comforts and the same decent living conditions that the men who work in the mill have.

We have come to face a good many difficult problems and in the solving of these problems, we want the very best trained minds that we can get, but we have to do away with old-fashioned ideas, with old superstitions and with old fetishes; we have got to face these problems in the same way that we have faced engineering and operating problems in our mills.

What Progress in the Woods.

In the woods operations we have made absolutely no progress so far as I know since we first began logging in the old days. We are using the same methods of hauling and almost the same methods of cutting. We have to some extent, of course, substituted the saw for the axe. There has been some effort in the East to use tractors in logging. Of course we have to leave out of this discussion the large timber operations in the West in which machinery of all sorts has been used and where they are costing more and more to do away with hand labor.

In the previous years our labor costs have been so low that we have been able to use man power and horses to a very large extent, but the day of that practice is almost past and what we need now in

our woods operations is men who will think out new mechanical methods for getting out the small amounts of timber per acre which stand in our Eastern forests so that we can cut down the expense of our logging operations.

The Yield of the Future.

Another thing which is of the utmost importance is the question of the continued yield of our forest lands. In the language of a forester, we have got to come to a basis of sustained yield. We are not going to be able any longer to mine the timber from our forests as we have mined our coal and metals and oil. The forest is not and never was intended to be mined; it is a growing crop and it must be handled on entirely different lines than our mining operations.

In order to do this and do it practically, there have got to be some laws in logging enforced so that the forest after logging will be left in a condition where it can continue to produce trees. The time has gone by when we can go into the forest and cut down trees here and there and everywhere, burn up the forest by carelessness. We have got to leave the forest in a condition to give us another crop and not only another crop but a crop in the very shortest possible time.

A Temporary Rise in Cost.

In order to do this, we have got to adopt some selective system of cutting. This, of course, will naturally raise the cost of our timber, but only temporarily, mind you. Once this system is established, the cost of logging instead of rising constantly as it does at the present time, will more or less average itself out over a series of years. To make this clear by an example, take a new tract of territory and follow out its history. Especially as we have logged in Eastern Canada, going into a new tract, a logging operation would commence on a river or on a lake and all of the timber which could be gotten out easily and cheaply would be taken out the first year at a very low cost. The second year the operating would have to go back a little further with rising costs. The third, fourth and fifth years, it would be necessary to go further back, with the costs still rising.

If the timber had been taken out back to the watershed the first year, the cost of that year's operations would have been great, but all the timber from the river right back to the end of the operation would have been brought out at once. The next year the same thing would have been done with costs approximately the same, so that while the cost would have been higher the first year, over a series of years the cost would have been uniform.

The Jobber to Blame.

Everybody knows that when you let a contract to a jobber or contractor to go into the woods, he is not going to care about your interests at all; he is going to take out the timber which it is easy for him to get out and which will net him the biggest profit, and this system of using contractors and jobbers has been the runiation of more forest areas than anything else I know of. It was an easy way to get out the logs and a fairly cheap way, but when you consider the results in the long run, we are going to be a great many years in paying for that sort of logging operation.

I would like to prophesy a little bit as to the future of logging operations. From what I can see of the trend of affairs in the West and some of the things which are taking place in Scandinavia, and when I think of what has been accomplished in the change of methods in our paper mills and in our great industries, I look forward to the time when our logging operations will be carried on much more by machinery than they are at the present time. I think we are just on the verge of having a mechanical saw which can be carried around easily from tree to tree and with which one or two men can do the work of a dozen. I think that it will only be a very short time until we will have a machine very much like the pneumatic or electric drill at the present day with which the branches can be taken off the trees and can be swamped much more economically than at the present time. I think that American ingenuity will very soon develop types of tractors or mechanical haulers which will enable us to get our timber out to much better advantage and much cheaper than the present method of skidding it out with horses.

Woods Practice Today.

You all know that the forest today is a collection of good trees and trees which, up to the present time we have found no use for. In order to log to the best advantage today, we have to cover very large areas to get a relatively small amount of timber and I feel sure that the practical men, the business men of today will very soon come to realize the futility of covering ten or twelve square miles to get a small cut of timber and they will come to the opinion that was expressed in England at the Imperial Conference this year by forty out of fifty-five delegates that the day of natural reforestation is very rapidly nearing an end.

Where Planted Forests Save.

This is a very broad statement but at the same time when you come to analyze the situation I think you will, after due consi'eration, more or less agree with me on this matter. You take large areas of timber and suppose you get from them an average of from five to six cords to the acre as we do in Canada—where we cut under certain Government diameter regulations—you have got to take your men into the woods, take your provisions long distances and cover large areas in order to get out this five, ten or fifteen cords to the acre. When you stop to consi'er that after you have taken out that timber you have got to wait forty or fify or sixy years for another crop which, so far as anybody knows at present will be but a very small fraction of the crop which you have taken out in your first cut, you have got to cover these huge areas to get the timber you need. It would not seem economical or practical to you, and you will surely come to the idea which has been forced on the experience of European countries, that if we are going to carry on our industries, the best way to get the timber is to get areas as near the mills as possible. Plant the areas with the very best possible stock you can get with the very largest amount per acre and then when your logging proposition comes along, look how the whole thing is going to be simplified! Instead of driving or hauling or railing your wood all the way from fifty to 200 miles, let us say, you are going to be able to go out within ten or twenty miles of your mill, put in your portable electric railway, utilize machinery which will cut your trees down just the way you cut your corn crop today, and you are going to get instead of five, ten or fifteen cords per acre, forty or fifty cords. You will reduce your logging costs and simplify all of your operations. Instead of huge wood piles which we see in some of our Northern countries to carry us through the winter, with insurance and money tied up in them, we are going to take the wood right straight from the stump to the mill. We are going to utilize a tree the same day it was cut, perhaps, or the day after.

The Future in Our Hands.

I know that a great many people will be skeptical but when you come to study the whole thing out carefully and to get right down to brass tacks in the matter, you are going to see that for the future this is going to be the ideal method. You can say, "Of course we won't live to see this; what business is it of ours to provide timber for the next generation"; you can make the same reply that has been made to me many times by managers of wood land departments, "What do I care about this, my job is to get wood as long as I am working for this company and when my successor comes along, let him face the problems that are created by the way I am logging today."

I have heard managers of companies talk in that way, but today we are coming to realize that we cannot shirk the responsibility of the next ten or fifteen or twenty-five or fifty years. We have no right today to create a set of conditions which are going to be difficult for our successors. It is not honest; it is not good citizenship; it is not good business.

The paper and pulp industry is, to a great extent, a stabilized industry which in all human probability ought to go on for generations. The mills and the tremendous installations which we have today should not be scrapped in ten or fifteen or twenty-five years, they ought to go on functioning for several generations to come and people who own woodlands certainly have a responsibility to see that those woodlands are kept in productive condition. (An address at Chicago before the American Paper and Pulp Association.)

Does this sort of thing pay? Here is a piece of natural forest land which should never have been taken out as a farm. The settler only wasted his years of labor and killed a productive patch of timber.

ONE OF OUR MANY DESERTED FARMS.

