

PUBLIC LIBRARY  
MONTON, ALBERTA

20c. A COPY

ILLUSTRATED

# CANADIAN FORESTRY MAGAZINE



AN EARLY MORNING START—A HUNTING PARTY ON KIPPEWA LAKE, QUEBEC.

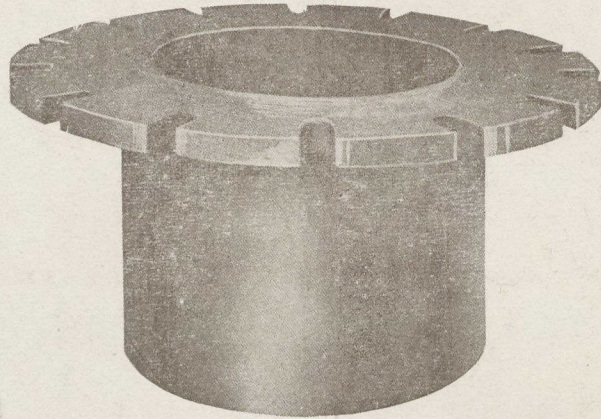


**“No Scrap Metals are used in our Castings.  
None but VIRGIN METALS employed.”**

**Acid Resisting  
Bronze  
CASTINGS**

**of all kinds**

**PULP & PAPER MILL  
CASTINGS MADE TO  
ANY PATTERN  
DESIRED**



**WEIGHT 1800 LBS.**

**Our New Brass Foundry is one of the largest and Best equipped in the Dominion, and is now open for business. We have one of the most modern Machine Shops in Canada and in a position to Machine Castings of every Description.**

**Immediate Deliveries**

**Prices Right**

**Work Guaranteed**

# **Acid Resisting Bronze Castings**

**A SPECIALTY**

**Ottawa Car Manufacturing Company Ltd.**

**Ottawa - - Canada**

**W. H. McINTYRE,  
Gen. Manager.**

**T. AHEARN,  
President.**

**WARREN Y. SOPER  
Vice-President.**





THE  
ILLUSTRATED  
**CANADIAN  
FORESTRY  
MAGAZINE**



CIRCULATION, 13,000.

ROBSON BLACK, Editor.

VOL. XVII.

OTTAWA, CANADA, SEPTEMBER, 1921.

No. 7

## Planting The Sand Banks of Prince Edward County

By Arthur Herbert Richardson, Ontario Forestry Branch.

During the spring of this year the Forestry Branch of the Ontario Government has been carrying on planting operations in connection with the reclaiming of certain needy areas in Prince Edward County. The area where this work has been done is a section of land situated about 9 miles south-west of the town of Picton. It consists of a narrow triangular piece of sand formation, which separates West Lake from Lake Ontario and extends for 5 miles south and east from the town of Wellington.

In the memory of residents in the neighborhood, all the sand at one time was quite near the shore of Lake Ontario. It consisted of high hills and deep swampy tree growth, and the latter with thick cedar swamps and areas suitable for pasture. But as time went on, the oft repeated foolishness of clean cutting wooded areas on poor soil was indulged in, the trees were removed, with the result that the fine particles of sand of which the hills were composed, commenced to drift and despoil forest land and good agricultural soil as it was driven by the prevailing north-west winds.



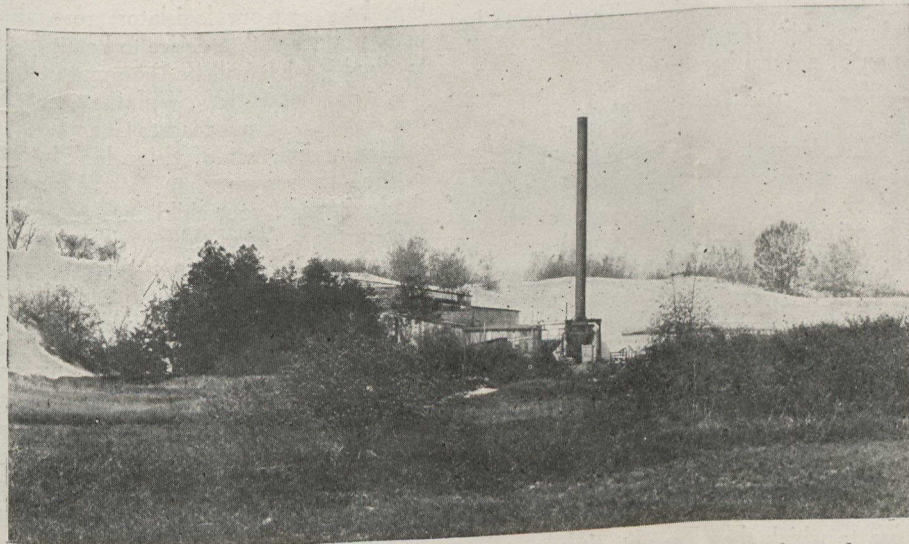
Blocking the sand dunes of Prince Edward County, Ontario, by planting trees. The planting gang is putting in willows and poplars. The willows in the background have attained their remarkable height in ten years.

