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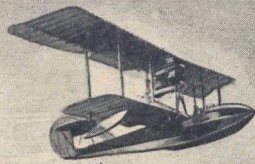


LOOKING THROUGH MAJOR'S HILL PARK TOWARDS THE CHATEAU LAURIER, OTTAWA.

Vol. XVII.

OTTAWA, CANADA, DECEMBER, 1921

No. 10.



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No. 10

Christmas Trees and Forest Conservation

The Cutting of Trees for Decoration Has Infinitesimal Effect upon the Timber Supply, and is Justified from Farmer's and Customer's Points of View.

By Clyde Leavitt, Chief Fire Inspector, Board of Railway Commissioners.

Each year, the holiday season brings its crop of suggestions from public-spirited citizens that in the interest of forest conservation the exportation of Christmas trees from Canada to the United States ought to be prohibited, or that the cutting of such trees should be altogether stopped.

This agitation, so far as it exists, is based upon the known fact that our accessible forest resources in the eastern provinces are by no means unlimited, but on the contrary are being rapidly reduced in quantity through fires and lack of adequate regulation of cutting methods, thus seriously threatening the future development of the great lumbering and pulp and paper industries, upon which so much of Canada's prosperity must continue to depend. The argument is advanced that the young growth cut for Christmas trees ought to be left standing, to grow to pulpwood or saw-timber size. There are, however, a number of points which should be taken into consideration in this connection.

Where Most Xmas Trees Come From.

In the first place, the great bulk of Christmas trees cut in Canada for export to the United States are from privately owned lands. In many cases, they are cut from pasture lands upon which the farmers desire to keep down the tree growth in order to maintain the pasture as such. In other cases, trees are cut from swamp areas or muskegs where the growth is very slow, but where growth in the open is favorable to the symmetrical development of the tree, thus rendering it particularly suitable for Christmas tree purposes. In neither of such cases would the prohibition of the exportation of Christmas trees or of their cutting for local use be likely to have any noticeable effect



in the direction of increasing the supplies of material suitable for pulpwood or lumber. To not more than a practically negligible extent are such trees cut from the great areas of timber limits, generally more or less remote, which comprise the areas upon which the lumbering and pulp and paper concerns depend very largely for their supplies of raw material.

It has not been very seriously suggested that residents of Canada should be prohibited the use of Christmas trees. These trees are usually available locally. If, however, exportation to the United States

were to be prohibited, there would be many farmers or other owners of private lands, along the International boundary in Quebec, New Brunswick and Ontario, whose market for Christmas trees would be cut off entirely or greatly reduced. It is reasonable to suppose that in such cases serious objection would be raised by them to the action suggested. The selling of Christmas trees affords farmers and others an opportunity for winter work and enables them to realize a certain amount of revenue from the value of the trees, in addition. The systematic growing of trees for pulpwood or lumber involves a long-time element, which makes this usually a matter for Governments or long-lived corporations. In either case, it is a business proposition. There is no reasonable doubt that the farmer can secure a larger net annual revenue from the sale of Christmas trees than would be the case were he required to let the trees grow to sizes suitable for either pulpwood or lumber, quite aside from the fact that he may have good reasons for wanting to get rid of the trees, as well as to realize upon them within his own lifetime. Only in the event of its being obviously necessary in the public interest would such governmental interference with private property be justified as would prevent the farmer from realizing upon his own property in the way which, in his own judgment, offers the best financial return for himself. There does not appear to be any such public necessity involved in this case.

This is the Real Waste.

As a matter of fact, the waste in connection with pulpwood and saw timber operations in all our forests outweighs many thousand times over, any possible loss which can be figured in connection with the Christmas tree trade. The an-

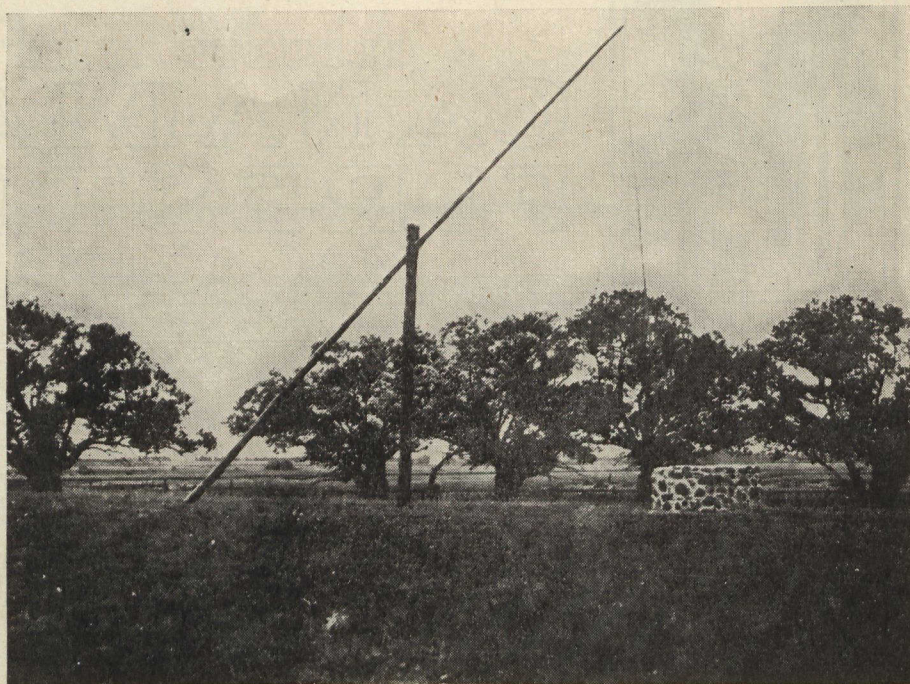
nual loss from preventable forest fires is in the same category. Before any government can take the matter of the Christmas tree trade so seriously as to contemplate prohibiting exports, it should first cast out the beam in its own eye, by providing really effective forest fire protection and by taking steps to eliminate unnecessary waste of merchantable material in connection with logging operations on Crown timber lands. This applies to Crown timber areas under the jurisdiction of the Dominion Government, and also each of the provincial governments, without any exception.

The greatest pity in connection with the Christmas tree trade is that the farmers or other private land owners often secure so small a percentage of the retail selling price in payment for the trees so cut. There is an excellent opportunity here for a regularly established business, paying good returns for the labor and capital involved. As a matter of fact, in various parts of Canada and the United States, the systematic growing of Christmas trees is a regularly established business. In some cases the cost of establishing forest plantations for the growing of pulpwood or lumber is largely paid for by the thinnings taken out from time to time in the form of Christmas trees. In other cases, plantations are established for the sole purpose of sale in the form of Christmas trees. These are paying businesses, and there is no more apparent reason why obstacles should be placed in their way, than would apply in the case of any other industry manufacturing goods for export or for local use.

A Paying Plantation.

On page 391 of the Canadian Forestry Magazine for September, 1921, is a report of intensive management of a forest plantation for Christmas tree production. This plantation is situated in Monroe County, Pennsylvania, and consists of spruce and balsam,—species which are very plentiful in eastern Canada, and the ones generally cut for Christmas tree purposes. In this case, the method of operation is to cut off the tree above the lowest whorl of branches, removing also all of the lowest whorl except one branch, which is left on the stump. This branch continues to grow, and finally assumes an upright position, taking the place of the original stem, and developing branches of its own, so that in time it can itself be cut for another Christmas tree. In this way the plantation has been managed for continuous production during the past 20 years.

It is probable that all the Christmas trees cut in Canada each year would not be more than could be grown on a very few square miles of fully stocked plantations, either under the above system or by replanting each year to replace the trees



The well of Evangeline, at Grand Pré, Nova Scotia. (See accompanying note.)

The Willows at Evangeline's Well

"At Grand Pré, too, are the Acadian willows, not only picturesque, in themselves, but wearing an air of romance and poetry that enriches the whole scene. It is hard to believe we live in the things of to-day in the presence of the willows of Grand Pré. There are a few very old and very decrepit ones on the road leading from the railway station toward the town. They can be regarded with unstinted emotion and unbridled imagination, for there can be no doubt that they were really put there by French hands as much as a hundred and fifty years ago, and have witnessed the tragic scenes that make the

history of this part of the country so memorable.

But it is in a meadow upon which the railway station faces that the interest of to-day chiefly centres. Across a wide field is to be seen a row of willows, and near them is an old French well, of course called Evangeline's well. There is no question about the antiquity of the well. It is as genuine as the willows, and if the pilgrim wishes to touch its sacred water with his finger-tips one does not see how harm could follow."—From Margaret Warner Morley, "Down North and Up Along."

removed. The area involved in this business is so small in proportion to our enormous areas of forest lands as to be practically negligible.

We Sell to U.S. 320,000 of Them.

So far as trees cut for export are concerned, it is estimated from Customs Department returns that around 320,000 Christmas trees, valued at \$50,982, were exported from Canada to the United States during November and December, 1920. At 1,000 trees per acre, this would represent the annual product of 320 acres or one-half of one square mile of plantations. Assuming a growth period of 10 years after planting, the area required to produce this number in perpetuity would be 3,200 acres or 5 square miles, assuming that the crop would be worked on rotation, the area cut over each year being at once planted up. For natural growth, the area would of course be larger, but in any event not of any substantial consequence in proportion to the considerations

above discussed. Hundreds of square miles of forest lands, containing more or less of valuable young forest growth, are burned over each year, by preventable fires, due to the lack of adequate provision for prevention and control.

The Christmas tree trade is a legitimate business. It furnishes winter employment and brings in a substantial revenue. Those who purchase its product presumably get value received, in the form of pleasure for themselves and their families, else they would not spend their money in that way. The cutting of Christmas trees is not prohibited in any of the States of the American Union, a popular misconception to the contrary notwithstanding.

The very commendable anxiety for the future of our forests might much better be directed toward securing really adequate protection from fire over the hundreds of thousands of square miles of forest lands where the provision for this is still inadequate.

A Practical Plan for a Prairie Town Park

By Archibald Mitchell, Western Lecturer of the Canadian Forestry Association

Editor's Note:—The following article represents a working plan for a prairie town park. It was prepared for the local authorities at Kindersley, Saskatchewan, but with modifications can be adapted to hundreds of Western communities:—

Situated so close to the station, this Park should become a beauty spot and a very great asset to the town. At present it is not. Indeed! with its rows of neglected trees standing among grass, mostly fox-tail, it is an eyesore. A good beginning to grow trees has been made at one time but, as is usual among the smaller towns, the constant cost of upkeep was too great and it fell into neglect. A move in the right direction but not very happy in its execution.

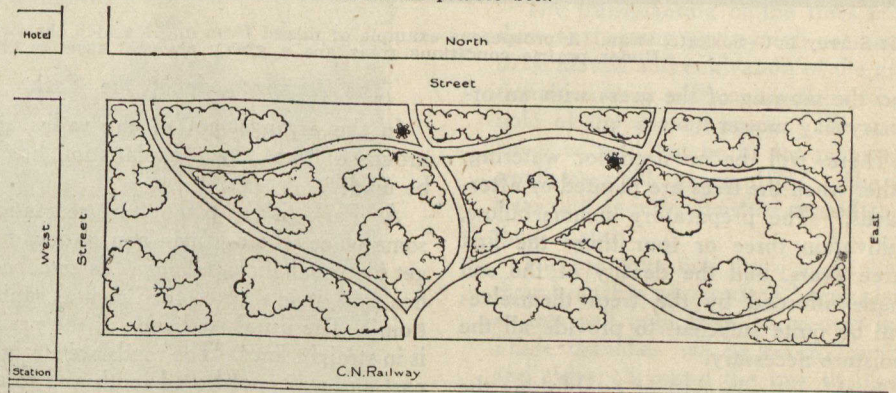
As everyone knows, the outstanding feature of our prairies is the shortage of rainfall. This is recognized in our farm operations and has to be allowed for in all plant growth, be it grain or trees. Moisture must be conserved in the soil for the use of the growing plants by a summer-fallow or some other means, otherwise it escapes to the atmosphere and plants don't grow. In the case of trees, this moisture escape is very much accentuated when grass is allowed to grow among them and exhaust the moisture from the soil. Periodic summerfallow permits the growth of grain crops, and constant cultivation, the growing of trees. But constant cultivation is expensive and very few small towns, or indeed individuals can afford it, and some other means must be found to enable us to conserve sufficient moisture for tree growth. We find this in planting the trees in dense enough masses, close together, and in using such varieties that the branches quickly shade the ground and so preserve the moisture in the soil for the use of the trees and for them alone. This is applying to prairie conditions the principles we find obtaining in the natural forest and this is the principle I am suggesting should be adopted in planting your park.

Solid groups, or islands of trees, dense enough and of size enough, and presenting mass enough to keep the sun and winds from drying out the ground underneath. The trees in the groups must be planted not more than four feet apart each way, as the closer they are the sooner the branches meet and the need for cultivation with its attendant expense will cease. In three years, if good cultivation is carried on, the groups should be beyond all need for further work and the Park of expense, unless for trimming off the edges of the roads and tree islands once a year or so,



BEAUTIFUL PLAYGROUNDS FOR THE CHILDREN AT COALDALE, ALBERTA.

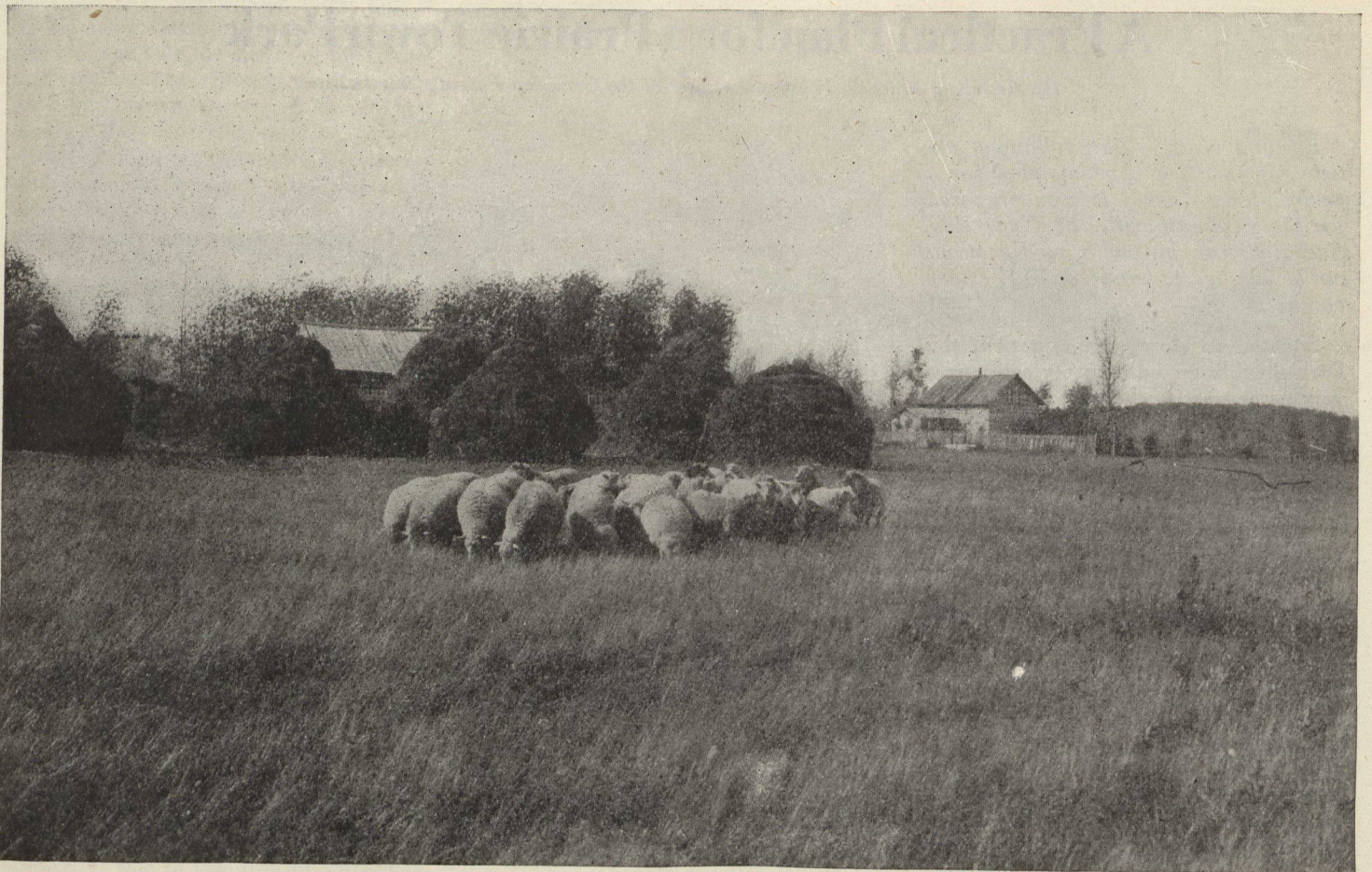
The school on the bare prairies deserves tree-bordered grounds as quickly as man and nature can supply them. At present, too many school boards are content with erecting fine buildings. The prairie province schoolchild is entitled to the same natural beauties that the Ontario or Quebec child enjoys. Nowhere in Canada do trees grow more readily than on prairie soil.