The land was designed for timber growing, and was too poor for field crops.. For lack of land classification in advance of settlement, the province lost the timber producing value of the land and the constructive service of a good farmer. Notice how the old fields are being reforested naturally with spruce.

Aeroplanes Feature in Quebec's Policy

At a recent conference of foresters from Eastern Canada and the United States, held at Grand Mere, Mr. G. C. Piché, Chief of the Forest Service for the Province of Quebec, outlined the forestry policy of the new Prime Minister, Hon. L. A. Taschereau. Mr. Piché dwelt principally upon the monetary value of the wood-using industries to the province, especially referring to the pulp and paper industries. Mr. Piché pointed out that the provincial government was determined to prevent the timber resources of the province from being wasted or over-exploited and to take full advantage of the opportunities now presented for turning the forest resources into actual wealth. It was also stated by Mr. Piché that Forest Posts would shortly be established at Hamilton Bay, Ungava Bay and James Bay, from which foresters will go out and make inventories of the forest resources of the province. These posts will be connected by wireless telegraph, and will have the assistance of aeroplanes, which will be used to make photographic surveys. The forest industry holds the second place in the Province of Quebec from the standpoint of value and products. It is now generally recognized that the forest industries of the province are entering upon the most prosperous period of their history. The next few years should witness a remarkable growth in these industries with attendant increase in the general prosperity of the Province.

Death of A. S. Goodeve.

A most valuable friend of the forest conservation movement was lost in the death of Mr. A. S. Goodeve, a member of the Board of Railway Commissioners and Director of the Canadian Forestry Association. Mr. Goodeve's interest in the Forestry Movement was reinforced by his membership some years ago in the British Columbia Forestry Commission, which conducted an inquiry into the forest resources of British Columbia and drew up an authoritative report on which the reorganization of the Provincial Forest Service was based.

A regular attendant at the meetings of the Directors of the Canadian Forestry Association, Mr. Goodeve's counsel was of the utmost advantage and his enthusiasm for educational propaganda was a great stimulus to the Association's executive staff.

He was an astute judge of men and affairs and maintained in his official and personal relations a cordial and sympathetic manner.

Mr. Goodeve's record of service to the cause of forestry was particularly emphasized in his work as a railway commissioner. The work of railway fire prevention came directly under his charge and gained greatly through his deep conviction that the guarding of the timber resources from all forms of destruction was an obligation of primary importance.

The Directors and Officers of the Canadian Forestry Association were represented at the funeral and a wreath of flowers was sent as an expression of the profound regret of his association colleagues.

One of the foundations of the British Government's afforestation programme in the United Kingdom: the Kingswood Nursery at Dunkeld, Scotland. The British Forestry Commission's nurseries are excellently planned and managed.

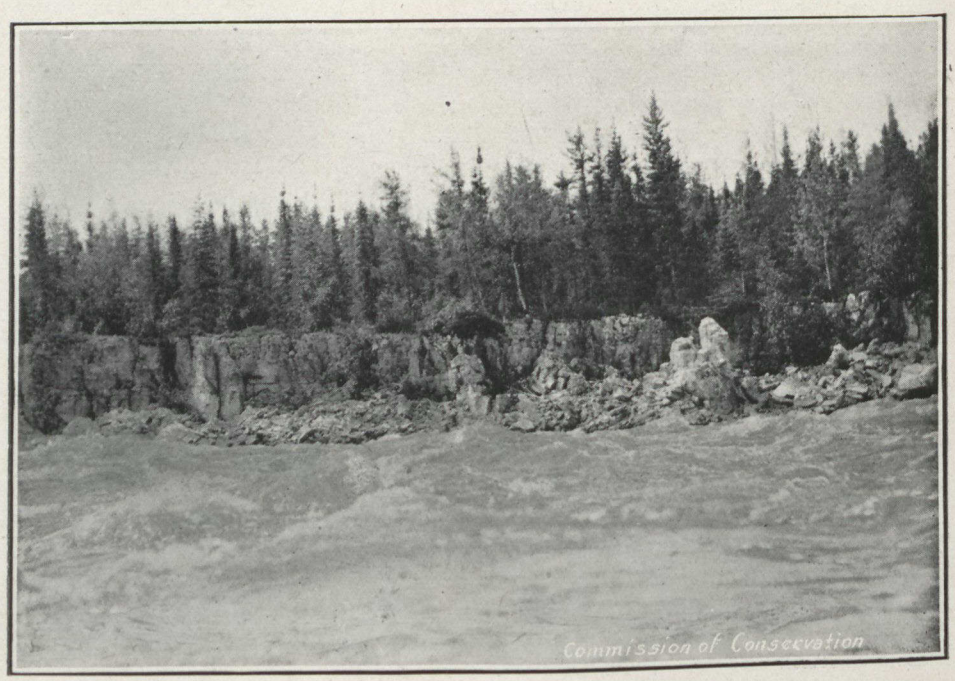
P. Z. Caverhill, recently appointed Chief Forester of British Columbia. Mr. Caverhill has a highly successful record.

The First Christmas Tree

A pretty legend is handed down about the first Christmas tree. When Ansgarius preached the "White Christ" to the Vikings of the north the Lord sent his three messengers, Faith, Hope and Love, to help find the first tree. They were to seek one that should be as high as Hope, as wide as Love and that bore the sign of the Cross on every bough; so they chose the balsam-fir, as it met their requirements better than any other tree in the forests.

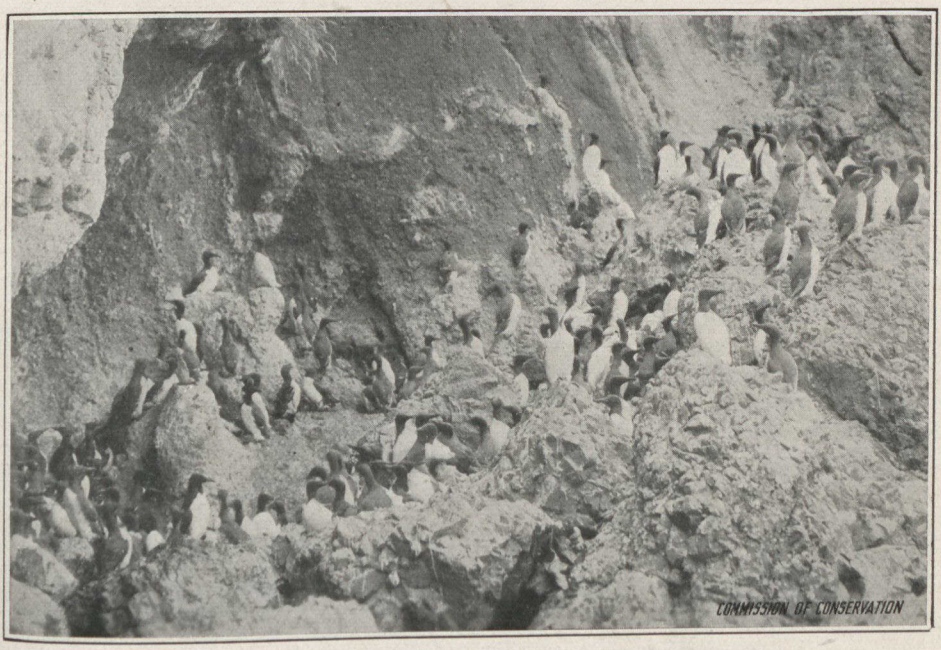
To Buy All Wood by Weight.