### Oat Crops Ruined.

The large areas occupied by grassy hollows have long since been buried, the good agricultural soil, which is capable

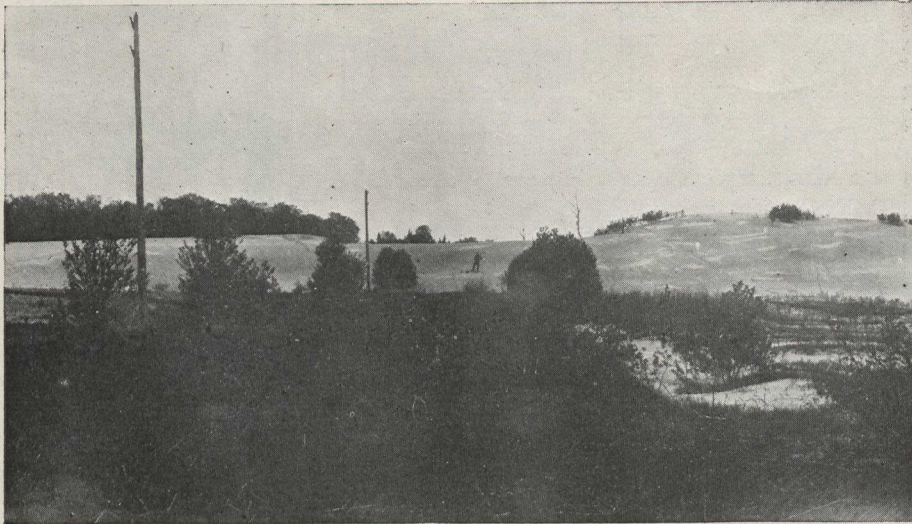
of producing 75 bushels of oats to the acre, has been inundated to the depth of thirty feet. Excellent cedar stands have been covered and killed, and then uncovered again as the sand moved slowly but steadily on its way. The original roads of the community now lie under 30 feet of waste, and one section of the thoroughfare has been laid out four times. To-day when you follow the road, as it makes a wide detour from its rightful position, the sand monster is seen, suggestive of some insidious serpent as it sneaks its way through the forest and over fields in crop.

For a number of years sporadic attempts to hold the sand were made, clumps of Willow were set out and brush fences were tried but with little result. In 1911, however, the farmers who were being "buried alive" secured a small grant from the Township Council for the purpose of planting trees. Several rows of "Holland" Willow were ploughed in along a part of the roadway with excellent results. To-day these trees have effectively accomplished their purpose. They aver-



Foot by foot the sand dunes of Prince Edward County, Ontario, creep forward, completely submerging all land and buildings in their path. The picture shows an abandoned mill which is already partly buried.





The silent advance of a great power of destruction. Sand dunes creeping across farm land. Four roadways lie beneath the billows.

age 20 feet in height and are a testimony to what may be expected from planting such species. Much credit is due those who initiated this work and for selecting the species which they did, because none other could have done the work better.

The movement of the sand is so rapid that only a few fast growing and tenacious trees can be used for such purposes, among the best being certain species of Willow and Poplar. And, moreover, such planting material is easily obtained, is quickly planted, takes root readily in the sand, and, best of all, stands an unlimited amount of punishment.

#### Planting in Belts.

The trees planted this year by the Forestry Branch consisted of 150,000 mixed

cuttings of "Holland" Willow (the same species used by the local farmers ten years ago), and our native Carolina Poplar. The trees were planted in belts 100 feet apart, each belt containing from 6 to 8 rows of trees of both species and ran at right angles to the direction of greatest drift.

The areas under process of reclaiming is in the neighborhood of 150 acres and includes the part where the damage is most imminent. In succeeding years the work will extend along the entire 5 miles towards the town of Wellington, and the time is not far distant when, where there was once desolate waste carrying destruction in its path, there will be, through wise and practical forestry methods, an area of valuable and beautiful woodland.

## Beautifying the Barren Areas

By Henry J. Moore, Forester, Ontario, Dept. of Highways.

It is not too much to expect that men and women who are fortunate enough to travel along the Ontario Provincial Highways, even of the present generation, will be privileged to enjoy some of the results of the policy of beautification of the Department of Public Highways. Already many miles of roadway have taken on a more cheerful appearance and this augurs well for the future. But it is not to the trees which line the roads alone that the writer would draw attention in this article, but largely to the work of landscaping and reforesting the barren and unsightly areas which from time to time have or will come into possession of the Department.

Engineers, in order to create more easy grades have had to make considerable cuts, and fills, and were oftentimes steep and barren slopes of these to be left un-beautified many cheerless and uninviting scenes would obtrude themselves upon the

vision. These areas, however, are not to be left in this condition. They are to be planted with trees and restored to a condition of natural beauty.

#### Reforestation Plots.

The Department of Public Highways owns many quarries and gravel pits, and when these are finally abandoned the areas are to be reforested with trees of commercial value, fortunately many of these areas are adjacent to or contiguous with the Provincial Highways, and from these the tourist will be able to see the results of the work without even alighting from his motor. It is hoped that apart from the commercial value of the timber, a valuable educational factor will be established, for as men see the improved condition of these areas and the profitable use to which they are put, they are very likely to follow the example.