Plan of Park at Kindersley Sask. - 1920



Highly attractive arrangement of tree groups and curved roadways at Dominion Tree Nursery, Indian Head, Sask.



Not Surrey but—Saskatchewan. A prosperous example of mixed farm ing in which the owner's shelter, built of trees, play an important part. Under prairie conditions trees are a great physical asset in breaking the force of winds.

and the mowing of the grass with an ordinary hay mower.

There will be no need for watering, either when the trees are planted or afterwards. The preparatory summerfallow, cultivation three or four times the first three years, and the density of the soil shade afforded by the trees themselves will be quite sufficient to provide all the moisture necessary.

In this way the cost of establishing the Park will be cut down to the very lowest, and its maintainance, its upkeep afterwards should be very little.

The Arrangement of the Park.

In the arrangement of the walks and groups of trees, some explanation has to be made.

A Park is a place for recreation, some place where a man can go and forget his usual surroundings. As somebody has said, it is a place for "mental sanitation." The usual landscape of the prairie is in straight lines. The roads are straight, east and west, north and south and so are the houses, the streets and sidewalks, even the horizon is usually straight, and when a man goes into a Park he has a right to

have a chance to forget all these things. And so, in this plan, the walks and groups of trees are in curves.

In all Parks, certain natural objects and conveniences have to be observed, and in this case these are the gate openings already provided on the north and the opening in the middle on the south leading to the round house. There are already two foot paths converging on that southern gate, indicating that it is a convenient place through which the railroad men may reach their work. This is a convenience that must be provided for and is in the plan. Bearing in mind the prime requisite of a Park, the change from straight lines, the walks so provided are no longer straight, they are in easy curves and to give them a natural appearing reason for their being so, certain tree groups are arranged so that the walks must swing around them. The pleasure of the walk through the park is much enhanced by these natural obstructions, by the added pleasure of anticipating what is to be seen as we advance around the curve. In the other paths, the same idea is carried out, adding very much to the attractiveness of the whole arrangement. The islands or groups of trees are arranged with the same object in view, to add to the attractiveness of the park by presenting irregular outlines on every side so that a stranger



A well planted school yard as the State Forester of Kansas sees it. Kansas has made fine progress in establishing wind breaks on treeless areas.

coming into the centre would be so struck with the suggestive attractiveness of the grass lawns disappearing round the islands and into the bays of them, that he would be at a loss which to explore first. With such an arrangement the scenic value of the park is multiplied manifold, because, no matter in what direction one may take a dozen steps there is an entire change of outline and attraction in the grouping of the trees and grass. As time goes on and the town can afford it this attractiveness could be very greatly added to by planting clumps of flowering shrubs and perennial flowers on the borders of the tree islands. These, obtained small are not costly and \$20 or \$30 worth planted each year would in time add immensely to the value and attractiveness of the park.

Planting Material.

The trees at present in the park are arranged in rows, which is not in accordance with the plan.

The groups as indicated should be adhered to as far as possible and where good trees occur in a group location, they should be left standing, unless they are going to unduly interfere with the working of the ground in preparing for planting.

There are some 250 trees in the park

may say to the contrary. Remember we are not growing trees so much as masses of bush which are to be dense enough in three or four years to take care of themselves and require no further expense. The trees may be in rows to facilitate cultivation.

What Trees to Choose.

The new material required will be some 600 maples (rooted plants), 600 Russian Poplar (cuttings), 200 Elm (rooted plants), 200 Ash (rooted plants), and 150 Jack Pine.

They should be arranged as nearly as possible, as per the planting plan attached.

No provision is made in the planting plan for pines but these should be arranged here and there in the groups near the borders for the sake of effect as good taste may direct.

A few Spruce may be added but as they are subject to an insect attack on the prairie, they should be used sparingly.

It may be possible to get as many Russian Poplar cuttings from your own trees as will do. They can be planted in the piece of garden at the east end of the park next spring, and the trees resulting planted in the groups next year.

The Maple, Ash, Elm and Pines should be 12 to 18 inches high or perhaps 2 feet.

Laying Out the Grounds.

Arranging the walks and groups on the ground according to the plan should not be difficult.

I should suggest the purchase of 1,000 twelve-inch pot labels. They are quite inexpensive and easily seen. With them and a line of binder twine to get the curves smooth, the walks should be laid out first and they should be 6 ft. wide. Each square of the plan represents one yard, so this should not be difficult to carry out. The walks, as far as possible, should conform to the plan though, if this means the removal of a good big tree it need not be slavishly adhered to. They should, however, be in easy curves with no short turns or crooks.

After being pegged out with the labels and the twine, on both sides, a number of good stout 2-inch x 2-inch pegs should be driven in to mark the location of the walk, and the labels used elsewhere. The actual making of the walks should be left till the tree groups are all laid out and the planting of the large trees done.

In marking off the tree groups, the trees already in them may be left, but the outlines of the groups should be made as near as possible according to the plan.

The grass should not be closer to the trees than four to six feet after everything is finished.

The transplanting of the trees may be done next spring as they will not have far to be moved and cultivation of the ground during summer will enable them to get a hold of the ground again. The ground, however, will not be fit for planting the small trees till Spring, 1922. The small trees will require moisture stored to give them a start.

The big trees may have about half of their branches removed on being planted, as this will help them to recover better. These branches will be taken from here and there all round the tree to preserve the balance as pointed out.

A good summer fallow of the grass land all one year will provide a good seed bed for grass the following summer.

(Continued on p. 538.)



A beautiful garden effect at Cupar, Saskatchewan, on the C.P.R. station property. Note the excellent growth of the trees.

and as the whole planting will require some 2,000 this will leave 1,700 to provide for. Bearing economy and also efficiency in mind, seedlings and cuttings should be used. These small plants will not make much of a showing the first year but will in the second, and in the third will average six to eight feet high.

The outlines of the groups may be well indicated by planting the large trees here and there in them. There should be some twelve to fourteen of these for each group and they should be planted not wider than eight feet apart, thus leaving room for one tree between to thicken up the group.

These thickening-up trees should be planted, notwithstanding what anyone



Thousands of prairie farmers with successful shelter belts of trees regard tree planting as their most profitable investment. Trees have made "Home, Sweet Home."



Above Cameron Lake looking East, Waterton Lakes Park, Alberta.

Dominion Forest Reserves are The People's Forests

The National Forests Protect Stream-flow and Provide Timber, Fuel, Hay, Pasturage, and Recreation for the Prairie Residents.

By James Lawler, Dominion Forestry Branch.

“EVERY acre of land put to its best use.” This is the motto of the forest engineer in deciding what areas should be devoted to agriculture and what reserved in forest for the production of timber and other forest products. This is the basis on which the Dominion forest reserves in Western Canada have been set aside. No large area of land in any part of the world is suited throughout its length and breadth for growing one crop. If land unsuited to production of, say, barley is devoted to barley, then the returns will be less than if it were sown to wheat, corn, or some other crop. In the same way, a very large proportion of Canada is better suited to the growing of trees than to any other form of vegetation. There is so much land in Canada that there is no need to ask farmers to attempt to grow ordinary agricultural crops on what is commonly called poor soil. In the past, both in Eastern Canada and the eastern part of the United States, settlers were allowed to go into forested districts, where an experienced farmer or forester could have told them that, while the soil grew magnificent trees it would grow nothing else. The result was that in many cases, after a settler had spent twenty or thirty years in clearing his farm he found the soil so bad that he was forced to abandon his homestead and start out to begin life over again. In all parts of this continent the aim now is to direct settlers into good farming areas and to reserve for the production of timber the broken, rocky and sandy land. This is the character of the lands which in Western Canada have been set aside for timber production and called Dominion forest reserves. It is possible that it might be better to call these areas National forests,

as the word “reserve” is not altogether a good one to use in this connection, unless it is remembered that these forest reserves are reserved for use and not from use. The fact is, the forest reserves are an extremely useful part of the Prairie Provinces and are increasingly being made use of by and for the settlers as indicated below. The subject is a most important one from every standpoint. There are now 39 forest reserves in the three Prairie Provinces and the Railway Belt of British Columbia, covering an area of 34,640 square miles, which is equivalent to a strip of land $41\frac{1}{2}$ miles wide stretching

across the 833 miles between Winnipeg and Calgary.

Storage of Flood Waters.

One of the great benefits which the forest reserves confer upon Western Canada is the storage capacity which they provide for the flood waters at the heads of the great rivers which flow through the prairies. The whole eastern slope of the Rocky mountains may be considered as one vast reservoir to hold back streams and rivulets which flow down the mountain sides in springtime, caused by the melting of the winter's snow. Eminent



A slough on a prairie province forest reserve, the resort of game. This picture shows two important purposes of a forest reserve. First it assists in water conservation at the heads of streams, and, second, it affords protection to game. Both these things are matters of consequence to dwellers on the prairie.



Pass Creek Summit, Waterton Lakes Park.

Courtesy Dominion Parks Branch.

agriculturists, looking at it from a purely agricultural standpoint, state that the maintenance of successful agriculture in the prairie depends upon this eastern slope being kept covered with a growing forest, and it is satisfactory to know that this whole slope, from the United States boundary northward to the northern part of Alberta, is now a great forest reserve. This fact of water storage is true of all other reserves in their location and degree.

Timber Production.

The timber on the forest reserves is viewed as a growing crop held in trust for the people of the West. The first duty is to protect it from fire and insects, and the second is to so regulate the cutting as to dispose of the dead and overmature timber and give the young growth a chance; thus it is purposed to keep up a perpetual supply of timber. This is the aim of the regulations, so far as concerns

the reserves, and as regards the citizens, the object is to supply them in the following order: (1) to give to each settler residing within fifty miles of a reserve a certain quantity of fuel and building logs, (2) to give to settlers the right to cut for themselves, or to have cut for them by licensed portable mills, certain quantities of timber, charged for at a nominal rate of dues, which timber must not be sold, but must be used by the settlers either on their own farms or in the construction of roads, municipal works, bridges, schools, churches, agricultural halls, etc., and (3) where there are considerable stands of fire-killed or overmature, to dispose of defined quantities of these public competition to commercial companies for sale in towns and village, or to mines, railways, and industrial establishments. This policy has been steadily pursued, and while the amounts of timber thus made available to

prairie dwellers would not seem large in a lumbering country, yet, having regard to the fact that these supplies are cut near at hand, with small, or no, charges, for transportation, and remembering also the scarcity of wood on the prairies, it will be seen that the reserves are an important factor in the agricultural and industrial development of the prairies. In France and other European countries, well managed forests have yielded an annual supply of timber for a century, and, to-day, contain more standing timber than when forest management was first applied. This is the ideal aimed at in the management of Dominion forest reserves, the attainment of which is sought by means of regulated cutting, by promoting natural regeneration, and by seeding and planting, when these are necessary.

Grazing 100,000 Head of Stock.

On some of the reserves there are areas, which, because of old fires, are not now under forest, but where the forest is encroaching on them. They are now bearing crops of native grass. There are, also, grass land areas which will probably never bear trees but which, by reason of the fact that they are surrounded by forest, must be administered by the Forestry Branch. On these areas there are now pastured about 100,000 head of stock annually, composed of cattle, horses, and sheep. The grazing is regulated, so as to permit each area to be grazed up to its full capacity without endangering the pasture. That this is meeting with the approval of the settlers is shown by the steady increase in this feature of forest reserve utilization. By this means settlers and ranchers are enabled to carry much larger herds than if they were restricted to their own property throughout the year.

Game and Recreation.

Another important feature of the forest reserves is the use which they serve as fish and game preserves and as places for healthful recreation. The game is under the supervision of the different provinces



Portable saw-mill on a Dominion forest reserve (prairie provinces) cutting lumber for settlers. As these mills saw only logs cut under settlers' permits this shows how the timber on the reserves is being used to supply the needs of settlers in the neighbourhood.



A herd of cattle grazing on a prairie forest reserve. In round numbers one hundred thousand head of stock—cattle, horses, and sheep—graze annually on the reserves. This use means much to the settlers and it is steadily increasing.

and the fish under that of the Dominion fishery authorities but the Forestry Branch co-operates with these, in this work. This means, of course, that hunters and fishermen in large numbers make use of the

reserves every year. This use is not contrary to good forest management and the Forestry Branch welcomes the coming of sportsmen, so long as they respect the regulations and are careful to do no dam-

age to the forests by fires or otherwise. The more that citizens know of the value and use of the forests, the greater care will all classes exercise in protecting them. This view is further carried out by the plan which allows citizens living near reserves to picnic, camp, or build summer cottages in locations along the shores of lakes designated for this purpose. Literally thousands of people every year enter the forest reserves for a few days, or a few hours recreation, and the number of cottages is increasing from year to year.

The People's Forests.

The purpose which the forests serve as a refuge for insectivorous birds that make war upon the insects which destroy such a large part of the farmers' crops is another way in which the reserves serve the public. In a word, the forest reserves are the people's forests, and they are managed so as to get the most out of them for the public not only for the present but also for the future, when the demands for all forest products will be even greater than at the present time.

Is the Time Ripe for a Canadian Sportsman's Association?

A Letter to the Members of the Canadian Forestry Association.

Having just returned from a successful deer hunt over one of Ontario's wild game covers convenient to the Capital, I am more than ever impressed with the absolute necessity of organizing in a National way the sportsmen of Canada, in order that the assistance and co-operation of every true sportsman from coast to coast may be secured for the protection and propagation of our Wild Game Animals, Birds and Fishes in Canada.

The actual value of Canada's wild game is surely sufficient to warrant the expenditure of a reasonable outlay for their protection at the present time. Figured in dollars and cents, the net food value reaches proportions almost unbelievable. Just focus your imagination on this, legally taken by gunners who applied for 1919 licenses, which they estimate represents an actual cash value of \$3,239,277. Now just figure for yourself what Canada's wild game resources would amount to. The total value is stupendous, but without the co-ordinated efforts of our sportsmen there is bound to be a marked depletion according as the country opens up and wild hunters of wild game are allowed to pursue their in-season and out-of-season depredations. Hunters also require education in wild game shooting, so that the minimum number of animals and birds may die of wounds, usually the result of wild shooting. One has only to

go to the woods in deer season and listen to the roar of from four to ten shots from a rapid fire rifle, at some poor buck who really thought the war was all over long ago. This wild shooting usually means nothing except possibly a wounded deer that very frequently gets away. Cool, deliberate shooting invariably brings down your game with from one to two shots.

Canada has many valuable wild game preserves, but why not make all our present large areas of wild lands game sanctuaries, with the good citizens of this country as their keepers. No game wardens could possibly provide our Government with such accurate first-hand information from year to year as a series of Sportsmen's organizations in every centre from the Atlantic to the Pacific. Bring in the Trapshooters, the fishing clubs and all the wild game hunting clubs and group them all into one Dominion organization, to be known as "THE CANADIAN SPORTSMAN'S ASSOCIATION."

The logical plan of procedure, it would seem to me, would be to turn the whole undertaking over to the jurisdiction of The Canadian Forestry Association, who are already well organized for the protection of our valuable forests, which is the home of the wild game. Why not simply extend that protection to cover the wild game also. With their well-established Monthly Magazine, reaching scores of

thousands of Canadians, what better means could be adopted of arousing public interest in the conservation of Canada's wild animals, birds and fishes..

J. MOFFATT ROSS, Ottawa.

Editor's Note:—We will be very glad to receive letters commenting on Mr. Ross's suggestions.

FROM NORWOOD, MANITOBA.

"Your magazine has made wonderful progress during the past year and is now a magazine not only of use but of interest to the ordinary layman."—THOS. H. WILSON.

DRYING WINDS AND PRAIRIE PROSPERITY.

Mr. Archibald Mitchell, of the Canadian Forestry Association's Western Canada branch, has constructed a chart which will appear in the next issue of this magazine, giving striking evidence, gathered from the official records of the Meteorological Service, as to the windiest sections of the Canadian prairies and the arguments for tree planting presented thereby.



Denizens of the Heights: Rocky Mountain Goats in Jasper Park, Alberta.

Some 1921 Forest Fires—and Canada Pays the Piper

At the time of going to press the record of Ontario's forest fire losses this year is not complete enough for publication. A few rough figures only can be given:

There were 1269 forest fires on the timbered area administered by the Provincial Government (constituting the great bulk of commercial timber lands).

The area burned over was roughly, 750,000 acres.

The approximate cost of fire fighting was \$78,000.

It is hoped in the next issue to indicate more accurately the actual loss to the Province of Ontario in timber destroyed.

The Western division of the Southern St. Lawrence Forest Protective Association (patrolling over two million acres) in Quebec, reports as follows:

"We had 128 fires as against 89 last year and the total area burnt over was 22,189 acres against 34,364 last year." The fire fighting cost was \$10,025 and the value of 'materials and buildings destroyed' \$15,395.