Mr. R. S. Kellogg, Manager of the Newsprint Service Bureau of New York, speaking at the meeting of the American Paper and Pulp Association, predicted that the time was not far distant when pulp wood logs and all rough wood going to the factory and mills will be bought by weight and the "cord" and the "foot" will become obsolete in the woodsman's language.



Forest and stream in Canada's Northland; one of the Fort Smith Rapids on the Slave River.

Red Rock Rapid on the Saskatchewan River.



California Murres—typical resting place on an Oregon reservation.

Lumber Prices and the House You Want to Build

It has been charged to the lumbermen that the reason building operations have not been conducted on a larger scale in various communities where the scarcity of houses is so pronounced, is that lumber has been too high in price and that consequently structural operations have been retarded. On the surface the average man thinks this allegation is a just and timely one and, therefore, the lumber dealer has to bear the brunt, for he gets all the blame. What are the facts? The per cent. cost of lumber in a house varies, of course, according to local conditions and the nature of the structure, but the per cent. cost is after all a relatively low item. On the average brick dwelling, the outlay for wood products ranges about one-fifth of the entire outlay. The bill for lumber on a $12,000 house represents 19 per cent. of the total cost. On a $10,000 dwelling the increased outlay for lumber, including interior and exterior trim, would not be more than $600 or $700 at the most over the prices which held sway in 1912. Plumbing, heating, electric wiring, hardware, glass and all other commodities have risen much more in proportion than lumber.

It is also pointed out that any person who builds even the most unpretentious home in these days demands a great deal more in that house than was formerly necessary. The average man calls for more in the way of exterior appearance and interior furnishings. The days of the coal oil lamp, the tin bath and the wood stove are ended. A square type, plain finished house with old style roof will not answer—in fact, would not be considered by a citizen planning to build a home of his own. Straight lines and square finish have been numbered among the things of yesteryear, and now in an estimate of building, there must be sleeping porches, cut-up roof, alcoves, attractive approaches, linen chutes, etc., while an estimate of building a house usually includes the heating plant, electric wiring and fixtures, a bath room fitted with fixtures as expensive as living room furniture, casement windows, panel effects, beamed ceilings, plate rails, wainscotting and even parquetry, with hardwood trim, polished floors and brick fireplaces—all of which effectively disposes of the slander that lumber costs too much to build to-day.

The query is often asked: Should I build now? And those who have given sane consideration to the subject in all its aspects say that it is always good policy to build "what you need, when you need it, and only what you need." If you require a home or your property urgently needs repairs, do not wait. Even should lumber decrease a few dollars in price, it will make no material difference in the average edifice.

Statistics reveal that approximately 55 per cent. to 60 per cent. of building cost is labor, and the question projects itself: Will this item be reduced? As already pointed out, people who are expecting pre-war prices will be disappointed, as we are living in a new era and must accustom ourselves to new conditions and surroundings. Irving Fisher, who is possibly, America's first authority on the subject of prices, says: "Go ahead on the new price level. Business men should face the facts. To talk reverently of 1913 and 1914 prices is to speak a dead language to-day. The buyers of the country since the armistice have made an unexampled attack upon prices through their waiting attitude, and yet price recessions have been insignificant. The reason is that we are on a new high price level and it will be found out that the clever man is not the man who waits but the one who finds out the new price facts and acts accordingly.'

Another shot fired at the lumberman from ambush is that his profits are excessive and that he is in the business

which creates wealthy men within a comparatively short period. A record and study of the lumber industry reveals that there have been many reverses in that branch, and perhaps more than in any other allied vocation. More foolhardy ones venture into the lumber arena than any other industrial calling and come out of it with a vastly different conception of its potentialities and realizations than when they set sail. True, a few fortunes have been made, but scores have been lost, and if the lumber manufacturer reaps a larger profit than those in other endeavors, it must be remembered that he takes a bigger chance. It is sad, indeed, to shatter a popular delusion, but the number of rich lumbermen is relatively not nearly as large as that of those engaged in numerous other lines where the returns are more liberal without any of the speculative spirit, the play of fortune and the freaks of the weather. In sporting propositions the man who takes the longest chance is given the greatest odds, and more money can be lost in a sawmill venture than in perhaps any other. A drop of a few dollars in quotations may in a night wipe out the earnings of a lifetime. To those who accept the greatest hazard, the largest spoils go, and the risks that the lumberman has to face are little known or thought of by the general public. The lumber operator encounters too much or too little snow in winter and the absence of rain in the spring; the scarcity of labor, its restless attitude and frequent exactions, embargoes, increased freight rates and transportation tie-ups, car shortages, varying demand, and supply abroad and at home, fire, flood and hurricane, heavy loans and a score of other contingencies, all of which may change conditions in a twinkling.

The writer holds no brief for the defence of the big lumber operator, but has sought to present frankly some of the conditions with which he is confronted at this juncture, and to answer effectively the charge frequently laid at his door of being responsible for building inactivity, shortage of homes and the halt in industrial expansion. — "Financial Post."

Aircraft for Forestry Purposes

Aerial Reconnaissance and Photography for the Woods Department of the Spanish River Pulp and Paper Mills Ltd., in Northern Ontario.

During the summer season of 1920 the Spanish River Pulp and Paper Mills operated a flying boat for the purpose of ascertaining the value of aerial reconnaissance and photography in woods operations.

The boat, an Aeromarine 44L, was launched on June 2nd and a trial flight was made on the same day. Delay in obtaining the Eastman K-1 Aero Camera held back the photographic work until July. Five hours and fifteen minutes only were spent in photographic flights. During this time forty-one square miles of terrain was photographed. Approximately eight hundred square miles was extensively reconnoitered during the summer. Delay in obtaining a developing tank has prevented the development of the exposed films, and therefore the construction of a key, absolutely essential to the interpretation of aerial photographs.

During the season 43 flights were made. During these flights, covering in all thirty-seven hours and twenty-five minutes, the machine was flown two thousand miles. Sixty-one passengers were carried. There were no "crashes" and no one was injured during the summer's work.

The experiment in aerial reconnaissance and photography, though of short duration, has proven of such value that the work will be continued by the Spanish River Pulp and Paper Mills during the flying season of 1921.

The tree-bordered waters of the Rideau Lakes.

The Warning Finger of China

(An Editorial in the Toronto Globe)

The perpetuation of the forests as a safeguard to the soil in the timbered areas now being disposed of is the problem of prime importance, but it is receiving very little thought from our public men The finger of warning, however, is pointed toward Canada from the most anciently inhabited quarters of the globe. Think of the tragedy of the famine in China, where, before the next harvest can be reaped, ten, perhaps fifteen, millions of souls may perish of starvation. Then realize that this calamity is the slow but sure accumulation of centuries of ignorant forest waste on the plains and in western hill regions of China. And with all the skill of modern engineering, decades, running into centuries, will be required to restore the disordered balance of Nature.