The Eastern Division of the above Association patrolling over five million acres of Quebec forest reports as follows:



The fire-season has been extremely hazardous in our section. The excessive dry weather, and heavy winds which prevailed from the very beginning of the spring until late in the month of September made the situation the most terrible

to any one's recollection in this part of the Province.

"Number of Fires—Damages."

Although the number of fires has not been as large as last year, each one proved much more stubborn and expensive to extinguish. According to our ranger's reports 188 forest fires arising from the following sources have been extinguished by our Association forces.

Sources—	Number of Fires.
Settlers	76
Locomotives	55
Unknown	38
Berry-Pickers	8
Lightning	4
Fishermen	3
Smokers	2
Hunters	2

188

A total area of 50,597 acres of forest land owned by settlers and limit-holders have been devastated by fire during 1921. This means that nearly 1 per cent of the total forested area of our section was

visited by fire during past fire season. The types of forest lands destroyed are as follows:

	Acres.
Merchantable Timber.....	12,468
Young Growth.....	13
Old Burn.....	1,959
Recent Burn.....	825
Cut Over Land.....	32,711
Miscellaneous.....	621
	50,598

Over \$48,000 have been expended to extinguish the above 188 forest fires, being an average of \$255.32 for each fire. A total sum of \$38,000 was paid to extinguish only one fire.

Although no fire permit was issued to settlers from May 15th to June 15th, our rangers have given out over 5,000 permits. An area of over 10,000 acres of land were actually cleared for agricultural purposes in our division according to above permits without injuring forest areas to any extent.

We had to prosecute 55 transgressors to fire laws and secured conviction in most of the cases.

The Value of Education.

Considering the character of the season we feel that the results obtained are satisfactory and encouraging for the future. We believe that our Association has done a great deal in forest protection work and the educational campaign carried on since its formation did a great amount of good in every part of the territory placed under our jurisdiction. This campaign ought to be continued and intensified if we wish to get rid of the fire plague within the shortest time.

FISHERMEN CAUSED HALF OF NEW BRUNSWICK'S FIRES.

Fredericton, N.B., Dec. 1, 1921—The past fire season was the most serious ever recorded. The snowfall for the winter of 1921 was below the average, while the usual heavy spring rains did not follow in March and April. During the months of May, June, July and August, the records show the rainfall was 30 per cent to 70 per cent below the average. Periods from six to twenty-five days occurred without any rainfall, not even showers. The very dry condition of the soil, the lack of water in the swamps and brooks, coupled with drying winds and continual hot weather made fire fighting much more difficult, greatly increasing the cost of extinguishing forest fires.

A summary follows:—

	Acres.
Number of fires reported to the Forest Service.....	450
Total area burned over.....	72,700

Private land burned is 40 per cent of total area burned.

Crown land burned is 60 per cent of total area burned.

Of the 72,700 acres burned 80 per cent was previously burned over land.

Area of Crown Land protected 7,500,000

Area of private forest land... 4,500,000

Area burned is therefore only 6/10 of one per cent of forest area.

In comparing the past fire season with that of 1920 the 1921 fire season extended over a period about three times as long. Over 100 more fires occurred, but the acreage burned over is only about seventy per cent of the acreage burned in 1920. The loss to standing timber is considerably less than in 1920, while the loss of property caused mainly by the Westfield Fire was about the same as the loss of property and wood products at St. Quentin in 1920.

Large Staff on Patrol

In addition to the permanent staff of forest rangers, a temporary staff of over 1,000 men, consisting of voluntary and co-operative fire wardens, road supervisors and extra patrolmen, were organized into a fire protection staff and rendered valuable service by their prompt action in fighting fires in their respective districts. In the matter of forest fire detection, the look-outs became very efficient and the value of this means of forest fire detection cannot be too greatly emphasized in this province. As practically all districts are connected by telephone, fires were promptly reported to the local wardens.

Causes of Fires.

Owing to the length of the fire season many causes were recorded which had not caused serious fires in previous seasons.

Fishermen, campers and picnic parties caused 50 per cent of the fires.

Railways caused 18 per cent.

Settlers caused 12 per cent.

Miscellaneous caused 17 per cent.

Lightning caused 2 per cent.

The causes of fires are not in the same proportion as in previous seasons and the damage resulting is not in the same proportion as the causes. Settlers' slash fires gave little trouble, due to the fact that all slash burning was closed off on May 10th until the fire season was over. Railway fires were greatly reduced by the systematic inspection of fire protection appliances on locomotives and the maintenance of railway patrolmen through forested sections. This was possible through the hearty co-operation of the railways in all matters pertaining to fire protection.

Miscellaneous causes, such as hay-makers, working on meadows within the forest, woods crews peeling pulp, cigar butts thrown from automobiles, farmers and others smoking in the woods while hunting stray cattle and poachers, all caused a few fires which did considerable damage.

Lightning caused a few bad fires for the first time on record in this province. This was no doubt due to the very dry condition of the forest and the absence of rains following the electric storms. Look-outs have proved so successful that several more are now under construction and nearing completion. Several telephone lines are also under construction.

A MONOLOGUE

I am a Timber Tree.

I grow where no other crop will grow.

I ask not one inch of farm land in order to give Canada a whopping profit.

There's about a million square miles where once I grew and where I grow no more.

Does anything else grow on the lands from which I have been banished.

The answer is, No.

I am a Big Employer.

I had pay envelopes to 73,000 men in the lumber industry and to tens of thousands of lumberjacks who make their logs in the woods.

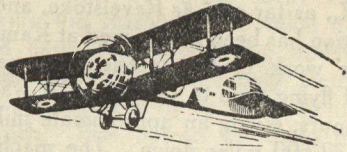
I have on my pay sheet every week of the year 25,000 men in the pulp and paper mills and I provide wages for another 25,000 workmen getting out pulp logs.

I don't know how long I can keep up this proud record. In a good many districts I have been chased out by forest fires and I can't return before the year 2,022 at the earliest. I didn't like to see the mills close in those deforested districts and the workmen turned adrift, but it couldn't be helped. If you can't make bricks without straw, you certainly can't make forest-jobs without forest.

Give me half a chance and I'll personally pay the national debt.

A CHRISTMAS TREE FARM.

The city of Stockholm, Sweden, maintains a large plantation of evergreens which are used entirely for Christmas tree purposes. The plantation is paying a profit and at the same time providing abundantly for Yuletide decoration, without the necessity of transporting trees from great distances.



AVIATION

IN FOREST CONSERVATION



A Department Devoted to the Discussion and Promotion of Civil Aviation in Canada

Edited by George A. Mackie.

Flying Services Rendered to Canada's Forests in 1921

Stations in all Parts of Dominion have Thoroughly Established the Value of Aircraft.

By J. A. Wilson, Secretary, the Air Board, Ottawa.

STATISTICAL SUMMARY OF CIVIL GOVERNMENT FLYING, APRIL 1st TO SEPT. 30th—6 MONTHS.

Station or Base.	Aeros or Seaplanes.	Flying Commenced.	Flying Discontinued.	Flying Period to Date, Total Possible Days.	Nature of Flights.											Total Hours Flown.	Approx. Miles Flown.	Aver. Flight Duration. (Hrs.—Mins.)	Days on which Flying Took Place.
					Forestry Reconnaissance, Photography and Fire Protection.	Misc. Reconnaissance, Photography, etc.	Photographic Survey.	Exploration.	Preventative Reconnaissance.	Communication, Transportation, & Demonstration.	Instructional.	Experimental Flying and Testing.	Miscellaneous or Unspecified.	Total Flights.					
*Vancouver, B.C.-----S.				183	127	34	11		49	35	15	11		282	388-42	29,153	1-23	129	
High River, Alta-----A.		May		148	187	17				1	1	30	5	241	595-20	59,533	2-28	127	
Victoria Beach, Man...S.		July		92	56	4	1							89	163-53	12,292	1-50	59	
N. Ont. Mobile Unit...S.		1st		134	105	13			28			33	3	182	321-28	24,110	1-46	100	
Ottawa, Ont-----A-S.		May		159		40	9		34	9	20		1	113	217-35	18,480	1-55	85	
Roberval, P.Q.-----S.		20th		121	57	10	3		10		10		1	91	161-11	12,089	1-46	63	
@*Halifax, N.S.-----S.		April		183		3			5		5			13	21-25	1,756	1-48	12	
Totals		June																	
All Stations		2nd		1020	532	121	24		49	114	30	130	11	1011	1871-24	157,413	1-51	575	
Stations Average				145.7															

@ Mainly Erection and Repair Base.

* Open Year Round.

82.1

THE Forestry Magazine has asked for a brief description of the flying operations undertaken last summer in conjunction with the forestry officers of the Dominion and Provincial Governments throughout the country.

Particulars of all flying, civil and military, carried out by the Air Board during the six months ending September 30th, are given on the accompanying summary. We are here concerned only with civil operations; but the work of the Canadian Air Force must not be overlooked. The Civil Operations Branch and the C.A.F. are complementary services: their officers and men are interchangeable; the knowledge and experience now so valuable in civil life, were gained during the war, on

service overseas; and the training carried on by the C.A.F. at Camp Borden, in flying, navigation, wireless, photography, the repair and upkeep of aircraft material and so forth, is of inestimable value to the Civil Branches. In return, the Civil Stations provide what elsewhere cannot be obtained—experience in administration, practical work in the field, opportunities for the development of initiative and resource. So it is that flying personnel required for purposes of defence, can be employed in time of peace in ways beneficial to the public; and Canada is fortunate in being able to make such extensive use of Civil Aviation, which stands to the C.A.F. in the same relation as the merchant marine to the Royal Navy.

A Varied Usefulness.

As will be seen from the tabulated statements, each station has served many different Departments and undertaken work of many different kinds; but at each and every station, it may be remarked, most of the work has had to do with forestry. This is as it should be: so important to the future of this country is the conservation of our forests. There are, next to our farms, our chief asset. Their neglect and destruction threaten to have economic consequences disastrous to the whole Dominion, while their conservation will ensure prosperity for all time to come in those vast areas which otherwise would gradually degenerate into waste and barren lands.



"H. S. 2 L" Flying Boat—1 Liberty Engine, 400 H.P., used at following air stations: Vancouver, Victoria Beach, Man., Sioux Lookout, Ont., Ottawa, Roberval, P.Q., and Halifax.

The efficient administration of the forests of Canada is therefore of prime importance. Why have foresters turned so eagerly to aviation? A study of their reports, and the articles published from time to time in this magazine and elsewhere, show that flying assists their administration in two most important respects—reliable information as to conditions throughout their territory, and immediate control of the forces at their disposal—failing which their work is hampered and oftentimes done in the dark.

The immense territories over which their forces are scattered, the paucity of present methods of communication and the difficult nature of the country to be traversed, make intercourse difficult and reconnaissance a long and arduous undertaking. The aeroplane or flying boat laughs at such difficulties; distance is nothing to it; journeys which formerly took weeks or months, are now completed comfortably in a few hours; forces can be moved from point to point over impassable country with ease and certainty and, above all, the exact conditions existing in any part of a reserve can be readily ascertained and immediately reported. This is what flying has done for the forester; nor is it too much to say that, though still in the experimental stage, it will make it possible, before many years are over, to bring under supervision and control the whole of the woodlands of Canada.

The work done from the Air Station at Vancouver for the Government of British Columbia was graphically described by Major Andrews in the last issue of this magazine; and nothing need here be added to his description, except to say that it is the earnest hope of the Air Board that his Department will continue to take

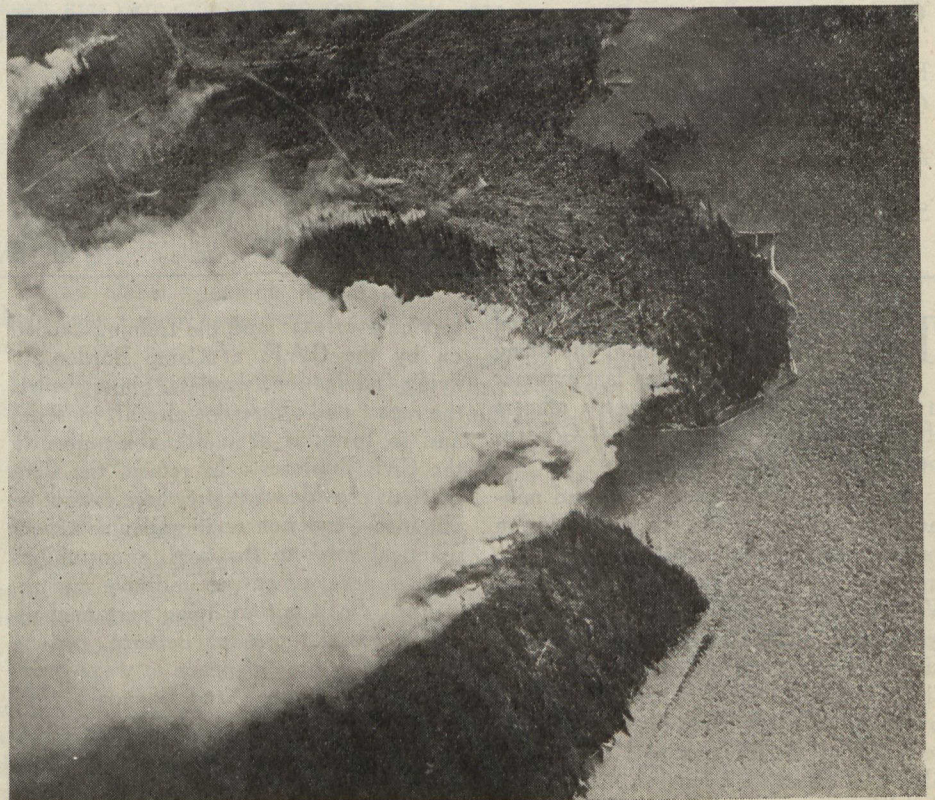
advantage of the facilities provided at Vancouver Station, the cost which was in part defrayed by the Provincial Government.

For the Forestry Branch of the Department of the Interior, patrols have kept under constant observation the lower Fraser Valley, the Thompson Valley, and the Shuswap Lake District; while, further afield, many inspection and reconnaissance flights have been successfully undertaken. The district covered during the year includes Vancouver Island and

the territory adjacent to the main line of the C.P.R., as far east as Revelstoke, and a sub-station has been maintained at Kamloops for work in the interior regions. The total flying time to October 31st was 438.15 hours, giving an approximate mileage of 32,600 miles flown. The machines in use were four HS 2L Flying Boats and one F3 Twin Engine Boat.

Flying in Alberta.

Passing eastwards to High River, Alberta, the work there has been almost entirely for the Forestry Branch of the Interior Department. Daily patrols have visited the Bow River, Clearwater and Crow's Nest Reserves. Wireless is used on the machines for reporting fires; and every fire in the reserve was in its early stages reported from the air. Patrols leave the Station daily—one month to the Clearwater River, the other south to the International Boundary. No patrol during the season has failed to finish its allotted task. The flying efficiency has been remarkable; it has enabled the Station to maintain an almost unbroken record throughout the year. A reconnaissance flight to Jasper Park was undertaken in September, with a view to ascertaining the feasibility of aerial patrols for fire protection in the National Park. Three days flying there enabled the Park Superintendent to cover all his territory and explore many parts of it never before visited. Aeroplanes only are used at this Station, five DH 4 machines being in service. Flying time 712.34 hours; miles flown 70,633, up to October 31st.



The Station on Lake Manitoba, at Victoria Beach, has given many examples during the season of the value of quick and easy transportation in undeveloped country. Hitherto the only methods of travel have been by canoe route or motor launch. Fire patrols by these methods are slow and uncertain, and the range of vision in a flat country is limited to the banks of the rivers and lakes traversed. With a flying boat this is all changed. Daily patrols covered the nearer regions where the danger of fire was most to be feared; and once a week throughout the season a machine made a 700-mile flight round the lakes, enabling the forestry officers to see for themselves an area of approximately 35,000 square miles. The route followed was north along the eastern shore of Lake Winnipeg to Norway House; thence south-westerly across the north end of the Lake to Grand Rapids; through Cedar Lake, south, down Lake Winnipegosis, to the town; thence eastward through the head of Lake Manitoba, across Lake St. Martin to Sturgeon Bay; thence southward along the western shore of Lake Winnipeg to the base. Inspection trips were made further afield from Norway House to Le Pas, and on to Cumberland House and the Carrot River Triangle. It is not too much to say that the advent of the flying boat in this district has revolutionized travel during the summer months. Flying was continued to well on in October. The last circuit of the lake was completed on the 10th of the month, some time after navigation by launch and canoe had become impossible. This trip was made under most adverse conditions through a series of blizzards; and it should suffice to show that the flying boat is not wholly a fair weather machine, but that it can meet and overcome climatic conditions which would defeat the craft now in use in these waters. The flying time to October 31st was 170.51 hours, covering a distance flown of 14,000 miles. Equipment, one HS 2L and two F3 Flying Boats.