One of the most mournful monuments of human folly and ignorance in mistreating the bounties of the earth is to be seen in a section of Syria about fifty miles square, of which the old city of Antioch is nearly the centre. That city once had a population of 200,000, now it has about 20,000. From the hill overlooking the ruins of this city the eye may range over seven other hills whose slopes contain the ruins of 150 cities and towns once teeming with prosperous communities. The symbols of a vanished wealth are visible on every hillside; vats for wine from the choicest grapes that fed the epicures of Rome, olive oil vats by the hundred, and ruins of baths among the colonnaded palaces of the rich. The living remnants of these populous sites are squalid, dirty and destitute to a degree.

Whence all this decay? Destruction of the forests which once clothed these hillsides. We know it from some of the most dramatic events of history. From these hills were taken the "cedars of Lebanon" which were imported to Palestine to build Solomon's temple at Jerusalem. The cedar wood was so admired that after the first temple was built the slopes of these hills continued to be stripped to furnish the interiors of private palaces of Jewish Kings, Roman nobles and Governors. When the protecting covers of the hill forests were stripped the freshets washed away the thin skin of soil down to the rocks, and the desolation now to be seen was inevitable. It took a millennium to build up this fertility, but it only took a few hundred years to accomplish the destruction. It will take another thousand years to make restitution to violated Nature and grow again the cedars of Lebanon, whose half-dozen trees represent all that is left of the glory of the departed age.

We have no stones to throw at the people of China and Syria in regard to the abuse of the bounties of Providence. There are many square miles of hill country in New Brunswick, Quebec and Ontario, where, through foolish forestry methods, including criminal forest fires, the surface soil has already been washed down to the rivers and the sea. In some of these situations it will take a century of careful replanting before the process of soil restoration can make even a beginning.

Our duty to the forest was divinely indicated by the injunction "replenish the earth and subdue it." It is folly incredible to invade a forest where Nature has already laid the foundation of replenishment and bring desolation where culture is called for. The Provinces of Canada should not permit the exploitation of timber lands without making the condition that the hills in forest tracts shall never become bald heads, but shall be kept in perpetual youth by State regulation and restoration. We cannot afford to trifle with the alternative, which would in one fatal lapse invoke the day of devastation of forest lands and cripple the priceless asset of our water powers.

Why Farm Forestry Pays

The right handling of forest trees on the farm will make it more prosperous, add to its comforts as a home, and enhance its value as an investment.

The home forest, in many sections of the country, will supply the timber which the farm needs for buildings, fences, fuel, repairs of all kinds, and many other uses; and there will often be a surplus which can be sold in the form of standing timber, saw logs, posts, poles, crossties, pulpwood, fuelwood, and blocks or billets for making spokes, handles, spools, boxes, barrels, and excelsior.

A well-cared-for home forest serves also as a windbreak for buildings, a shelter for live stock, a protection of valuable lands from erosion, a means of profitable employment for men and teams during otherwise spare or idle time, a place of recreation, and an improvement in the appearance of the farm.

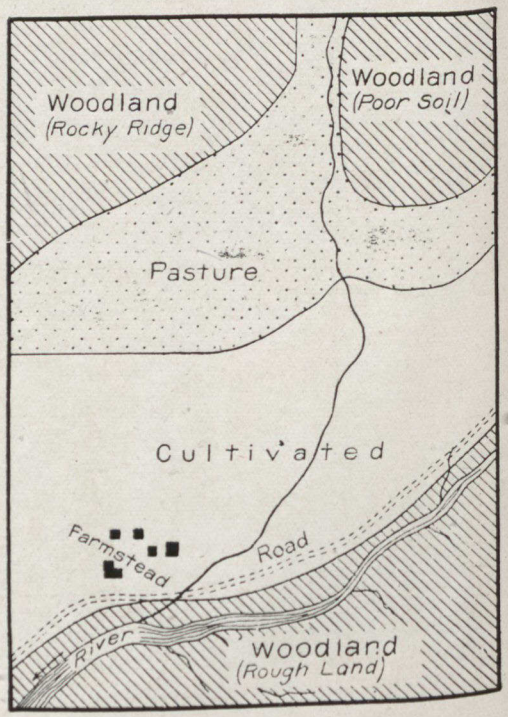
Trees improve and build up the soil. The leaves, small twigs, and other tree litter decompose and form a layer of dark-colored vegetable mold, which enriches the soil and stores up soil moisture. By means of this layer of mold, the binding of the soil by the roots of the trees, and the resistance of the trunks to the rapid flow of water, the woods prevent floods from gullying or destroying the land by erosion, particularly on steep slopes.

Even if a farmer sells no timber the woodland pays. The firewood, fence posts, and material for repair and construction on the farm, the timber and money saved by having them conveniently on hand, and the protection against extremes of weather afforded the crops, farm buildings, and stock are worth considerably more than the slight trouble and expense of raising and caring for the trees.

The woods need not occupy good farm land that will grow other crops. Trees should, as a rule, be located on land too poor to cultivate, such as gullied or very rocky land, swamps, steep slopes, and barren soils. Unused corners and small uncultivated spots about the farm are good places for rapid-growing, useful trees. The chief economic reason for timber growing on the farm is to get a profit from those portions which would otherwise be unproductive.

Though the land on which the farm forest is situated may not be suitable for other crops, it should not be treated as waste land. (Fig. 1.) By a little care it can be made to produce valuable timber. Only a little attention is required, and this may be given in the winter or when other farm work is slack. Forest trees and woodland are more valuable now than they were a few years ago. Many trees that used to have little value, and even small trees that used to be counted as brush to be got rid of, are now in good demand.

—U. S. Forest Service.



NO IDLE LAND ON THE FARM.
Woodland on the hills, pasture land on the slopes, and cultivated land below.

An Ode to a Telegraph Pole

Slushly is the highway between the unspeakable hedges;
I pause
Irresolute under a telegraph pole.
The fourteenth telegraph pole on the way,
From Shere to Havering,
The twenty-first from Havering to Shere.
Crimson is the western sky; upright it stands,
The solitary pole,
Sombre and terrible,
Splitting the dying sun
Into two semi-circular halves.
I do not think I have seen, not even in Vorticist pictures,
Anything so solitary,
So absolutely nude;
Yet this was an item once in the uninteresting forest,
With branches sticking out of it, and crude green leaves,
And resinous sap,
And underneath it pine spindles
And ants;
Birds fretted in the boughs and bees were busy in it,
Squirrels ran noisly up it;
Now it is naked and dead,
Delightfully naked,
And beautifully dead,
Delightfully and beautifully, for across it melodiously,
Stirred by the evening wind,
The wires where electric messages are continually being despatched
Between various post offices,
Messages of business and messages of love.
Rates of advertisements and all the winners
Are vibrating and thrumming like a thousand lutes.
Is the old gray heart of the telegraph pole stirred by these messages?
I fancy not.
Yet it all seems very strange,
And even stranger still, now that I notice it,
Is the fact that the thing is after all not absolutely naked,
For a short way up, half-obliterated with age,
Discolored and torn,
Fastened on by tin tacks,
There is a paper affiche
Relating to swine fever.
The sun sinks lower and I pass on,
On to the fifteenth pole from Shere to Havering.
And the twentieth
From Havering to Shere;
It is even more naked and desolate than the last.
I pause (as before).
(Author: We can start all over again now if you like.)
(Editor: I don't like.)