Serving Ontario.

The mobile unit working from Sioux Lookout and from subsidiary bases at Minaki, Allen Water, and Banning, has been engaged principally in forest survey and intensive timber cruising; though during the season at critical times, its services were called on for the transportation of reinforcements and supplies to fire-fighters. The work there has been done for the Forestry Department of the Government of Ontario, who have expressed their complete satisfaction with the results obtained. The whole country between the National Trans-continental Railway and the English River, Lac Seul and Lake St. Joseph, has been mapped in detail. Lakes and water courses have been sketched, and the different forest types have been shown under their various classifications. Barrens, muskegs and other natural fea-



TYPE OF MACHINE USED BY THE AIR BOARD.
"D.H. 4" Aeroplane—1 Rolls Royce Eagle VIII Engine, 360 H.P., used at High River Alta.

tures have been located, and now, after three months work, complete information is available regarding a stretch of country, 200 miles long and averaging 50 miles wide, regarding which only the most superficial information was previously available. Hours flown, 333.13; distance covered, 24,700 miles. Season, May 20th to October 12th. Equipment, three HS 2L Flying Boats.

The station at Ottawa, established for research and experimental flying, has been fully employed throughout the season. In addition to research in photography, photographic survey, wireless telephones and other experimental work, photography of a practical kind has been undertaken, including a set of mosaics for the International Joint Commission of the St. Lawrence Waterway. To foresters, the operation of the greatest interest undertaken from this station was ten days flying in the Temiskaming region (for the Entomological Branch of the Department of Agriculture) where, over an area of many thousand square miles, an investigation into the spruce bud worm situation was carried out with satisfactory results. Flying time, 268.20 hours; mileage, 19,670, up to October 31st. Equipment, two DH 4 Aeroplanes, one HS 2L Flying Boat, and one Aero Seaplane.

At Roberval, Lake St. John, P.Q., the work of the Station established with the assistance and co-operation of the Province of Quebec, has been continued. The machines have been continually engaged in work for the forestry officers of that Government in the undeveloped territory north of the Lake, as far as Lake Mistassini. Flying time, 182.59 hours; mileage, 13,740. Equipment, three HS 2L Flying Boats.

The Station at Dartmouth, near Halifax, N.S., has been maintained as a repair and maintenance depot. Little flying is done from this station; but several in-

teresting operations have been carried out on a small scale for various Government Departments. No forestry work has been undertaken. Flying time, 54.25 hours; mileage, 2540; equipment, one F 3 and two HS 2L Flying Boats.

This completes the brief review of the forestry work performed throughout the Dominion during the summer months. Up to October 31st, the total flying time for all civil Stations was 2,160.37 hours, flown in 1,124 separate flights, and covering approximately 180,000 miles. The results obtained are most encouraging and full of promise for the future of Civil Government Aviation in Canada.

Better Machines Needed.

In considering them, it should be borne in mind that, to meet immediate requirements, Stations and material have to a great extent been improvised; and that, without equipment of the latest type, and without the expenditure of money on permanent buildings, the Air Board has succeeded in demonstrating conclusively that civil aviation has its uses in this country. The machines available are all of them war-machines of obsolescent types. Most of the Stations are merely on the banks of rivers or lakes—without hangers, workshop accommodation, or other conveniences. If flying under these conditions can produce such satisfactory results, there is no doubt that when machines especially designed have been obtained, and when permanent structures for their repair and accommodation are available, the results will be beyond all question.

The success of the work undertaken during the past two years is largely due to the spirit of friendly co-operation which has existed between foresters and airmen. Without it, the work cannot succeed; and the enthusiasm with which all engaged have worked together for the good of the public service, is a happy augury for success in the future.

Questions and Answers on Forestry

Q. Is Canada supplying most of the oak used for interior finishing in our homes and public buildings?

A. By no means. We now import the greater part of our oak, ash and elm from the United States. Hickory is also an imported article. These woods grew on our best agricultural lands and were the first to be destroyed.

Q. How much of Canada's lumber cut is used annually by Canadians?

A. Not more than one-sixth. The United States is our greatest market for forests products.

Q. Is Scotland planning to afforest her waste lands?

A. Yes, and is making excellent progress. Scotland has an acreage of 19 million acres. The existing reserve of woodland is just 650,000 acres. During the next ten years 125,000 additional acres will be planted with timber trees. The British Isles are enormous wood consumers and yet hold the smallest percentage of area under timber of any old-world nation except Portugal. A great programme of forestry is now under way.

Q. Is it true that Canada faces a timber famine?

A. Not true in the sense of a bread or clothing famine. There could be a timber famine with a general decay of our industries and decrease in population even though the casual observer could see plenty of trees about the country. Timber can only be profitably cut when in relatively dense stands. A few scattered trees do not make a stand and such trees would make enormously expensive lumber if cut. The present danger is that our forests are growing steadily thinner, the burnt areas are rapidly extending, and valuable species are disappearing. Canada needs constructive forest policies.



A river of logs—the raw material of Canadian pay-envelopes and the bulwork of export trade.

Q. How many forest fires, large and small, do we have in Canada in an average year?

A. Five thousand would be a fair estimate. Ontario alone had 1,269 forest fires this year, burning over 750,000 acres, and the Government spent \$78,000 on fighting them. In the United States this year, more than 14,000 forest fires broke out in the pulpwood regions alone.

Q. What causes our forest fires; is there any means of preventing them?

A. Ninety forest fires in every hundred are started by settlers, railroads, cam-

pers, smokers, and other human elements, very few by lightning. These men require the timber areas to give them occupation or recreation, yet their personal carelessness is killing one of Canada's mightiest assets.

Q. Has not Canada the largest forest resources of any country in the world?

A. No. The United States possesses about three times as much timber as Canada, and Russia is regarded as much better endowed with timber than the United States of America.

A New Portable Fire Pump Proves its Metal

Some months ago an article was published in the Canadian Forestry Journal describing a new forest fire fighting appliance introduced in the Canadian National Parks. The appliance in question was a large rotary fire pump built into the body of an automobile. This outfit was developed for the purpose of promptly and efficiently dealing with forest fires along the highways in Rocky Mountains Park (Banff) and Kootenay Park which adjoins it where there is approximately 200 miles of motor highway. Naturally the highways are so largely used that there is constant danger of forest fires along their borders. The small portable fire unit developed by the Dominion

Parks Branch some years ago has proved to be a very efficient fire fighting instrument but it was felt that insofar as highway work is concerned an outfit of much greater capacity and capable of self transportation was necessary to meet the special conditions concerning highways. The new unit developed being built into an automobile can be transported at high speed and therefore can promptly reach fires a long distance away. In addition it throws a stream of 125 gallons per minute as compared with the 20-gallon stream of the small portable unit.

The first unit of this variety has been tried out in the field during the past season and its success from the start has been so

great that the Parks Service has already ordered one additional unit and has requests from the superintendents of every forest park for similar units.

The new engine has been tried out in half-a-dozen or more fires in Rocky Mountains Park. After the first fire at which it was used the following report was received from the Superintendent of Rocky Mountains Park:—

"Last Sunday a fire started between the railway and the highway, about two miles east of Anthracite. Mr. Sibbald with the Fire Truck immediately proceeded to the fire, and water was turned on five minutes



TESTING OUT THE MOTOR FIRE PUMP, BOW RIVER, ALBERTA.

This Motor Pump was designed for Dominion Parks Branch, Dept. of the Interior.

after the truck arrived on the scene of the fire. In spite of its jumping the road in two places, the fire was easily kept under control and subdued in a very short period, the truck giving most efficient service and Mr. Sibbald and myself were highly delighted with the manner in which it worked."

"Mr. Sibbald states that he considers the Fire Truck to be easily the best means we have of fire fighting and he has nothing but praise for the manner in which it fulfils our requirements. I would ask that whenever favourable opportunity arises a second truck be secured for our use."

The reports regarding its use at later fires have been correspondingly enthusiastic. Every one in the Parks forest fire service is satisfied from the experiments at Banff this year that the new motor truck fire engine constitutes just as valuable a development in forest fire work as did the original portable unit.

SPRUCE RESOURCES IN DANGER.

(Toronto Globe.)

That spruce is being crowded out of the forest areas of Ontario, Quebec and New Brunswick owing to methods of lumbering employed, is the verdict of Dean Howe, of the Faculty of Forestry, University of Toronto. In some places spruce is being cut down six times as fast as it can be replaced by nature.

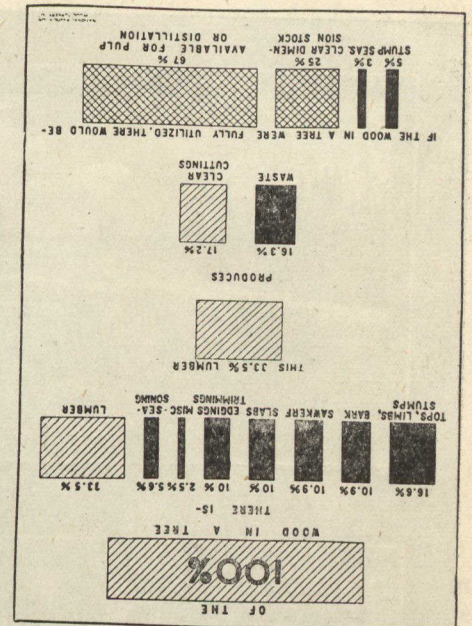
Under the auspices of the Commission

of Conservation, now abolished, Dean Howe surveyed more than 10,000 acres of cut-over pulpwood lands to determine the rate at which spruce and balsam were re-establishing themselves after logging. He established 25 acres of sample plots where conditions affecting the regeneration of the pulpwood species can be closely studied through a series of years.

In co-operation with certain pulpwood companies more than 600 acres of experimental cuttings have been established. The idea of this is to find some modification of the present cutting methods that will increase the amount of young growth of spruce.

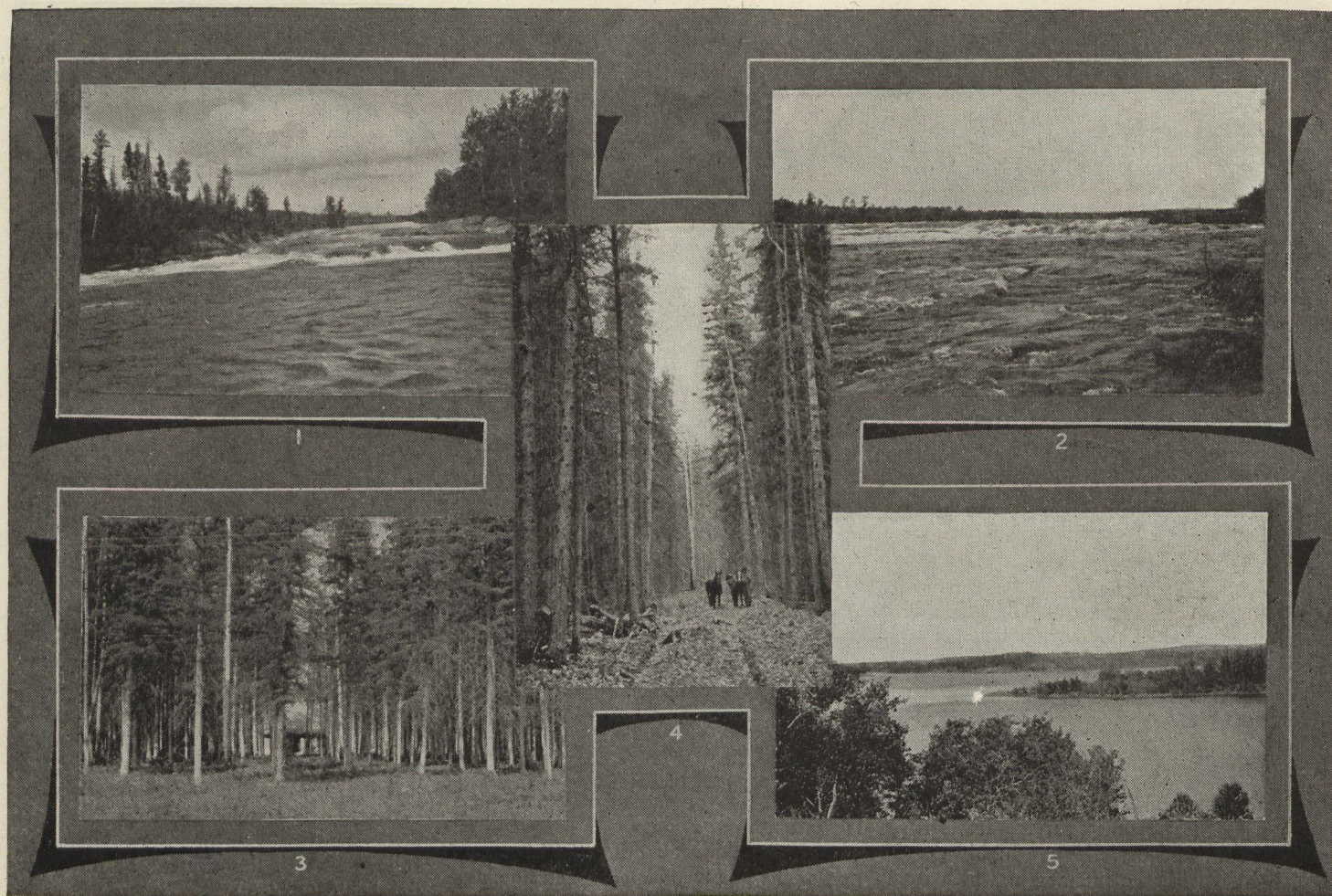


View showing Pumper with suction hose in place. Photo Country Parks Branch, Dept. of the Interior.



LUMBER CONTENT OF A TREE.

The National Association of Wood Turners, Inc., (U.S.) has issued the chart above to show the percentage of lumber and waste in the average tree. This chart assumes that the total content of the tree is 100 p.c. This total is understood to include such items as leaves, undergrowth, to be the practicable total, and does not etc. The studies of the Forest Service are followed as to the content of this practicable 100 per cent. The lumber wastes are taken from experience data of the National Association of Wood Turners, also the totals for salvage from slabs, edgings, and short or crooked logs. The total theoretical salvage possibilities were worked out entirely from basic data analytical derived, and supplemented by field studies.



(1) Scoping Rapids on Sturgeon—Weir River. (2) Rapids on Churchill River. (3) Pascuia Forest Reserve on line of C.N.R. (4) Spruce—Poplar type of Saskatchewan woods. (5) East shore of Amisk (Beaver) Lake.

A Journey to Strange Tropical Forests

By H. N. Whitford, Professor of Tropical Forestry, at Yale.

The beauty of a tropical forest is greatly over-estimated by dwellers in temperate climes. The testimony of nearly all travelers to the tropics is to the effect that no where did they see such an expanse of flowers and charming forests as those they had left, and they all complain of the monotonous greenness of the trees, which have never to prepare for winter. Where the trees are most immense and crowded, as in the Amazon district, and in the East Indies, the forest is lonely and silent, shadowy and sombre in the subdued light. The trunks rise without branches for many feet, tied together with creepers and lianes, in an indescribable confusion of festoons and ropes and cables, reaching from tree to tree, and to the ground; some flat, some twisted either around each other or smothering a tree; some limp and swaying, others drawn taut like the stays of a ship's mast. Many of them are climbing palms and many are armed with cruel fishhook-like thorns. The lianes, and the trees themselves, support myriads of small epiphytic or parasitic plants, ferns, fungi and countless other species.

Overhead the forest is roofed by the tops of the trees and of the creepers; the foliage is sharply defined against the sky, even the finely-cut delicate leaves of the great leguminous trees characteristic of these forests. Nearly all the flowers of the deep forests are confined to this upper stratum, where the sun's rays can reach them, and they are not always easily seen, being often green or white, and inconspicuous amid the verdure.

How Tropical Trees Look.

The most tropical trees, moreover are, even, when brilliant, very fugacious; one reads of people walking through the maple leaves petals of a day, as through the maple leaves in autumn. The forest trees, however, are very prolific, and many of them bear bud, blossom, and unripe and mature fruit at the same time. The forest giants in some instances have protected themselves against the dangers of the great height and top-heaviness. Tapangs and figs have great buttresses like undulating wooden walls, others, as the screw-pines and the man-

groves, perch on aerial roots, sent down from trunk and branches. The last are found along sea-shores, stepping far out into the water, backed by the screw-pines and nipa-palms and presenting an almost impenetrable front, woven into a thicket by interweaving creepers, interminably long and even thorny. It is at such edges of the forest, in clearings and along roadsides, that one sees the imagined beauty of the tropics. There the under-shrubs have a chance to grow and bloom, interspersed with graceful tree ferns and waving palms. The creepers and tree-branches descend and hang waving and blossom-laden over the masses of ferns and ground plants; and there the brilliant blossom of orchid and parasite and epiphyte are visible.

African forests are often like those of temperate zones, with open glades and clumps of trees. One can hardly call the oasis of palms in the deserts, forests. In Abyssinia the country has been likened to the Scotch Highlands.

It is Australia, however, which has the most peculiar tropical forest, for in spite

of the fact that her gum trees are the tallest trees in the world, it is a shadeless land. So burning are the sun's rays, that the leaves of the predominating eucalyptus are so disposed as to present always their edge to the sky; the acacias have

delicate compound leaves, the ti-shrub has reduced its foliage to mere needles, and the wierd she-oak has dispensed with leaves altogether, string-like branchlets taking their place. The first impression of an inland Australian forest is one of

monotony in color and appearance, and of burning heat and desolation heightened by the flopping strips of the bark of the gum-trees, which is cast away as northern trees shed their leaves.

The Forests of Our Far Northwest

By Ernest G. Whitehead, Ottawa.

FROM Fort Smith, which is the natural gate-way of the North, timber can be seen growing on nearly all the islands of any size and on both banks of the river system to McPherson, within the Arctic Circle. As one goes farther north, it is observed they dwindle in size and quantity. The greater part of this timbered area is composed of spruce, tamarac, jack pine, poplar, larch, birch, willow. As far as can be observed these woods extend back two or three miles on each side of the rivers and are of good size and in commercial quantities.

In the Mackenzie District white and black spruce attain a height of 80 to 100 feet, and in the majority of cases, are straight and furnish at least two logs to a tree of good size. Below Fort Smith, during the summer of 1921, in an area of about a square mile two hundred logs were cut, averaging forty feet long and ten to eighteen inches in diameter. Spruce is found in scattered groups, but generally, the groups are large. Annual rings numbering one hundred were quite common. This timber, protected from forest fires should be enough to meet the requirements of the country for many years, although its export as pulpwood should be restricted.

The ground is a light soil with sandy sub-soil including many swampy areas. In the valleys especially the white spruce attains its full development in size and quantity. The lower half of the Slave River is well wooded in this respect. The bark of the spruce is used as roofing for log cabins.

Jack pine is a purely Canadian tree

having its southern limits in New Brunswick and extending across the country through the Northwest to Alaska. This tree attains the height of 100 feet, but not generally. The farther north its extension the smaller it becomes—finally decreasing into scrub. It is not well adapted to lumber, but is highly valuable for telegraph poles, railway ties and fuel. It is very prolific and whole areas of it are seen in the Mackenzie District. The sandy soil is especially adapted for its growth. It is noticed that after a forest fire that this species of pine is the first to spring up. This is accounted for by the fact that the heat of the fire bursts the cones from which the seeds fall. Jack Pine disappears entirely north of Bear River.

The poplar really constitutes the for-

but is better adapted for fuel, or pulp.

Forest Fires Needless.

A great enemy of the Northwest forest is fire. In most cases these fires are caused by pure carelessness on the part of the trapper, Indian or traveller, who do not see to it that their camp fires are extinguished. It is a commendable sign, however, in traversing these rivers and forests to see the various posters and warnings issued by the Dominion Forestry Branch, which call attention to the great danger of forest fires which destroy, not only the forest, but its wild life of every description. Too much propaganda cannot be used to constantly remind the people of the results of thoughtlessness in this respect.

The Tamarac is common to all Mackenzie District and generally leafs out before many of the other trees. Its habitat is in the swamps and muskegs. It is composed of a tough fibrous wood and generally used where such wood is required, especially as keels for boats, etc. It extends as far as the limit of the forest (barren land).

Northern Hardwoods.

The true hardwoods are extremely scarce in the Territories, with the exception of Birch.

According to an Hudson's Bay authority "The tract of country embraced by a line drawn west from the borders of the woods on the Anderson to the Mackenzie, southward, to Paeu de Livre river (Hare Indian river) at Good Hope is very well timbered."



Christmas Day on the Athabasca River below Fort McMurray.

ests of the Territories, in many places. It is found in conjunction with other trees wherever they grow. "The balsam poplar inhabits the entire length of Mackenzie waterways assuming its greatest size on the Athabaska, Slave, Peace and Liard rivers. Below Simpson it gradually thins out and is of inferior size." Its wood has been used in the building of log dwellings

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ROBSON BLACK, *Editor and Manager.*

THE HIGH COST OF FISHING.

Fifty per cent of the forest fires in New Brunswick this year were set by fishermen.

This is too high a price to pay for a few strings of salmon and a pocket full of snap shots.

It means buying your sport at fifty dollars a day and your fish at ten dollars a pound; and letting the taxpayers of New Brunswick pay the bill.

Fishermen deserve their fun, but forests are getting too scarce to exchange them for a frying-pan of bass.

New Brunswick, and no other province, will stand for this sort of vandalism. Probably not a single fire caused by these fishermen was necessary. Probably every one resulted from neglected camp fires, from lighted matches, from tossing away lighted cigarettes. They had their fun and New Brunswick pay for it at so much an ounce.

The economic pillar beneath the Province of New Brunswick is timber. A square mile of forest is valued not because of the cubic contents of the wood growing thereon, but because of the capacity of that square mile to keep on producing successive crops of wood. No province in the Dominion can so ill afford to sacrifice its forest wealth as New Brunswick.

Two methods may be suggested to teach the careless fishermen that fire is a vicious thing to fool with. He can be shown by educational propaganda. But that must be supplemented. An hour in police court, and a hundred dollar fine is a great tonic for sluggish patriotism. It likewise improves the memory and increases personal efficiency much better than a mail order course.

THE CHILDREN BOSS THE FUTURE.

Of the numerous channels of educational propaganda employed by the Canadian Forestry Association, perhaps none is more interesting to readers of this magazine than the Travelling Lecture Sets. At present there are in daily operation five such sets. Two tell the story of Canada's Forests and set forth graphically the need for conservation. One is a French language set, on a similar subject,



EDITORIAL



The Christmas Tree.

I like that custom quaint and old
That makes the tree the emblem of
The reason when our hearthstones hold
So much of laughter and of love.
For trees, that from the dreary earth
To merry realms of blue arise,
Are links that bind our humble mirth
To God's great laughter of the skies.

Trees are our green ambassadors
From earth to heaven. In all lands
The tree God's grace divine implores
With lifted head, uplifted hands.
And he who looks upon a tree
Must upward look beyond, afar—
Shall in the selfsame vision see
Above the tree the sun, the star.

May we at Christmas learn the truth,
What man must be to be complete;
The little sapling in its youth
Strives for the heavens at God's feet.
And so must we, tho rooted here
On God's gray earth, still strive to rise,
And thru life's long and changing year
Still seek for heaven and the skies.

which has been given a hearty reception by scores of schools in Quebec. Another relates the story of Old Ontario's deforested lands, the great tract of sand dunes and other barrens, how these have been afforested in certain sections, what the process is, the remarkable result achieved, and then goes on to give practical information as to the planting of barren lands with suitable trees. Another of the lecture sets is for use in the prairie provinces and is a complete and most interesting exposition of tree planting under prairie conditions. Any western resident who can resist the lure of tree planting after hearing the prairie lecture must have a hard heart indeed.

Each lecture set consists of fifty-five beautiful photographic reproductions in lantern-slide form, attractively tinted in natural tones, together with a complete manuscript containing an introduction and

a series of descriptive paragraphs corresponding to the lantern slides. The outfits are packed in strong break-proof boxes in which the glass slides can safely travel thousands of miles without much risk of damage.

The Association first ascertains by correspondence the schools, churches, etc. with stereopticon equipment, willing to employ the lectures. Each lecture-set is then routed from Ottawa to the nearest applicant. On the inside of the box is a packet of ready-addressed labels with a route, so that after making use of it, each recipient merely attaches a new label, hands the case to the express agent and on the next day the set does duty in another community.

Tens of thousands of Canadian school children and adults have been given delightful and instructive hours by this form of instruction.

The Tree—Our Best Trade Agent

Until very recently the forest has been the great unadvertised member of Canada's family of natural resources. Note the following:

In Canada's trade with the United States in 1920 the forests of this country

supplied products representing a value of \$8 per head of Canadian population. Our agricultural sales to Uncle Sam were only \$5.90 per head. Minerals were \$4.50 per head, and fisheries \$2.10 per head.

FIRST AID FOR FIRST THINGS

The forward march toward forest conservation in Canada is headed by Fire Prevention.

Fire Prevention has no competitor for front rank. All other participants lag miles behind.

Yet in the minds of thousands of Canadian business men, anxious to lend their aid to public forestry policies, the first thought of a sovereign remedy for Canada's timber depletion is the planting of trees.

Tree planting has its rightful place in forest replenishment, but as far as concerns our immediate economic necessities and the advancing of our public forest policies, one fact should dominate, viz:

The annual plague of forest fires represents Wholesale Devastation.

The planting of trees represents Retail Restoration.

This assertion has no critical bearing upon tree planting projects in themselves. It merely establishes the relative importance of the two forces, destruction and constructive, as it should properly appeal to Canadian business men and public administrators.

One ordinary forest fire, a year or two ago, destroyed enough timber

in Manitoba such as could only be replaced by planting 14 million trees at a cost of approximately \$140,000, and a wait of fully 50 years.

Another fire in Quebec this year destroyed 56,000 cords of standing spruce and 23 million board feet of pine. To replace that pulpwood by planting trees would require an immediate cash expenditure for nursery stock and labor alone of \$8,206. with interest compounded for 50 years (the date of cutting) plus cost of fire protection for 50 years, and administration for 50 years.

Is not that a reasonable method of calculating the economic mischief wrought by just one forest fire that was not even reported in the newspapers by a two-line item?

To replace by planting the pine destroyed in the other fire, referred to, would take an immediate investment of 7,500 for nursery stock and labor, with interest compounded for 80 years (maturity) plus cost of fire protection for 80 years and administration for 80 years.

Let tree planting go ahead where conditions warrant—

But let us frankly face the fact that, in the nation-wide aspect of conserving forests, we cannot make headway until the Forest Fire business is "scotched".

Robson Black.

South America, The World's Greatest Reserve

The products of forests are usually divided into two great groups, as follows:

(1) Major forest products, such as wood used for construction purposes and for special uses, as furniture, cabinet work, wood used for small articles of all kinds, etc.; (2) Minor forest products include firewood, tannin extracts, dyes, rubber, gutta percha, rattan, bamboo, wood oils, resins and various forest plants that produce medicinal products, like quinine, cocaine, sarsaparilla, epicac, camphor, etc. As a matter of fact, the value of these minor products of tropical forests consumed in the world's markets greatly exceed the value of the major products. Indeed, so great is the demand for some of the minor forest products that many of

them have almost entirely become cultivated ones. Ten or 15 years ago while most of the rubber of commerce came from a wild forest tree of the Amazon valley, approximately 80 per cent of the rubber used to-day is from cultivated plantations of this tree in the Eastern tropics.

Kapoc is the commercial name for the cotton from the so-called cotton tree, and is a native of tropical America, but the chief source of this valuable product, used principally in stuffing mattresses, is from plantations in Java. Formerly the chief source of the Peruvian bark, quinine, was from the wild forests of Ecuador, Columbia and Peru. To-day most of the quinine comes from cultivated plantations in India and Java. The lack of cheap labor in the American tropics is the chief reason

why these valuable products are cultivated in the Eastern tropics.

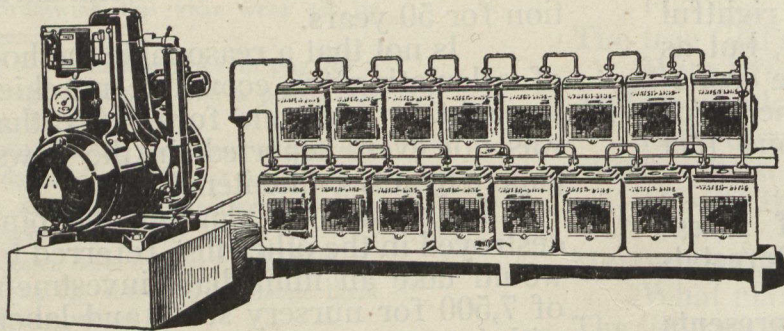
Because the climate conditions of temperate regions are not favorable for the production of many tropical minor forest products, the temperate markets must always depend on the tropics for most of them unless synthetic products can be substituted. While efforts made to produce synthetic rubber have not proved successful, yet the manufacture of synthetic dyes has greatly reduced the demands for the dye woods of the tropics, hence until the war greatly, but temporarily, stimulated the use of the tropical dye woods, the amount of these woods used in the markets it not likely to be greatly increased.

On the other hand tropical woods for

construction purposes have not been in demand in the great lumber markets of the world, the United States and Europe, principally because the forest of these regions have light timbers in large quantities that are better suited for general construction timbers than the so-called hardwoods of the tropics. The coniferous woods, or softwoods, of the temperate regions of North America, Europe and Asia stand in sharp contrast with that of the hardwood forests of the tropics. On the one hand coniferous forests occur in pure, or nearly pure, stands that make their

lumbering on a large scale more profitable, hence the lumber industry has been highly developed; on the other hand the hardwood tropical forests are more complex in character and usually far away from well-developed industrial regions, hence capital has not been attracted to their exploitation on a large scale. Moreover, because of the great development of the lumber industry, especially in the United States, there has been an over-production; the surplus finds its way to all parts of the world and large amounts have been absorbed by the tropical countries. The

contribution that tropical forests have made to the lumber markets has been woods for special uses rather than those for general construction purposes. Many woods of tropical countries are used locally for general construction purposes, that never find their way into outside markets. The study of tropical forests show that while they are more complex in composition than coniferous forests of temperate regions, yet this complexity is not so great as formerly supposed. The complexity is increased by the undergrowth trees that do not reach commercial size. The trees that reach huge size and overtop the undergrowth species are composed of comparatively few species whose woods are little known. Also, a large percentage of these trees produce rather soft hardwoods that are easily worked. Thus, the estimated stand of timber in the Philippines is 200,000,000,000 board feet, more than 100,000,000,000 of which are light hardwoods that can be and are being substituted locally for many purposes to which imported coniferous woods were put. These forests also occur in sufficiently heavy stands to warrant the establishment of fairly large lumbering operations that will reduce the cost of their utilization. A recent estimate of the area and stand of timber in some of the large tropical forest regions is as follows:



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Forest Region.	Forested area in million acres.	Stand of timber in billion board feet.
Southern Brazil	260	650
Amazon Basin	1,024	3,400
Northern South America	200	500
Indo-Malay Region	320	1,600
Total	1,804	6,150



A FIRE ALARM

The prosperity of the Pulp and Paper Industry and of many other industries depends on the maintenance of

OUR FORESTS

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This space devoted to the cause of forest conservation by

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The forested area of the United States is estimated at 550,000,000 acres, carrying a stand of timber of 2,800,000,000,000 board feet. Thus the Amazon region alone is estimated to have some 600,000,000,000 feet more than is found in the United States.

GROWING TIMBER ON THE FARM.

Timber is essentially a poor-land crop. Steep slopes, poor soil, rocky land, unusual corners, gullied and wooded tracts—all these afford opportunities for growing timber profitably. A careful survey of the average farm will reveal a surprising number of spots of this sort which can be utilized to advantage. If they do not already have trees, planting them with the proper varieties will materially increase the value of the land.

Canada's Gravest Menace is The Forest Fire

One Million Square Miles of Precious Forest Destroyed by Canada in 75 Years. The Remedy is the People's Hands.

This article concludes Dr. Howe's contribution in the November issue under the title, "The Forest as an Automatic Wood Factory." (Originally addressed to the Forestry Students at Toronto)

WE have in Canada around 1,900,000 square miles of soil covered with forests. That is over a billion acres. A billion acres of forest, that is a wonderful heritage. Let us see how we have treated this great free gift of nature. When we examine this matter our pride is touched at once for we come right up against a fact that involves our obligations of citizenship and this fact is that we have allowed from two-thirds to three-fourths of our great forest heritage to be destroyed by fire within the past 75 years. Forest fires have destroyed the same logs on more than 1,000,000 square miles of good Canadian territory.

A million square miles in 75 years burned; total forested area hardly twice that amount. It is only a problem of simple arithmetic to realize what that means for our forests, if these ravages continue. That isn't all. It takes nearly 75 years to produce a stick of spruce pulpwood and nearly twice that length of time to produce a 12-inch spruce sawlog, under the average growing conditions in the forest. Suppose the destruction by forest fire goes on at its present rate, then make another simple arithmetical calculation from the above statement, and you will realize what may become of our spruce pulpwood and spruce sawlog supplies, even within the period when you are still active foresters.

Fires that Destroy the Soil.