—From Punch.

Some Forest Fables!

No. 2

By Dr. C. D. Howe

Once upon a time a business man had many manufacturing establishments scattered all over the country. He made a great many different kinds of articles and all these articles were made of wood. The articles were very well made and were very useful. The people bought them eagerly and paid high prices for them. The business prospered and the manufacturer of wood products became very rich. In fact, there were only two other men in the country richer than he.

It will be seen that he was very careful and business-like in his methods, otherwise he would not have made so much money. His factories were well organized; each workman was carefully trained to do his bit; he did it well and was paid accordingly to the value of his service. Since the manufacturing establishments were so valuable and were such big money earners, they were well protected against loss by fire. In some places as in sawmills, bucket brigades were organized; in others like planing mills, connections were made with high pressure water-mains; in paper mills automatic alarms or automatic sprinkler systems were installed. The more valuable the property to be protected, the more the money expended in protection against fires.

This manufacturer got all his raw materials out of which he made so much money by using thought and care and labor, from trees of various kinds that grew in a forest. He didn't own any trees; he had to buy them from another man and that other man owned many, many acres of trees; in fact, most of the best trees of the country were in his possession.

Now, unortunately, in sharp contrast to the successful manufacturer, the owner o fthe trees was rather slothful and unbusinesslike in his methods. He did not require efficiency or skill in his workmen and he paid them low wages. In the matter of fire protection, for example, we have seen how the successful man manage that, but the owner of the trees, on the other hand, would put a decrepit old man and a young boy in charge of a forest that contained trees worth $1,000,000. They, of course, were helpless when the fire came and the forest would burn. In fact, so many trees burned under this kind of management that the manufacturer found it increasingly difficult to get the raw materials for an increasing number of his products; some he had to seek at great distances, others gave out entirely and had to be brought in from foreign countries. All this naturally helped to increase the cost of wood products. In fact, it increased so rapidly that the people cried out greviously against the high prices, but they themselves were the owners of the trees they allowed to burn. They cried out against conditions created by their own negligence.

In the long run in this world men get what they pay for either in thought, effort or money. The forests of Ontario will continue to be destroyed by fire until the thought, care and money put into their protection is commensurate with the value of the property involved.

A Township to Plant Trees.

The Township Council of Keene, Ontario, has decided to take up the offer of the Ontario Government to supply trees and do the planting work on condition that the Township supplies the land. Under this enterprising scheme, the Province undertakes to supervise the plantation until maturity and then hand over the timber crop to the municipality.

The offer of the Ontario Government to assist the Township Councils in re-establishing timber crops on waste lands is being taken up with eagerness.

Improvements in Railway Fire Protection

By Wm. Kilby, Fire Inspector, C.N.R., Winnipeg.

A large part of the central western provinces, was in glacial times, a huge lake known as Lake Agazziz, and when the glaciers from the Hudson Bay region slowly forced the water out of the lake they left enormous flats of very valuable clay. The fertile prairie lands west of Winnipeg, world famous for their productiveness, were originally a lake bottom, and sometimes when excavations are being made the remains of shell fish are found and go to confirm this statement. In other parts where timber growth is in evidence the glaciers formed huge, saucer-like formations and on the edge of these is found the best timber, but the centre of the saucers, owing to the drainage being retarded by the rims or ridges is covered with a scrub growth of tamarac and black spruce. Along the outer edge of the rims, forest streams opening out into lakes were formed and early exploration was made by this method, consequently the explorers got their first information of the timber resources from the quantity they saw growing alongside the streams.

With this insufficient knowledge to go on, our wonderful timber supply was ruthlessly wasted, and efforts to conserve it by economical logging methods and protect it from devastating fires were considered an unnecessary expense.

The Use of Plowed Guards.

Many years ago, the Canadian Pacific railway reconizing the enormous damage done by prairie fires, established a system of plowing strips known as fireguards on either side of their track running through the prairie country. These strips stopped the fire from spreading over the prairie, but the root of the evil at that time, the locomotive, was not improved until years later, the policy being rather to stop the fire than to stop the cause. In forested regions the plowing of fireguards was not practicable and different measures, therefore, had to be adopted. Spark arresting and ash pan devices were experimented with, and the use of hard coal, which was obtainable in sufficient quantities a few years ago, were very successful, but with the development of the coal mines of Western Canada and the necessity of using this home product, the fire preventive devices on locomotives have not, so far, been developed to make the use of these light Western coals practicable.

In order to stop fires in forested country it was therefore necessary that other systems be adopted and special fire patrol, special vigilance by track forces and oil burning locomotives were put into use, but despite the combined efforts of Government Forestry Departments working jointly with the railways, each years sees the timber supply of Canada given a hard jolt by fires alongside the latter's lines.

Sometimes Falsely Blamed.

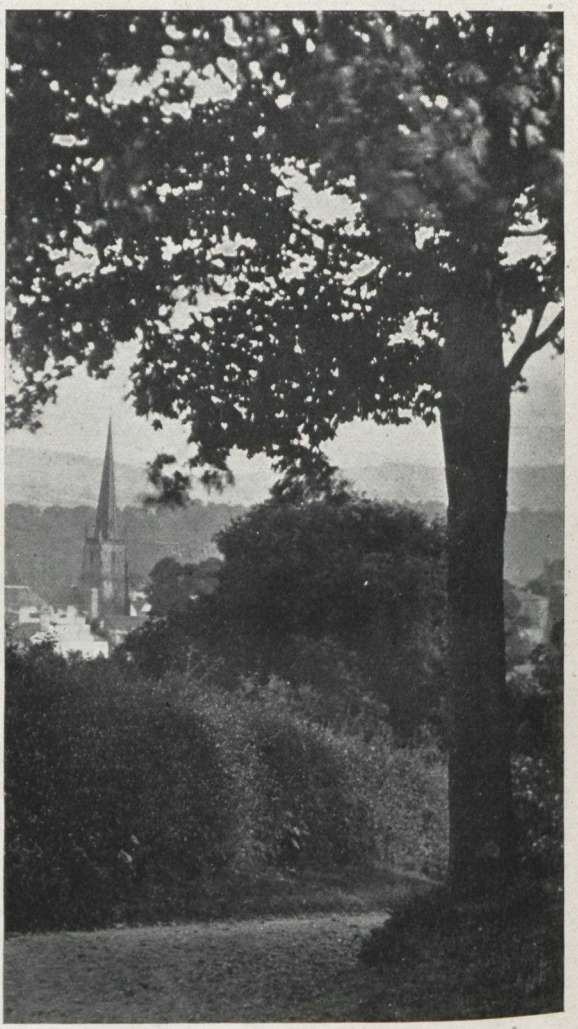
While it is frankly admitted that many fires are started from railway causes it is yet felt that the railways are held to blame for many fires of doubtful origin which they have not been guilty of starting.

The principle of immediate action is as applicable to forest and prairie fires as to the city ones, but owing to the enormous distance help is necessarily much longer in arriving. Communication is highly developed on the railway, and to use this to secure the best results is the first aim of the fire reporting system as used on the Canadian National Railway.

Early in 1914 a form (No. 1959) using telegraphic symbols was introduced, this in order to reduce the Telegraph Operator's work, and to handle with the least possible delay reports of fires. The form calls for the notification of officials who will be able to take any action that may be necessary to combat the conflagration, either in the forest or on the prairies. Oftentimes, it is necessary in serious fires to tie up train movements

and to despatch every available man, water tank cars, and the crude fire fighting appliances which are in such general use for fighting forest and prairie fires. There is no audience to witness the moving out of the fire fighters and their apparatus, but the issues at stake, sometimes involving human life, are almost as great as in the city where every modern appliance which can be devised is put into service.

Telegraph Report (No. 1959) is sent in every case to the District Roadmaster, the official with a first hand knowledge of the territory and of any available help; simultaneously, his Superintendent, General Superintendent, General Claim Agent, Assistant General Manager and the General Manager are advised, making the chain complete. Needless to say, where the Roadmaster can handle the situation he does so, and only in cases of extreme urgency is it necessary that he call for help from the higher officials. He is well acquainted with the Government forest and prairie fire fighting agencies and by previous co-operative arrangements these bodies work hand-in-hand to combat the fire menace.



A Forced Landing.

It took place on the fourth trip back to Remi Lake, Ont. The plane was carrying Capt. Maxwell, George Doan, mechanic; H. M. Blake and myself, passengers. When about an hour from Moose, too-thin oil flooded the engine making it impossible to "carry on." Capt. Maxwell fought the engine and coaxed it but found it conquering him. He circled a stretch of the Mattagami half a dozen times, with the altimeter dropping, marking every shoal and stone, before coming down. He made a beautiful landing in a spot where there was about five feet of water, between high, twisting, rock-bound banks. After a bitterly cold night on the shore of the Mattagami, with little to eat, we "took off" the next afternoon—an operation calling for the most delicate handling as there was not only the imminent possibility of smashing in the bow on a hidden rock but there was the necessity even after leaving the water of guiding the big plane between the twisting river banks until it had attained sufficient height to clear them and the bush. But it was done. And when we attained flying height visibility was wiped out by the smoke from forest fires and

He that planteth a tree is a servant of God,
He provideth a kindness for many generations,
And faces that he hath not seen shall bless him. —Henry Van Dyke.

heat haze that lay on the forest. Capt. Maxwell, in spite of a still misbehaving engine, had to give up the water and steer a compass course. We came down in the lake where the gasoline had been cached, added 15 gallons to the 5 left in our tanks, and in the late afternoon started on our last leg of 30 miles to Remi Lake. The visibility was worse than ever.

Maxwell was still steering by compass but an east wind sprang up and blew us miles out of our course. He climbed down to take observations and found we were below Kapuskasing, 14 miles from Remi Lake, so he headed along the railroad tracks and got home safely with the gasoline tanks all registering zero! Narrow enough!"—From Aeroplane and Motor Age.

Quebec Sends Four Foresters to Europe

The appreciation of the Quebec Government of the necessity for the practice of forestry on its non-agricultural lands, and of the need for thoroughly trained foresters to make its programme effective, has recently been further evidenced. Four of the employees of the Provincial Forest Service, Messrs. Guay, Landry, Baillairgé and Lussier—graduates of the Forest School at Laval University—have recently been sent to Europe by the Provincial Government, to spend a period of six months in making advanced studies of forestry practise and forest utilization in France, Belgium, Switzerland and Germany. One of the men will extend his studies to cover a period in Sweden. Among the lines of investigation to which particular attention will be paid by these men will be methods of lumbering, saw-milling, silvicultural practice, reforestation, aerial photography, forest research, wood technology and wood utilization, including the development of markets for hardwood species through small wood-using industries.

Europe and Canada.

While forestry conditions in Europe are widely different from those in Canada, the general principles of the science of forestry are the same the world over, though it is of course necessary to adapt the practice to local conditions in every case. In Europe, the practice of intensive methods of forestry—the systematic growing of wood crops—has been a matter of development through centuries, and foresters from other countries can learn much of direct value to them in a study of methods and conditions there.

A period of study in the forests of Continental Europe is, for example, a regular part of the curriculum of English and Scottish forest schools which prepare men for the practice of forestry in the United Kingdom, India, and other parts of the British Empire. The desirability of such study was particularly emphasized at the Imperial Forestry Conference, held last summer in London.

Quebec is setting the pace in this direction, with the prospect that a number of scholarships may be established, under which several Quebec foresters will be sent annually to Europe for intensive study of particular problems. The value of such a programme in developing and broadening out men for wider and more useful fields of activity at home is self-evident. The four men sent this year to Europe by the Quebec Government will, upon their return, take positions of responsibility in the Forest School at Laval and in the Quebec Forest Service, thus at the same time strengthening the courses of forestry instruction and increasing the effectiveness of the Provincial Forest Service in solving its problem of how best to retain the great areas of non-agricultural Crown timber lands of the Province in a condition to produce successive crops of the more valuable timber species. To accomplish this within the limitations of practice set by the surrounding economic conditions will tax the best efforts of a large staff of the most thoroughly trained and experienced foresters, for a period of many years.

The example set by Quebec in this direction may well serve as an object lesson to other Government agencies, Dominion and provincial, which are engaged in the administration of Crown timber lands.

Mechanical Attack on Fire

By M. A. Grainger, Lately Chief Forester of British Columbia.

A man was showing me over one of the pulp and paper plants back east last summer. He said: "These giant turbines in our power plant, the complex paper-making machinery in our mill, show what marvelously efficient thinking has been done to improve manufacture. And our products are marketed by the most up-to-date salesmanship on this continent. But in the woods, on which this large investment depends absolutely no thinking whatever has been done. The same old woods foreman is cutting timber in the same old way that he did 50 years ago; the hardwoods are killing out spruce reproduction; and 50 years hence, both mill and investment will be doomed unless we go into the woods and do that thinking now."

There is a similar lack of balance which we are trying to remedy in forest fire work. Motor patrols, wireless telephony, publicity, have all been brought into use, to detect and prevent fires; but the actual attack on a forest fire has kept on being mostly a pick-and-shovel, gunnysack-beating affair. Feeling that these useful articles are not the last work of modern fire fighting science, the Forest Service has been testing portable gas driven pumps. We have over 40 now in use, and the results have been most satisfactory. They do not replace picks and shovels, but supplement them much as a machine gun gives powerful support to rifle fire. Where water is available, one pump does the work of 20 men and far more efficiently. Near Cranbrook a single pump was largely responsible for keeping fire out of a valley containing 200 million feet of timber. Up this coast, the inhabitants of a little sawmill settlement had given up fire fighting one day last summer, and were watching the approaching fire in despair, when one of our launches arrived. The ranger and a pump came into action, and in a very striking manner the whole settlement was saved. Wherever a logging operator sees the work these pumps can do, he says he will get one for himself at once, and I hope he does not forget next day.