There is still another, and more serious, aspect of our present forest fire situation, and that is the prevalence of repeated fires on the same area. There are undoubtedly many situations where one burning under proper control after the logging operations would improve the conditions from the standpoint of the next crop. It would accelerate regeneration both in time and in growth; it would remove many disease-spreading agencies and it would do away with the most dangerous fire hazard by the destruction of the slash. But the repeated burning of the same area is the great destroyer of future forests. The first fire may not destroy all the seed trees, but the second fire usually finishes the job besides killing the young growth that may have followed the fire. When both seed trees and the young growth have been killed there are no means by which nature unaided can re-establish the commercial species. After a few fires, the area becomes a man-made desert so far as the valuable pulp-



Destruction by fire of Spruce, Peace River watershed.

wood and timber are concerned. Thousands of acres of thrifty young growth are being transferred every year from the potential forest class to the desert class through the agency of the repeated fire. If we systematically kill the young growth of our commercial species, what can we expect of the future?

Fire protection is the most important problem in forestry policy to-day; in fact, it is one of the most important economic problems facing Canada at the present time. It transcends the tariff question in its importance in relation to the future prosperity of the country, yet I doubt if you will hear it mentioned in any political speech.

I wish I had the power to use words that would sear your souls with the importance of forest protection. We have made great advances in this respect in the past few years, thanks to the untiring efforts of the Canadian Forestry Association and to various forest fire-fighting organizations throughout the country. Members of our own staff deserve much credit for their

part in it, but even at that the present conditions cannot be allowed to continue if we are to keep our forests continuously productive and our lumber industries prosperous, industries that increase our national wealth by a half billion dollars a year.

Educate Against Fire.

I wish I could make you all missionaries to preach forest fire protection from the housetops, or better perhaps from soap boxes on the street corners because we will never accomplish adequate fire protection until public opinion is aroused on the subject to a greater extent than it has ever been done yet. You must help in educating the people to realize that every acre of forest land burned means a lost job for some one; you must help to educate the fool with his match out in the forest; you must help the railway corporations, especially the people's railways, to realize that burned forests mean reduced revenues; you must help educate the settler in the north country to realize that

the lumberman's right to his purchased timber is equal to his own right in his purchased soil.

Forest protection then will be your most important work for the next few years, but you will help solve other problems, all interesting and stimulating. You occupy a favored position in forestry. The men who have gone before you have been preparing the way for you. Their duties have been largely administrative. Now the price of lumber and the condition

of markets are such that things can be done in certain forest localities that could not be done before. We are now on the threshold of intelligent management of our forests, the practice of forestry in the technical meaning of the word assuming, of course, that the present business depression is only temporary). You are to take part in the remoulding and recreating of the forest organism, in guiding and directing nature's growth-energy to an extent impossible to your predecessors in

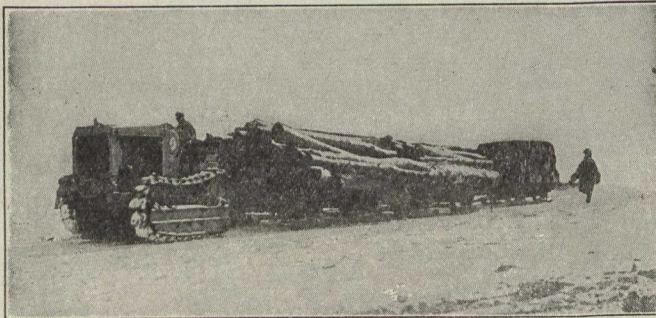
the profession. As soon as you attempt to direct nature's forces in the forest you will at once come up against problems that will put a serious strain upon your gray matter. Suppose you are placed in a white pine forest. You know that white pine has contributed more to the wealth of the Eastern provinces than any other forest tree, but it is gradually passing out of the forest, even on areas that have not been seriously burned. The present logging methods create conditions unfavorable to the re-establishment of white pine forests. It is a very valuable tree because its wood is useful for many purposes and it grows quite rapidly. It would be good business to perpetuate it in the forest without resorting to expensive planting. How is it to be done? We don't know. That is one of the problems some of you must solve.

The White Pine Enigma.

Let us turn to the former pineries that have been burned. Some of them, as you know, have abundant regeneration, fine young stands of white pine of great promise, while an adjacent area burned at the same time is in the possession of poplar or birch with little or no pine. Why? We don't know. We may guess, but we really don't know. Some of you or your successors will solve the problem. A monument may be erected in Queen's Park some day to the man who devises a cutting method that will ensure an adequate natural regeneration of white pine in our forests, this in spite of the fact that he won't need such a monument. The gratitude of generations of lumbermen will be his monument, as well as the white pine forests he will leave behind, for they will go on long after mere bronze or marble in Queen's Park has crumbled to dust.

Suppose you were placed in a pulpwood forest. You know the story of the cut-over pulpwood lands, how the spruce, undoubtedly furnishing the best wood for all round pulp and paper purposes of any tree in our forests, is being gradually crowded out by inferior species. It will be your problem through your knowledge of its biological relations, its seedbed requirements, its light requirements, its soil requirements to reinstate the spruce to its former position in the forest. The pulp and paper industry adds around \$100,000,000 to our national wealth each year, besides distributing about \$30,000,000 in wages. The principal source of supply is spruce, yet the commercial supply is fast disappearing. It is going the same way white pine has gone in our forest. The man who can devise a logging method, fair to the operator and fair to the people, the owners of the land, that will ensure the establishment of successive crops of spruce, may, also, have a monument erected to his memory this time in front of

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the House of Parliament at Ottawa. His descendants may accept the honor with becoming modesty, but his most enduring monument will be the gratitude of countless generations of pulp and paper manufacturers and workers throughout the Dominion.

Replanting in Old Ontario.

It may be that you will be called upon to help recreate forests by artificial methods on areas where the possibility of natural regeneration has been destroyed by abuse or mismanagement. There are close to half a million acres of waste lands in Old Ontario that could be very profitably brought into tree-bearing again by artificial reforestation. These areas are very near local markets and so will be reforested first, but when that is done there would still remain a half million acres of old pineries in Central Ontario, areas that in the past have borne 10,000, perhaps 20,000 feet of pine per acre, that have been burned and reburned until all the young pine growth has been destroyed. The pine forest will have to be recreated by artificial planting if it ever exists again on those areas. In the not distant future, generally speaking, products from planted forests will contribute to the supply of local markets, and some of you will have the satisfaction of creating those forests.

So I might go on outlining your problems in the forests north of the prairies, on the East Slope of the Rocky Mountains and in British Columbia. They are fundamentally the same everywhere. The creation of a forest by guiding and directing tree growth—energy for the purposes of continuous public service, in order that industries which touch the economic life of the nation in almost every phase may be always maintained in a prosperous condition. What would it mean to Canada if all our twelve hundred million acres of absolute forest soil were fully stocked with commercial trees, adequately protected



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from fire and managed for continuous production? What would the resources from such forests mean in terms of reduced taxation, in furnishing the financial aid in the building of highways, the endowment of schools and universities, the founding of hospitals and libraries? You see, you are to be important factors in the effort to lead your own country into the path of its higher destiny. Unless you have this vision and faith in the ultimate success of that vision, you will have failed in the duty of your profession and in the obligations of citizenship.

SHELTER-BELTS AND SOIL FERTILITY.

A blanket of four or five inches of snow over a prairie farm during winter and until early spring means a large amount of moisture for the soil. The problem is to keep it there and not have it blown away by high winds. This is where shelter-belts on the farm prove their value by preventing drifting and thus retaining moisture and fertility.

PRAIRIE TOWN PARKS.

(Concluded from p. 517.)

The grass should be Kentucky Blue and it should be sown thickly with about a fifth of white clover. The grass should be sown first and the clover after. After being raked it should be rolled if possible. Weeds will appear the first summer but if they are kept cut off with a mower the first year they will trouble very little afterwards.

After the tree groups are from eight to ten feet high, which will be in three years, there will be no further need for cultivation but it will then be an additional assurance for good growth to cover the ground underneath the trees with straw, 8 to 10 inches deep to keep in the moisture. In doing this, the branches must not be trimmed off. They must be allowed to remain until they drop off naturally. No artificial pruning is allowable in these forest islands.

Somebody will some day come along and suggest pruning or thinning, and whoever is in charge then may be inclined to do it, but if he does, he will undo all the work already done and your park will revert to a condition similar to what it is in now. You are growing, not trees, but a number of miniature forests and they must be managed accordingly.

Making the Walks.

After the trees are all planted, the walks should be pegged out ready to be made. The easiest way to do this is after the walks are pegged out, to plow along the line of the pegs, using a rolling coulter if possible to cut a clear furrow and throwing the earth into the walk. Three or four inches deep will be quite enough.

The grass edge bounding the walk must be sharp and a clean clear furrow is essential, and while the clean sharp edge can be restored with the spade, the less of that the better as it takes time. It should of course be dressed with the spade. After the furrows are made the centre of the walk should be rounded up by using a—V—along the furrow throwing the loose soil into the middle.

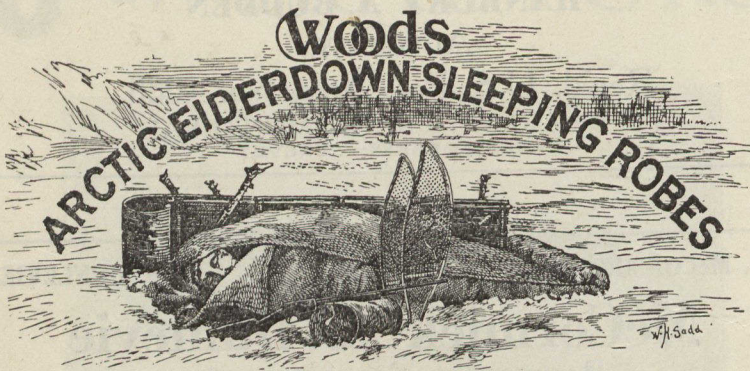
The —V— is made of 6-inch plank as per the sketch enclosed. It makes a fine job and saves a lot of work.

Care of the park after the trees require no further cultivation and the grass is grown.

The finish of the park is everything and no matter how well your trees and grass are growing it will never have the pleasing appearance it should have unless the edges of the tree groups and the walks are kept trimmed. These should be gone over once a year with a half-inch turf iron. It will not take more than a day or two to do, and perhaps even need not be done

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every year. But it should be borne in mind.

Then the grass should be cut. Nothing looks better than a well trimmed lawn, and nothing looks worse than a ragged one. Lawn mower cutting is an expensive item however, and a run over twice a year with an ordinary farm mower will do very well. Perhaps, before some big day, a lawn mower can be run along the edges of the walks and the islands, say a yard or so wide. This will make a wonderful difference in the appearance of the park.

A TREE FOR A TREE.

Some people think there should be a law to compel loggers to plant a tree for every tree cut down. As it is necessary to start five or six seedling trees to secure one full grown forest tree, straight, tall, and without limbs, such a law would not work. Besides, the application of silviculture methods, the forest engineer endeavours in many cases to coax Nature to reforest cut-over tracts herself, and to plant only as a last resort. In view of these facts what the laws of some European countries do demand in regard to certain non-agricultural lands is: "Start an acre of young forest for every acre cut down."

AIRPLANES AND FOREST FIRES.

Recently the initial trip was made from Kamloops, British Columbia, of a new airplane which had been flown up from Vancouver to be used in patrol work over the forests in that district administered by the Dominion Forestry Branch. The machine in use earlier in the season was returned to Vancouver for overhauling. The new plane was piloted by Major McLaurin of Vancouver, and with him on this trip were Mr. D. Roy Cameron, district forest inspector, and Mr. J. A. Wilson, of Ottawa, secretary of the Air Board of Canada. The trip of 250 miles was made in three hours and twenty minutes. There had been a smoke haze for some days, which had made detection of fires from the lookout stations difficult and the use of the airplane with its greater range of visibility overcame this. No fires which Forestry Branch officers did not know of were discovered but from the airplane the fires were classified according to their size and importance that suppression measures could be directed accordingly. In fact so detailed was the observation carried out by the district forest inspector that these in the plane could see the fire-fighters clearly and the kind of work they were doing.

Prince of Wales Afforests His Waste Lands

(From a Sketch in the London Times of the Duchy of Cornwall)

The tramp down hill to Fenworthy brought us through part of the newly-planted ground, while rows of young larches and spruces on the opposite side

of the Assycombe Brook could be traced in the distance. It was noticed that failures were not uncommon, but an estimate of 10 per cent. indicates that the trees suffered only lightly from the ravages of the drouth, for in many planta-

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MILLS AT IROQUOIS FALLS, ONT.

tions a 50 per cent. loss has occurred. The planted or plantable areas are of peculiar shape. because observance of the 1,500-foot elevation limit excludes many parts that otherwise would fall conveniently and symmetrically within the scope of the scheme. In fact, there are constant reminders that even the more accessible and residential parts of this expansive plateau are near the height above which afforestation ceases to be a commercial proposition.

"The Duchy scheme embraces about 5,000 acres, of which 400 acres have al-

ready been planted. The nurseries were formed as part of the enterprise for reasons of economy, and they have proved a saving and a success. The young larches and spruces raised here cost less than the transport of plants introduced from other suitable sources, and they have been equally adapted and healthy. The nurseries, which are under the immediate direction of Captain Hale, are still limited in extent, but they are advanced sufficiently to be of marked economic advantages in the development of the local enterprise, while there are de-

finite prospects of wider benefits in later years. They are managed on modern principles, and the equipment for expediency and economy in every detail is complete."

THE FORESTER AND HIS WORK AS A CREATOR.

From an Address to Forestry Students of the University of Toronto, by Dr. C.

D. Howe.)

One of the greatest enduring satisfactions of life is to be a creator, but it is still greater satisfaction to guide the development of that thing which you have created. That is the greatest satisfaction in a farmer's life, and that will be the greatest satisfaction in your lives. The beautiful and wonderful thing in your profession is that you will take this plastic, mobile life-unit, which we call a forest, and fashion it to meet your ideal; the largest quantity of the best quality of wood for the purposes desired. I can't pass by this point without elaborating it a little; it always seems so wonderful to me. Why is it that forest trees can form such a highly organized community, so sensitive to the slightest changes in climate and soil conditions, and consequently so easily moulded by the hand of man? It lies in their mode of growth. Each annual ring of growth, together with the new leaves that appear every year, are new colonies of cells, a new generation of life. When the conditions of life in a forest have changed for any tree, when, for example, it became a suppressed tree instead of a dominant one, the new cells of the growth of that year became adapted to their new conditions. The same is true when a suppressed tree, through some accident to its neighbors comes into the full enjoyment of light. The last annual growth is at once capable of taking advantage of the new situation created in the forest. So long, then, as the tree can form annual rings, it possesses the plasticity and the adaptability to meet the condition imposed upon it by its neighbors. That little growing layer under the bark is a wonderful thing! If we seek still farther for the cause of the plasticity and adaptability of forest growth, we would find it in the living matter contained in these annual new colonies of cells, the substance we call protoplasm. It is because the protoplasm has the power of receiving impressions from without and of reacting to those impressions that we have plasticity in plant life. Were it not for this irritability of the protoplasm, we would have no growth, no differentiation of structure, no evolution. Were it not for this, we might still be little blebs of jelly sucking up mud on the bottom of the primordial seas.

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It is then through the agency of this living matter that you are to be the creators of a forest and that you are to guide the development of the thing you have created until it meets your ideals: every acre of forest soil occupied by wood valuable for some purpose.

THE BONES OF THE AIRPLANE.

It has been truly said that tough flax fibres are the feathers of the airplane, and with equal truth it may be affirmed that the bars of Sitka spruce wood are its bones. Think what airplane designers and flying men demand of the bones of their planes! They must be light, strong, stiff, and tough, and above all every stick must be dependable. After trying many things, airplane designers settled on Sitka spruce (*Picea sitchensis*) as the ideal material. This wood is found chiefly in British Columbia, from which a large supply was drawn during the war. The war was, in fact the cause of the introduction of Sitka spruce to the public, and since that time this wood has had an extended use in other lines of industry for which experience has shown it to be suited. The Forest Products Laboratories of Canada have prepared and the Forestry Branch of the Department of the Interior has issued a bulletin embodying the record of thousands of tests of this wood. It is entitled Bulletin No. 71 "Sitka Spruce; Its Mechanical and Physical Properties." Copies have been sent to those most directly interested and any person who desires a copy, but has not yet received one, will be supplied free, upon application to the Director of Forestry, Ottawa.

THE OAK.

A little of thy steadfastness,
Rounded with leafy gracefulness,
Old oak, give me,—
That the world's blast may round me blow,
And I yield gently to and fro,
While my stout-hearted trunk below,
And firm-set roots unshaken be.
—Lowell.



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

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

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

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LIMITED

Empire Association Gets Under Way

London, Nov. 16—At the inaugural meeting of the Empire Forestry Association at the Guildhall to-day, a resolution was passed urging the early extension of a constructive forestry policy to all parts of the British Empire, for the purpose of scientific conservation and prudent exploitation for the benefit of the Empire. Sir George Perley seconded the resolution.

Lord Lovat stated that the aim of the association was to federate the voluntary associations and individuals interested in

the Empire's timber supply, thus pooling the resources of their knowledge.

Hon. F. L. Wood, M.P., Under Secretary of State for the Colonies, had recently refused to permit a reduction of the forestry staffs in two West African colonies. Mr. Wood, emphasizing the vast timber resources of the British Empire, said that 250,000,000 acres of timber were available for sawing in Canada. He said he was a heartfelt believer in doing everything possible to develop the use of Empire-grown timber within the Empire.



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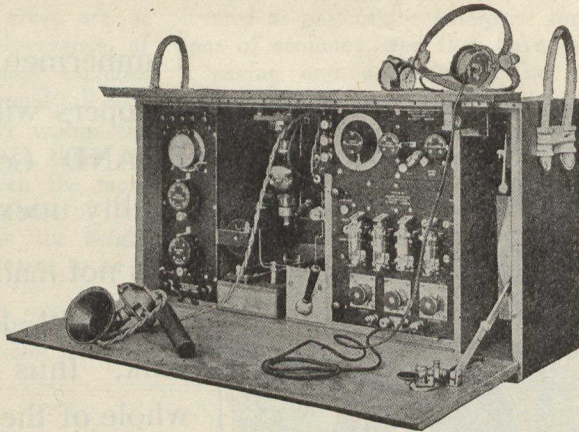
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TRANS-CANADA ROUTE.

In response to a request received from Sir Ross Smith, the Civil Aviation Branch of the Air Board has recently mapped out a combined aeroplane and seaplane route across Canada from Kodiak Island, Alaska, to St. Johns, Newfoundland, which it is proposed should constitute the Canadian section of the "Round-the-World" Flight. It is understood that Sir Ross Smith will attempt this flight in the near future, using a machine of amphibian design which will be able to alight and take-off equally well from either land or water.

The project is one which it is felt the Canadian public will naturally take a keen interest, in view of the fact that the success of such an undertaking would undoubtedly do much to pave the way for the establishment of a greatly accelerated trans-ocean communication service by air between Canada and other units of the British Empire. The proposed all-Canadian route, with approximate distances, is:—

Route.	Approx. Distance. Miles.
Kodiak Island, Alaska, to Wrangell, Alaska	700
Wrangell to Prince George, B.C.	450
Prince George to Edmonton, Alberta	450
Edmonton to Moose Jaw, Sask.	450
Moose Jaw to Winnipeg, Man.	400
Winnipeg to Fort William, Ont.	385
Fort William to Sault Ste. Marie, Ont.	280
Sault Ste. Marie to Montreal, P.Q.	525
Montreal to Fredericton, N.B.	455
Fredericton to Sydney, Cape Breton	360
Sydney to St. John, Nfld.	420

4,875

THE HOUSE THAT JACK BUILT.

This is the house that Jack built.

This is the lumber, all shaven and sawn,
That was used in the house that Jack built.

This is the tree, so tall and so strong,
That furnished the lumber, all shaven and sawn,
That was used in the house that Jack built.

This is the forest, so broad and so green,
The home of the tree so tall and so strong,
That furnished the lumber, all shaven and sawn,
That was used in the house that Jack built.

This is the match, so neat and so small,
That was thrown by a gink without thinking at all,
Down into a brush heap, lighted and all,
And burnt up the forest, so broad and so green,
The home of a million trees, stately and strong,
That would furnish the lumber, if shaven and sawn,
For thousands of houses like Jack built.

FRED H. BYSHE,
Dominion Forest Service.

Ru-ber-oid Roofing



Is the peer of any composition roofing made.

It has a proud record of service, covering more than a quarter of a century.

On many a roof the limit of its endurance has not yet been found after more than twenty years of duty.

Inborn quality, from the surface to the centre, is what gives RUBER-OID its character.

We would suggest you consider this, for your own benefit, when planning to purchase a roof covering for that new or old building.

The Rubberoid Company, Limited.

—FORMERLY—

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52 VICTORIA SQUARE, MONTREAL, QUE.

PLIBRICO Jointless Fire Brick.

For lining Steam Boiler Furnaces, Dutch-ovens and wood Burners, without a high-priced bricklayer.
Will last longer.

AMBEST

Metallic Packing

Will pack anything.

All sizes out of one can.

BEVERIDGE SUPPLY CO., LTD.
MONTREAL.

Triumphal Tour of Forestry Cars in Quebec

On the recent tour of the Forest Exhibits Car and the Forestry Lecture Car of the Canadian Forestry Association south of the St. Lawrence on the C.N.R. and Quebec Central railways, the number of persons attending the forest protection lectures and visiting the Exhibits Car reached a total of 38,731.

This makes over 140,000 persons reached this season through the novel and impressive method of the Canadian Forestry Association's railway cars.

Following are interesting items from the daily diary of the cars:—

November 14th, River Manie—Held evening lecture on forest protection in church which was packed to the doors. Most of these people were men from the surrounding camps.

November 15th, Monk—During afternoon 300 school children and 200 adults visited Exhibit Car. It took two lectures to cover evening audience which totalled 400 people.

November 18th, Megantic—At 3 p.m. had 172 pupils and 4 teachers from English school. At 4.30 p.m. the priests arrived with 300 boys from French school. At 8 p.m. lecture given in town hall was packed to the doors by approximately 750 men and women.

November 19th, Courcelles—In addition to big crowds at the Exhibits Car three evening lectures had to be given to accommodate the audiences. On Sunday at Courcelles nearly 2,000 people visited the Exhibit Car.

Nov. 28th, Thetford Mines—During af-

ternoon had 1,000 students from schools, with 500 adults. During evening, 900 persons passed through Exhibit Car.

At 8 p.m. at College Hall gave lectures to 1,500 people, and from 10.30 to 11.30 p.m. another 400 passed through the Exhibit Car.

Nov. 29th, Disraeli—In afternoon, 300 boys, 400 girls and all teachers in district attended, with 800 others. Gave motion picture lecture to 200 older boys at 3 p.m.

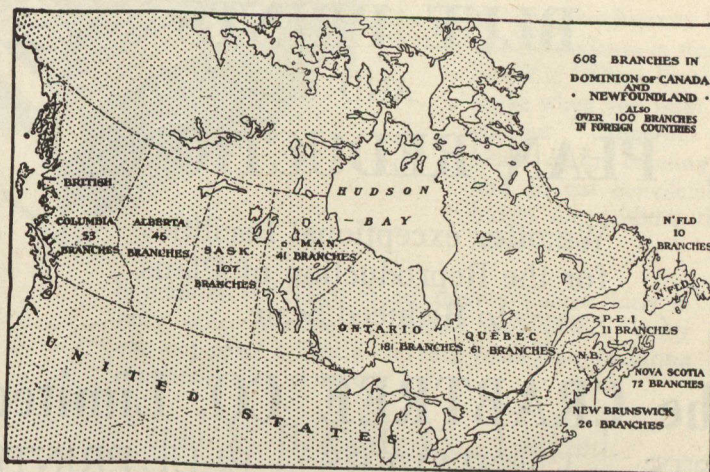
During evening had over 1,000 persons at lectures.

Dec. 1, East Angus—Splendid arrangements made by kindness of Mr. J. A. Bothwell and Mr. S. Osborne, of Brompton Pulp and Paper Company, so that big attendance was assured.

At 3 p.m. had 300 English school children.

At 4.30 p.m. had 350 boys from French school.

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...and...

LUMBER OF ALL KINDS

At 8 p.m. local hall was packed to overflowing with adults. Usual lectures and motion pictures given.

More than 2,100 people during the afternoon and evening visited the Exhibit Car.

Following day had audiences of convent children totalling 550 and had another 1,000 persons at the Exhibit car.

The foregoing daily experience are typical of the public response to the Canadian Forestry Association's educational efforts in forest protection.

Viscount Bryce on Canada's Progress

(From "Canada—An Actual Democracy.")

"Has Canada been behind other countries in dealing with social reforms, with labour controversies, with tariffs, with the systematic development of national resources?"

It must be admitted that the right method of conserving and developing natural resources either has not yet been found or that it has not been properly put in practice, though no subject is more essential to the welfare of a new country.

Here the problem is threefold. The aims generally sought have been (a) to provide the maximum of facilities for turning forests and minerals to the best account, and for the transportation of products; (b) to prevent the absorption by speculators, for their own gain, of these and other sources of natural wealth; (c) to secure for the nation, so far as can be done without checking individual enterprise, the so-called "unearned increment" or additional value which land, minerals, and water power acquire from the general growth of population and prosperity."

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NEW FOREST PROTECTIVE BODY.

The Anthracite Forest Protective Association, operating in nine counties of the anthracite coal regions of Pennsylvania and having its office in Lansford, Pa., has appointed J. M. Sloan to the position of Secretary-Treasurer. Mr. Sloan is a graduate of the Faculty of Forestry, University of Toronto, class of 1915.

The Association, which is a non-profit organization of timberland owners, is co-operating with the Pennsylvania Department of Forestry in the prevention of forest fires. Its influence extends over a large district which contains approximately 500,000 acres of forest land. Active membership represents over 97,000 acres of forest. The membership includes small farmers, coal corporations, water companies and lumbermen. A large number of interested persons have been elected to associate membership. Several steel look-out towers have been constructed and connected with telephones by the Association. A large part of the work done is of an educational nature and the people of the region are beginning to realize that each individual has a distinct responsibility in preventing forest fires.

FOREST SCHOOL FOR NEW HOME.

The faculty of Forestry at the University of Toronto is next in line on the building and extension scheme of that institution. The converted residence at present in use on Queen's Park is now insufficient to meet the combined needs of the faculty and of the department of botany which share in the space there. Further, the greenhouse is now quite inadequate to meet the demands made upon it, while the experimental garden was recently cut in half, to make space for the new Psychiatric hospital. Several sites have been considered for the Forestry department, but no action has been taken so far.

Forest Fires Take Away Jobs!

SIZE UP EVERY TIMBER FIRE AS YOUR PERSONAL ENEMY
AND GET AFTER HIM.

— Put Out Your Camp Fire —
Never Toss Away a Lighted Cigarette

There are hundreds of jobs in a live forest.
Dead forests drive out population.

This advertisement inserted in the interests of forest protection by

The Spanish River Pulp & Paper Mills, Ltd.
SAULT STE. MARIE, CANADA

THE SURE FOUNDATION FOR A BETTER CANADA.

How the Canadian Forestry Association has Served the National Interest.

1. Secured important forest protection laws and brought about more effective administration by Governments.
2. Aroused public interest in all parts of Canada in the vital problem of forest conservation.
3. By means of eighteen branches of education propaganda it has brought essential information to hundreds of thousands of school-children, Boy Scouts, teachers, clergymen, settlers, railroad men and other classes.
4. It has fulfilled its responsibility as the standard bearer of organized public opinion by making Forestry a **national cause**, and making the aims of Forestry intelligible to every citizen.
5. It has put first things first and has insisted upon Forest Fire Prevention as the immediate and paramount problem in forest conservation.
6. It has spread the knowledge of forestry progress between Governments and private companies, and thereby has served as a clearing house of ideas.
7. It has established and maintained a Tree Planting Campaign in the prairie provinces with expert demonstrators and lecturers visiting hundreds of treeless communities with the Association's Tree Planting Car, fifty thousand prairie residents attending the lectures in 1921.
8. It has stimulated reforestation of barren areas in Eastern Canada and has given constant aid in the solving of shade tree problems by individuals and municipalities.
9. It has carried a graphic educational campaign in forest conservation to 100,000 people in Ontario, Quebec, New Brunswick and Nova Scotia during 1921 through the Forest Exhibits Car, with two lecturers in charge.
10. It has presented to scores of thousands of Canadian voters the common-sense reasons for forest protection, not only as a safe-guard to the existence of the wood-using industries, but as an insurance policy on farms, fisheries, mines and manufacturers, transportation systems, etc.

The Association has worked from coast to coast to lay a foundation of intelligent ideas and ideals upon which our Provincial and Dominion Governments may safely construct more comprehensive and effective policies of forest conservation.

WHAT WE HAVE YET TO DO.

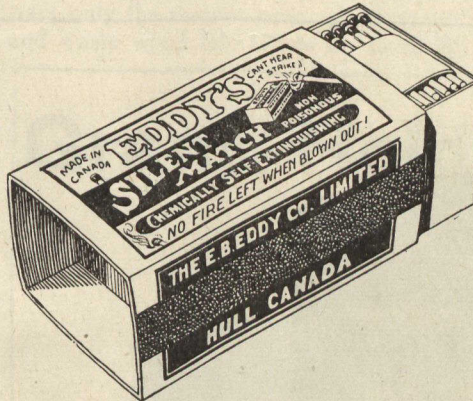
Make Forest Protection the personal policy of every Canadian patriot.

Make tree planting the unpostponable business of every prairie settler, in order to improve crop conditions, minimize wind damage, beautify home surround-

ings and thereby stabilize prairie population.

Make reforestation of waste lands in Middle and Eastern Canada a first concern on the part of municipal and provincial governments and individuals.

Win the personal interest of all farm



No Fire Inviting After Glow

Safe as matches can be made are the matches in this box. EDDY'S "Silent Fives"—they strike when you want them to without dangerous flying heads or fire-creating sparks, and go out completely when blown out without the least After Glow.

In addition to "Silent Fives" there are some thirty to forty other varieties of EDDY MATCHES—every one as perfect a light as seventy years manufacturing experience can produce.

The E. B. Eddy Co., Limited.
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MADE IN CANADA—FOR CANADIANS

ONTARIO PAPER COMPANY

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MANUFACTURERS OF

Newsprint Paper

children in improving their home supply of timber through planting up the barren portions of their farms with trees, and in woodlot improvement.

Create a national Forward Movement in forest protection of sufficient intensity to bring about public policies adequate to meet the economic needs of the nation.

IT takes 65 muscles of the face to make a frown, but only 13 to make a smile - - - Why waste your energy? **KEEP SMILING.**

A Farmer-Forester With a Great Record

While at times it may seem that few farmers are interested in forestry or the growing of a wood supply on their holdings, as a matter of fact thousands of Canadian farms display such an interest applied with great intelligence and foresight.

A unique demonstration may be found on the property of Mr. E. Terrill, at Floral Hill Farm, Northumberland County, Ontario, Mr. Terrill has the true forestry instinct and although his place is ten miles

from a railroad and not apt to be visited by many, he has achieved results that deserve the widest advertising. The following description is by the agricultural editor of the "Toronto Globe."

More than history has been made on the Terrill farm. One of the best practical demonstrations in farm forestry that I have seen anywhere in the Province has been given there. Forty-four years ago 300 Norway spruce seedlings, packed in a box about the size of those which raisins were formerly sold in, were received from an American nursery. These were transplanted with a space of three inches between each seedling. The next year they were again transplanted and a third transplanting took place in the following season, the young trees in this last planting being properly spaced for permanent growth.

"Each time the seedlings were moved roots that showed a tendency to wander were cut off." Mr. Terrill said, "and I have always contended that, if you want to get a really satisfactory growth, this course should be followed. At no time were the seedlings exposed for more than a few seconds to the air in transplanting, and at no time was there any evidence of a check in growth by moving."

75 Ft. High, 10 Ft. Around.

That growth was not checked is made clear by the appearance of the trees today. Located on the elevation for the purpose of providing a wind-break for the Terrill orchards and buildings, they are the most prominent feature in the landscape for miles around. The height is about 75 feet, and one of the trees, measured three feet above the ground, while I was there, showed a circumference of 10 feet.

It might be observed in passing that the extra care taken in transplanting and root-pruning was justified in this case because comparatively few trees were being dealt with and appearances called for perfect growth with each tree. Such care is, of course, impossible where a wood-lot is being planted and thousands of seedlings are being used. Neither is it necessary in that case, because a large number of trees have to be weeded out after a few years have passed, and in thinning only well-grown trees need be left.



JAMES SMART PLANT

Brockville, Canada.



The JOST COMPANY, LTD.
Bought — PULPWOOD — Sold

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Quotations on Request

Nature Helped Here.

There is, however, something still to add regarding this Terrill wind-break. In course of time the seedlings of nearly half a century ago began to produce seeds themselves. Many of these seeds fell on soil parent stems and prepared for them by a covering of needles, and the seed, planted by nature's own hand, soon produced a fresh crop of seedlings. These were used in replanting a second row parallel with the parent trees, and now there is a double windbreak, the younger trees having already attained a height of 20 feet.

A 25-acre Woodlot.

Nor does even this exhaust the story of Mr. Terrill's practical demonstration in farm forestry. On his farm of 180 acres 25 acres is in permanent bush.

"Do you let the cattle run in that bush?" I asked.

I knew what the answer would be before the question was put, but was nevertheless gratified by the emphatic manner in which the "No!" was pronounced. A man who loves trees as Mr. Terrill does, and who realizes the value of a permanent woodlot as he realises it, can be depended on to see that cattle do not destroy the young seedlings.

With all this, Mr. Terrill is an all-round good farmer. Trophies modestly shown in the living room prove this. A silver cup was won for the best managed dairy farm in one of four districts into which the Province was divided for purposes of competition. A shield was won which recorded the further fact that the Terrill farm stood third in a province-wide competition of the same kind.