The pumps are gasoline-driven; weight 170 pounds; throw 45 gallons a minute, with a 180-foot head and cost about $800, with 1,000 feet of hose, complete. By using a relay tank, a couple can be used on a working radius of 2,000 feet.

Attack by Air.

For co-operative work with the various government services, the Canadian air board has just equipped a seaplane station near Vancouver, with hangar,, slipways, Machine shop. Two types of machine are provided for—the big, heavy twin-engine flying boat that can carry 14 persons, including the crew of three, or the same weight of fire pumps and equipment; and the medium size seaplane carrying one pilot and four passengers. For the present, we do not figure on patroling in the air to detect fires; the main idea is to provide a taxi service, with machines ready to take the air in any fire emergency.

St. Thomas and Its Trees.

The Hydro-Electric Commission and the Parks Department of the City of St. Thomas have placed the trimming of the trees on the streets where hydro wires are strung under the superintendency of the Horticultural Society. The St. Thomas Horticultural Society have as their chief plantsman, Mr. R. V. Smith, formerly superintendent of Parks of London, who is an expert along this line. The trimming is being done in a sane manner. That part of the work on the tree that it is necessary to remove to protect the wires is paid for by the Hydro Commission, and the balance of the work to make the tree symmetrical is paid for by the City Council. The spirit exhibited by these two municipal bodies is commendable.

To Replace Source of Fuel.

The Galt, Ontario, Reporter says in a recent issue:

As a county close on the heels of York, in production and wealth, Waterloo should lose no time in getting into communication with the Provincial Government. Bare hills and river banks by the score call for the tree planter, and with so favorable an opportunity presented, the advocates of Reforestation will be serving an important field by getting into touch with Queen's Park. What York can afford to do to perpetuate its forest wealth, Waterloo county can also do. Hundreds of acres of local wood lots are being denuded to serve the fuel user, while nothing is being done to make good the loss of the timber removed. From a sensible, far-seeing people more is expected to send down to posterity such forest growth as is called for to hold the strength of our soil and create future sources of supply.

Trees Along New Highways.

The Ontario Department of Public Works has struck a popular note in preparing a tree planting programme to accompany the construction of highways. The Honourable Mr. Biggs, Minister of Public Works, states that like all the main roads in France, Ontario's highways will have considerable space on both sides, and will be lined with trees 75 feet apart, mostly maples and oaks. As outlined by the Department: "At frequent intervals, and guided by the opportunities of the district, parks and picnic groves for passing motorists will be established. The aim of the urbanites is to get out of the busy streets into the country. Shaded woods and sunny lake shores will be ideal spots for these nature seekers."

How the Prairie Gains by Trees

In speaking of the value of trees to prairie communities, says an interview in the Calgary Herald with Archibald Mitchell, western lecturer of the Canadian Forestry Association. Mr. Mitchell said that there were two ways in which water loss occurs on the prairies, which are by drying out and being blown away by the wind. When nature grows a block of trees, he said, she speedily shuts out the sun through the foliage of the trees and at the same time keeps the drying wind out by planting the trees close together. This principle must be followed to a large extent on prairie farms, he declared. The whole thing was a matter of moisture and the thing to be kept in view was that tree culture and grain growing are the same. In grain growing the farmer can check this water loss by summer fallow. Summer fallow in the forest was out of the question of course, and therefore the shade of the trees were used to produce the same results.

The tree problem was the same everywhere, he declared. The forester does not pay so much attention to the trees as he does to what is going on down below, and what one sees above ground is a mere indication of what is going on beneath it.

Lightning's Share of Blame.

"Let it be understood, there is no excuse for forest fires started by human agency. .No man has a right to start one and allow it to escape. If there was any danger in starting it, he had no right to take the chance, and if he did take it he should be ferreted out and take the consequences. Rarely, but very rarely, a forest fire originates from lightning, and such an one is the only kind of fire for which there is no one to punish. In an experience of fifty years I have seen but two forest fires that I could charge to lightning."—*Dr. Rothrock.*

Simcoe Takes Hold.

(By Ahmik in Toronto Globe.)

A country municipal forest covering 800 acres and within easy access by rail and motor.

That is what the County Council of Simcoe has provided for by the purchase of a block of waste land in the township of Vespra.

The location is between Midhurst and Anten Mills, within a mile of Hendrie station on the Penetang line of the old Grand Trunk and within easy reach of the leading highway connecting Barrie and Elmvale and within eight miles of the former town.

The land, wholly useless for ordinary agricultural purposes, was secured at a cost of $5.74 per acre. There is some second growth pine, white birch, red oak and a little hardwood on the property. The whole block was once covered mainly with pine and since this was removed the land has remained practically idle.

Province to do Planting.

The expectation is that the Province will provide seedlings and undertake the work of planting. The question of care after planting is still to be settled, but in view of the public spirit shown by the country in purchasing the property the Province would be fully justified in building a home and providing a caretaker for the protection of the trees during at least the early stages of growth.

Private Planting to Follow.

It is probable that the public enterprise already under way will be supplemented by private enterprise. County Treasurer Quinlan, who has been one of the chief movers in Simcoe county scheme, is already contemplating planting 25 acres of very stony land on property belonging to him near Lake Simcoe.

The work of reforesting the waste lands of old Ontario appears to be at last definitely under way.

Fire, An Evil Master.

The Provincial Forester of New Brunswick, Mr. G. H. Prince, in his report on forest fires during 1919, makes special reference to the losses caused by settlers' clearing fires and camp fires. In 36 cases, action was taken against parties for violation of the fire laws. The officials of the Forest Branch made it clear to the

offenders that they did not wish to deal harshly with them but that the fire laws must be observed, in the interests of themselves, their neighbors and the timber owners. The presiding justice severely reprimanded the offenders, pointing out the danger of neglecting slash fires, in which many of the delinquents had lost their homes. None of the defendants pleaded ignorance of the slash-burning law, but each claimed *he did not expect his little fire to spread so rapidly.* The losses due to these small beginnings exceeded $100,000.

Scottish Peer Loses by Fire.

Lord Glentanar, of Glen Tanar, Aberdeenshire, Scotland, was recently in Canada. He owns a large forest property and has the misfortune to have had the only disastrous forest fire in Scotland for nearly one hundred years. Twelve hundred acres of forest were burnt. The fire was probably caused by carelessness and burnt for a long time, owing to the character of the soil. Before returning to Scotland, Lord Glentanar purchased a gasoline forest fire pump and hose for use in case of emergencies.

Planting in Scotland.

Professor Leslie, of Aberdeen University, Scotland, has been studying forestry conditions i n Canada, and gives the following account of the planting activities of the British Forestry Commission along nursery lines in that section. In the Craibstone, about five miles from Aberdeen, in 1918, 800,000 seedings were grown and planted out in areas acquired by the Commission. In 1919, 2,000,000 seedlings were lifted and transplanted. Last spring, 2,000,000 seedlings were transplanted. These were mostly Scots Pine, larch and Sitka spruce. In the spring of 1919, extensive sowings were made in the Improvement Park and in the Woodlands Fields nurseries. Woodlands Field now has 1,300,000 spruce and 1,000,000 larch two year seedlings and the Improvement Park 5,000,000 larch, 4,800,000 Scots pine, 1,000,000 Japanese larch, 1,500,000 Sitka spruce, 100,000 American white spruce, 1,500,000 Douglas fir and 10,000 Austrian pine. Double the above quantities were sowed this spring.

The Laurentide Company, Ltd., is cutting one thousand cords of hardwood to be used in the manufacture of ground wood pulp. The species being cut are poplar, white birch, yellow birch and maple. The two first will be floated and the two latter will be transported in barges.

Air Photography in B.C.

(Victoria Times.)

Increased activity is noted from the Jericho Beach B. C. Air Station. The HS21, flying boat, which has made several trips to Victoria is now at Kamloops Lake, in charge of Major C. MacLaurin, superintendent of the B. C. Air Station, who with a party is now engaged in taking aerial photographs of forest limits in that neighborhood, for the Provincial Forestry Department.

The huge flying boat was dismantled and shipped by train to Kamloops, where it was taken to the lake and re-assembled. It has been engaged on the forest reconnaissance since Monday last, and it is learned that excellent results are being produced. Major MacLaurin is accompanied by two riggers, and one engine fitter, all from the British Columbia Air Service. Major Basil Hobbs is in command of the British Columbia Air Station in the absence of the superintendent.

It was learned to-day that there was some likelihood of a sub-station being formed at Kamloops to work in conjunction with the coastal air station.

Trees.

I think that I shall never see
A poem lovely as a tree.
A tree whose hungry mouth is pressed
Against the earth's sweet flowing breast;
A tree that looks at God all day
And lifts her leafy arms to pray;
A tree that may in summer wear
A nest of Robins in her hair;
Upon whose bosom snow has lain;
Who intimately lives with rain.
Poems are made by fools like me,
But only God can make a tree.

JOYCE KILMER.
(Killed in France.)

Mr. Caverhill Promoted.

Mr. P. J. Caverhill, formerly chief forester of New Brunswick and more recently with the B. C. Forest Service has been appointed chief forester of British Columbia in succession to Mr. M. A. Grainger, who resigned.

Women as Fire Fighters.

Albuquerque, N. M., women helped in the hazardous game of fire-fighting during the past season in the Southwest, according to the forest officers of several of the Arizona and New Mexico Forests. Some were stationed on the lookout towers of lonely high peaks, others working remote forest telephone exchanges through many hours when the danger was acute, and others on the very fire line itself, leading or fighting the fires with the hastily assembled crews. Forest fire fighting has generally been conceded a full sized man's job, but the long annals of the Forest Service throughout the West are filled with stories of women taking a helping hand at the various phases of the game. This past season in the Southwest was no exception.

On the Rincon Mountains, a part of the Coronado Forest in Southern Arizona, the high Spud Rock Lookout was "manned" during the fire season by Mrs. Lyle B. Smith, wife of the local Forest Ranger. Mrs. Smith, in addition to her lookout duties, cleaned and brushed out a number of miles of trail in the vicinity of her tower. She had occasion late one night during the season to make a search of ten miles, with a fire guard and tools, across the mountains for a reported fire.

The West Benefits.

Referring to the Tree Planting Campaign of the Canadian Forestry Association in the Prairie Provinces last summer, the Calgary Herald states:

"The tour was so successful it will be repeated next year. This is real educational work and bound to be productive of lasting benefit to the West."

"He Blazed a Good Trail."

At the request of the staff on the Duck Mountain Forest reserve in Manitoba, "Windy Mountain," the highest hill on this reserve, has now been officially named "Ketchum Hill" in memory of James Carleton Ketchum, who was the only surviving son of T. Carleton L. Ketchum, Barrister, of Woodstock, N.B. The late Mr. Ketchum entered the University of New Brunswick after he was graduated from the Carleton County Grammar School, taking up a forestry course. In 1914 he received appointment to the staff of the Dominion Forestry Branch and was assigned to the Duck Mountain Reserve. He was later attached to the 23rd Howitzer Battery and on the 3rd day of May was fatally wounded in action near Vimy and was buried the next day in Aux Reitz Cemetery.

A brass plate to his memory has been placed on a large boulder on the top of the Manitoba hill with a suitable inscription and the words, "He blazed a good trail." Mr. Ketchum was particularly talented as an amateur artist, both in pencil and colors and has left some beautiful pieces of work, which will ever be treasured by his relatives and friends.

The Family Tree.

Norfolk, Va.—When Miss Ada Oakes, daughter of Mr. and Mrs. J. C. Oakes, of Washington, N.C., became the bride of Walter Pine, of Salisbury, N.C., recently, it proved to be an unusual marriage. The pair decided to have a "wooden wedding." Everybody that took a leading part in the ceremony had a name like a tree. For instance:

The groom, Walter Pine.
The bride, Miss Ada Oakes.
The best man, Robert L. Birch.
The bridesmaid, Anna Lee Laurel.
The parson, Rev. Oscar T. Wood.

The ceremony was performed at Washington, N.C., and to make the "wooden flavor" complete the couple went to Hickory, N.C., to spend a week with the bridegroom's aunt, Mrs. E. V. Shingle

Idle Forest Land.

The depletion of timber in the United States says "The North Woods" has not resulted primarily from the use of our forests but from their devastation. The kernal of the problem lies in the enormous areas of forest land which are not producing the timber crops that they should. There are 326 million acres of cut-over timberlands in the United States. Their condition ranges from complete devastation, through various stages of partial restocking or restocking with trees of inferior quality, and the whole woodland rapidly increases in value by the elimination of inferior trees.

With an active market for cordwood and for fence posts, poles and lumber there is every inducement to clear out the inferior trees—diseased, dying, crooked, and less valuable kinds. Right cutting also includes the removal of large, sound trees whose growth is slow, because they are nearing or have reached maturity. The cutting should be done only at a time of favorable market condition or when building or other timber is needed on the farm.

Ontario's Need For Cruises.

Officers of the Commission of Conservation, who have been engaged upon the work of making an inventory of the forest resources of Ontario, have been struck by the lack of reliable information regarding the timber conditions in certain regions which have been opened up by railways for some time and for which it might reasonably be expected that fairly accurate and complete data would be available. There is a notable absence of the results of systematic cruising which could very economically be carried out in conjunction with land surveys. Undoubtedly, progress in the work of cruising timber areas was very severely handicapped during the war by the difficulty of securing the necessary staff.

In view of the frequent inquiries from foreign investors for authentic information respecting the timber and pulpwood resources that are available for exploitation in Eastern Canada, it is essential that the work of making thorough timber cruises and of compiling authentic forest maps be given sufficient staff and funds to ensure immediate and rapid progress. There is little doubt concerning the availability and the eagerness of capital to engage in the development of forest industries—the most urgent need is to make known the situation, character and quantity of the resources that are available for such exploitation. The Commission of Conservation is collecting and collating all of the authentic data that can be obtained in regard to Ontario, but the task is rendered doubly difficult by the fact that over many large and important areas satisfactory cruises have never been made.—*A. V. Gilbert.*

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