TREES NEEDED FOR THIS DISTRICT.

(A letter to the Can. Forestry Assoc.)

Melita, Manitoba, Dec. 1, 1921.

"I have spent five months in the South West corner of Manitoba. Few no doubt are aware that this district has had six crop failures in succession due to hot wind, drought, etc. Several farmers have expressed their wish to procure quick growing trees for planting around their buildings, farms, and some are going to plant rows up through the fields. If you could give me information where these trees might be procured I would be greatly obliged.

"I have convinced myself that an extensive tree planting scheme for this area is the only solution to prevent these hot winds from destroying the crops. If you are interested or could give any suggestions or assistance re tree planting in this district I would be glad to hear from you. I feel confident that some tree planting scheme should be adopted. I know this that the farmers are ready to assist."

Henry Ford Applies His Genius to Forestry

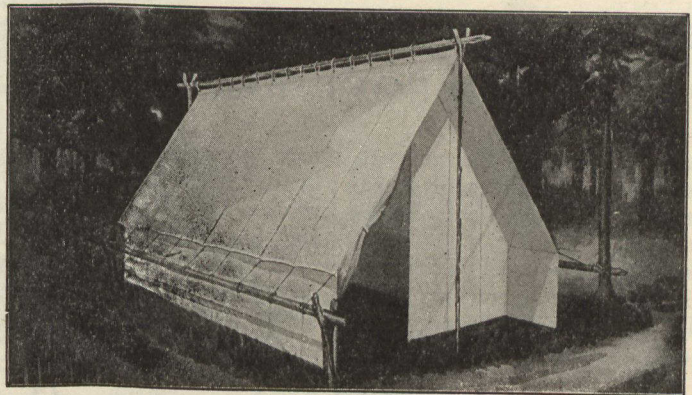
Henry Ford, manufacturer of the popular-priced motor car bearing his name, has turned his attention among other things to a practical method of forest harvesting. According to a report from Iron Mountain, Michigan, Mr. Ford is experimenting on a section of timber land two miles from Saginaw, Mich., where he is putting into execution a plan that may well revolutionize the industries depending upon forests for the basic raw materials. The method is to remove from the tract only the mature trees. Underbrush and waste wood left are to be carefully

cleared to protect the remaining trees against fire. The young trees will be permitted to attain maturity. In the meantime they will seed the ground about them, and when they, in turn, are cut, the next crop will have started. Thus harvests may be made in each of a period of years indefinitely. Sufficient space is left between the grown trees to permit their rapid development. E. G. Kingsford, a member of a Ford company, says concerning the venture and its possibilities: "Mr. Ford is convinced that the public interests demand a fundamental change in treat-

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ment of our forest wealth. The inevitable result of the present system will be the denuding of our forest lands. As the denuding continues woods products costs will advance steadily. Finally, denudation will be carried to the point where the need of remedial measures will be realized everywhere. At that time reforestation will be the only hope for the future, and this is a slow and expensive process. The harvesting of trees is a practical alternative. In our present test we cut trees with a minimum diameter of ten to twelve inches."

Permanent Slump Unavoidable Unless Timber is Protected

The recent slump in the lumber market and the consequent failure of the lumber companies to clear their overstocked yards of manufactured lumber has resulted in a marked reduction in the amount of lumber manufactured at the mills during the past summer season. Many firms are holding

over their 1921 cut of logs in their booms until next season. The outlook for the winter is therefore not at all promising and very few of the lumbermen are cutting any quantity of logs this winter. In the back settlements everywhere there will be a quiet winter and many men and horses will be idle.

In the greater part of the province this condition is keenly felt by the people, whether farmers along the valleys of the rivers or the millmen living in the towns and villages, as these are dependent for nearly all of their wages upon the continuous production of wood products from the vast forests of the province.

In normal seasons local labor is about sufficient to supply the demand. During seasons such as was experienced in 1919-20 local labor is insufficient to meet the demands and labor is brought in from the neighboring provinces. This year only a small percentage of local labor will find jobs in the woods.

The above statements illustrate all too clearly the dependence of the people upon the lumber industry for a livelihood. Large lumber mills idle, summer ports conspicuous by the absence of lumber schooners, uninhabited hunter camps, and portage roads filled with windfalls and snow through the long winter months, means empty payrolls and hungry families.

But such a condition is only temporary. The lumber industry will soon be back to normal, as business in general improves, and the perpetuation of the industry will depend entirely on the raw material available. With present methods of utilization, which are every year becoming more intensive, it is felt that New Brunswick has forest resources to provide a continuous supply for the woods products industries unless the forests are destroyed through Forest Fires which in the past have reduced the forest capital materially. Failure to realize the value of the forests was one of the main causes of such destructive forest fires. With the realization of the value of our forests and the efforts of the government to prevent forest fires, it is hoped that the wonderful forests so essential to the welfare of the province will be allowed to produce the necessary raw material for the perpetuation of the lumber industry and payroll of the people.

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New Mills, New Jobs, if Forests Stay Green

New Brunswick has been termed the "Province of Comfortable Homes," and the lumber industry has formed a very large and important part in the development of the province since the early days of settlement. In the latter part of the eighteenth and first part of the nineteenth century the cutting of white pine for ship timbers was the main industry, a considerable trade having been worked up with Great Britain. With the passing of the ship building industry the cutting of spruce deals for the English market was the main industry. During the past few decades a considerable trade has been maintained with the United States, and other manufactured products, such as shingles, lath, etc., have been shipped, in addition to all sizes of dimension lumber. Lately balsam fir and hemlock have become commercially valuable.

The development of the pulp and paper industry has during the past few years increased the value and importance of New Brunswick timber. There are now five pulp mills manufacturing pulp within the province. The advent of this great industry has materially increased the forest payroll and has made possible the development of more water power than would otherwise have been possible. At present the investigation into the value and accessibility of the vast stands of hardwood by several large concerns would indicate that new industries for the manufacture of hardwoods may be expected in the near future. In fact, everything points towards a considerable enlargement in the forest industries rather than a curtailment. Such is possible in view of the vast forest resources containing many different commercial species within the province which may be kept in a productive state by regulated methods of cutting, but which may be rendered unproductive by Forest Fires. The increased development in the industry during the past few years has been possible because of the curtailment of forest fires so destructive in the early days. Further precaution is necessary so that destruction of the forest by fire may be totally eliminated, thus increasing the amount of raw material available.

EARLY WARFARE AND OUR FORESTS.

"Thus began the memorable war (the French and Italian war) which, kindling among the forests of America, scattered its fires over the kingdoms of Europe and the sultry empire of the Great Mogul; the war made glorious by the heroic death of Wolfe, the victories of Frederic, and the exploits of Clive; the war which controlled the destinies of America, and was the first in the chain of events which led

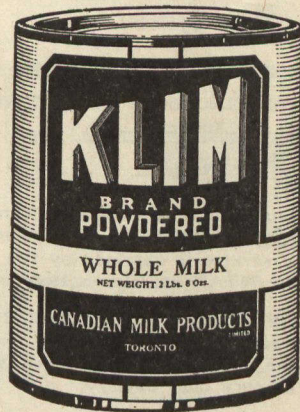
on to her Revolution with all its vast and undeveloped consequences. On the old battleground of Europe, the contest bore the same familiar features of violence and terror which had marked the strife of former generations,—fields ploughed by the cannon ball, and walls shattered by the exploding mine, sacked towns and blazing suburbs, the lamentations of women, and the license of a maddened soldiery. But

in America, war assumed a new and striking aspect. A wilderness was its sublime arena. Army met army under the shadows of primeval woods, then cannon resounded over wastes unknown to civilized man. And before the hostile powers could join in battle, endless forests must be traversed and morasses passed, and every where the axe of the pioneer must hew a path for the bayonet of the soldier." —Francis Parkman, "Conspiracy of Pontiac."

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Annual Meeting, Toronto, January 10th

The Annual Meeting of the Canadian Forestry Association will be held at the King Edward Hotel, Toronto, on Tuesday, January 10th.

All members of the Association will be heartily welcomed to the morning and afternoon sessions. Between 10 and 12.30 a. m. the business session will be held. At 2 p. m. will commence a series of addresses by distinguished and interesting speakers. Full details will be mailed to members well in advance.

CANADA'S DEBT TO DR. FERNOW.

Owing to illness which unfortunately shows little sign of improving, Dr. Bernard E. Fernow, Dean Emeritus of the Faculty of Forestry of the University of Toronto, who has been living in retirement at his Toronto residence for some time passed, has moved to the home of one of his sons at Cynwyg, near Philadelphia, and will later visit another son at Ithaca, N.Y.

Members of the forestry profession and conservationists, generally, throughout America, had anticipated that Fernow's years of retirement from active teaching would be utilized in writing and occasional lecturing, for which his vast fund of knowledge had amply prepared him. It appears probable, however, that Dr. Fernow's energies henceforth will be confined to safeguarding his health and his further contributions to the literature of forestry in America may have to be sacrificed. Dr. Fernow's monumental service to the Dominion of Canada will probably not be fully appreciated for many years to come, but it is safe to predict that in any future account of the truly great scientific pathfinders whose foresight and labours gave this country its first impetus towards conservation of the natural resources, the name of Dr. Fernow will be written in golden letters.

ONTARIO CEDAR VS. B.C. CEDAR.

Vancouver, B.C.

Editor Forestry Magazine:—

We have just received a letter from an Ontario dealer claiming that Ontario cedar is superior for shingle manufacture to B.C. cedar. What can you tell us?

Our correspondent's letter was referred to the Forests Products Laboratories at Montreal, and to a well-known lumber expert of Toronto. The replies follow:

Montreal Quebec Toronto Winnipeg Calgary Vancouver
Halifax Ottawa London Regina Edmonton

FORESTS PRODUCTS LABORATORIES OF CANADA.

McGill University, Montreal.

24th November, 1921.

The cedar of Western Ontario is the white cedar (*Thuja occidentalis*, Linn), while that of British Columbia is the red cedar (*Thuja plicata*, Don.). The two woods appear to be about equal in durability, while in most strength function the

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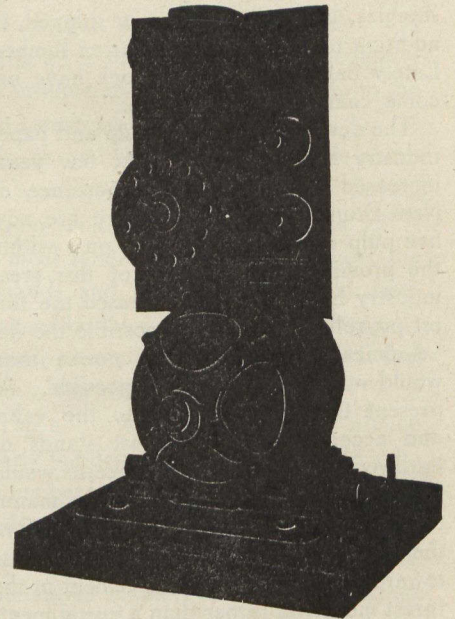
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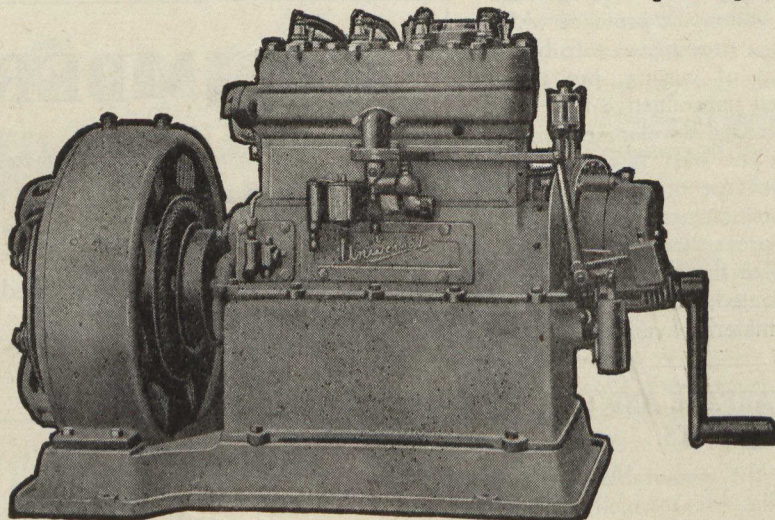
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red cedar, rather contrary to popular impressions, is superior.

As wood shrinks or expands, following changes in moisture content, much less radially than tangentially, the edge grained shingle is superior to the flat grained product which is subject to cupping and warping. The bulk of the shingles now made are edge grained. As the red cedar reaches much larger sizes than the white cedar it is possible that the edge grained shingles made from it are more likely to be strictly edge grained than those made from the smaller tree. However, I do not know how important this might be as I have not examined the shingles from that point of view.

There does not appear to be very much difference in merit between the two woods for shingle manufacture, but I should be inclined to give the preference to the red cedar.

It may be of interest to mention that a investigation on the fire retardant treatment of shingles is now in progress here. As you are no doubt aware the question of fire retardant treatment is quite a live one just now on account of the restrictions on the use of shingles due to fire hazard.

Yours very truly,
W. KYNOCH,
Superintendent.

Toronto, Nov. 24th, 1921.

I am in doubt if I understand the question aright, which you have raised in yours of 22nd. It would be hard in any event to make any comparison between Ontario and British Columbia Cedar.

If we are thinking of standing timber we must recognize that not alone are the size and quality of the two species entirely different, but the density of their stand is likewise dissimilar. The only way that I know to compare them is in respect to the

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the amount taken

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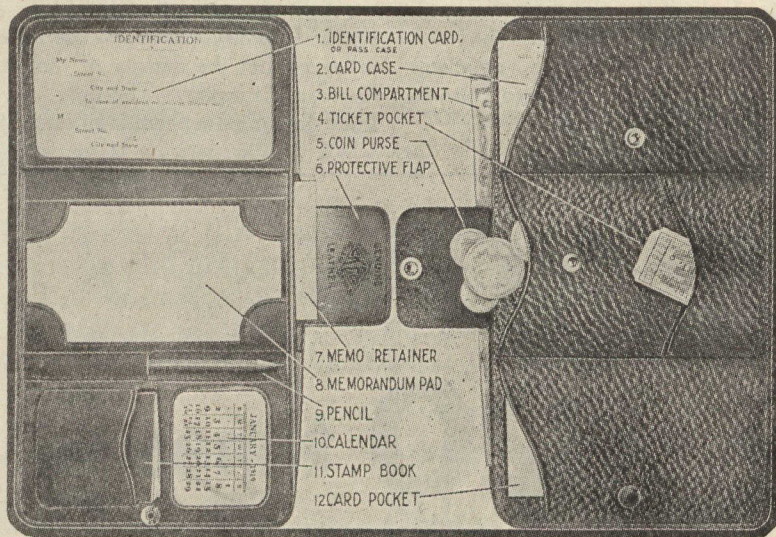
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way the timber is valued in the two sections for convertibility in use. B.C. cedar is in good demand, and good Cedar logs rank even higher than good Fir logs. On the other hand, Ontario Cedar is one of our poorest species. Its chief use, as you know, is telephone poles and ties. The amount of shingles it produces is small, and the percentage of good quality so produced is likewise in the minority. For some purposes I would, personally prefer the Eastern or White Cedar shingles, but their total product is relatively so small that they can hardly be considered a feature in the shingle business.

—A.C.M.

WESTERN TREE GROWER IS ALSO GRAIN CHAMPION.

John W. Lucas, of Cayley, Alberta, a loyal member of the Canadian Forestry Association and a very successful planter of trees on his prairie farm, pictures of which have been reproduced in this magazine, is the champion grower of oats in the world. Mr. Lucas won the sweepstakes prize at the International Grain and Hay Show at Chicago against world competition, making his second triumph of the kind. It is worthy of note that Mr. Lucas is a strong believer in the value of shelter belts of trees as a farm asset.

MEMORIAL KAURI ON GRAVE.

A kauri tree has been planted on the grave of Sir David Ernest Hutchins in the Karori Cemetery, Wellington, New Zealand. The tree was planted by Sir James G. Wilson, president of the Forestry League, and among those also present were Sir Francis Bell, Acting-Prime Minister and Commissioner of State Forests, Messrs. W. H. Field, M.P., L. McIntosh Ellis, Director of Forestry, E. Phillips Turner, secretary of the Forestry Department, and members of the executives of the Forestry League and of the New Zealand Sawmillers' Federation.

Sir James Wilson said that by his very valuable reports on forest conservation and regeneration and tree planting, Sir David Hutchins had done a great deal to arouse interest in forestry throughout the country. "This tree, he observed, planting the kauri on the grave, represents the feelings of all those present toward the man who was the originator, not only of the Forestry League, but of the Forestry Department. This tree is to remind future generations of the services he rendered to New Zealand."



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.

INDUSTRIAL INVESTIGATION AND RESEARCH

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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Correspondence is invited from manufacturers, mining men, trade representatives, chemical engineers and others desiring information on Canadian conditions, resources, and industrial opportunities.

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