At one point namely the steep banks of the rouge cut about fifteen miles east of Toronto on the Toronto-Montreal Highway, reforestation has already been started. Three thousand seedling pines were planted during the past spring, and it is expected that the planting of this particular area will be completed next year. The seedlings were kindly supplied by Mr. E. J. Zavitz, the Chief Forester of Ontario, from whose Department, as time goes on, the Department of Public Highways expects to get much planting material.

#### Departmental Nurseries.

The demand for small stock for planting on the Department's lands having become so great it is within the bounds of possibility that nurseries will be established to produce the many necessary kinds of trees. It is essential that these nurseries be located at central points from which will be facilitated the quick removal of the subjects to their permanent positions during the planting seasons.

So far the cost of planting along the highways has been small and an increase in the cost is not expected, in fact it is so small that the value of the timber in the next generation on the areas to be reforested will more than pay for entire planting operations along the 2,000 miles of Provincial Highway. This does not mean that the trees which are lined along the roads, or grouped in the various parks will be cut, but those on the areas which are planted under a proper scheme of reforestation.

Even should the commercial trees fail to pay for the work, what of the beauty? Is it not worth something? Twenty years hence Ontario will not care to sell the asset of beauty along its highways for millions of dollars for if as men and governments come and go, they in their wisdom continue the policy of beautification and reforestation, the highways of Ontario will express to the world the fact that long ago our legislators rose above petty politics with a desire to beautify and to dignify what will be the greatest highways of the world. Will they not be? For do not all roads lead to Canada?

Men and women of vision look into the future,—fifty years hence; can you see the heritage of your children, and of those who in the order of things will come from other lands? At all times these trees will be beautiful. In spring with bursting bud, in summer with garb of livid green. In autumn with russet and gold, and in winter when garbed in a mantle of shimmering white and clearly silhouetted against a frosty sky the very beauty of their nakedness will baffle human expression. Silent as the snow which caresses them words will fail to describe their imperious beauty as queenlike they rise out of the haze to be crowned by the morning sun.



# Shade Tree Injuries and How to Repair Them

Many large Trees not worth the High Cost of "Surgery" — Principles the Amateur should Understand.

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



In a beautiful and historic Nova Scotia town, Annapolis Royal. The elm trees shown in the photograph were planted by the late Mr. Justice Ritchie 150 years ago. The picture was taken early last Spring when the foliage had not yet attained full growth. A resident of Annapolis Royal writes to the Canadian Forestry Magazine: "This town will always hold Mr. Justice Ritchie in grateful remembrance for giving us these trees." Could any man desire a more enduring epitaph?

The history of tree repairing probably dates back as far as the cultivating of trees. It is only within recent years, however, that the present methods used in the work have been developed and a widespread interest created.

There is nothing mysterious about tree repairing. It can be undertaken by any careful man who is not afraid of hard work and who will take the pains to familiarize himself with the fundamental principles which underlie this work. Practice is of course a great advantage since it develops quickness in determining the proper thing to do, and speed in doing it. Many amateurs who undertake this work go wrong chiefly because they do not understand the reason for doing certain things. They will often give a great deal of attention to conspicuous injuries and overlook completely the smaller ones which will later become serious.

It will not be possible within the space available, to discuss fully all sides of tree repair work, but it is hoped here to point out a number of things which will give some of the readers of the Canadian Forestry Magazine a better understanding of the work and perhaps be of assistance to tree owners who are either obliged to take up the work themselves or employ some one of doubtful skill.

## Trees Worth Repairing.

The question as to whether or not a tree is worth saving must be decided by the owner, even the expert tree repairer can only advise him as to the probable cost and the chance of restoring the tree to health. Most healthy, vigorous young trees requiring minor repairs are, as a rule, worth the effort. In the case of old



A graphic history of an Ontario sand dune. The marshy flat by the lake was once a mountain of sand which in the course of years was blown inland, submerging farms and buildings. The stumps of the original trees have been uncovered by the process and some vegetation is springing up in the moist soil.

## PRINCIPLES OF TREE REPAIR.

The fundamental principles which must be observed to secure the best result are briefly as follows:

1. All diseased, decayed, injured or dead material must be completely removed. This may necessitate the formation of large cavities.
2. All wounds must be sterilized and then made waterproof.
3. Deep cavities must be covered or filled, or left in such a condition that they will heal readily.
4. The tree must be kept under observation and immediate attention given to any defects that may appear in the work and to any new injuries that may be received.

## Time for Repairing.

Tree repairing may be done at almost any time of the year except in the spring when the buds are swelling and the new leaves being formed. When the sap is running actively it may interfere with the work. If concrete is to be used the work must be done when there is no danger of frost.

trees that require the expenditure of a considerable sum of money and much labor, the owner, in the opinion of the writer, is often ill advised in making an effort to restore them. Unless it has historic associations or is a rare species, it would, in many instances, be better to

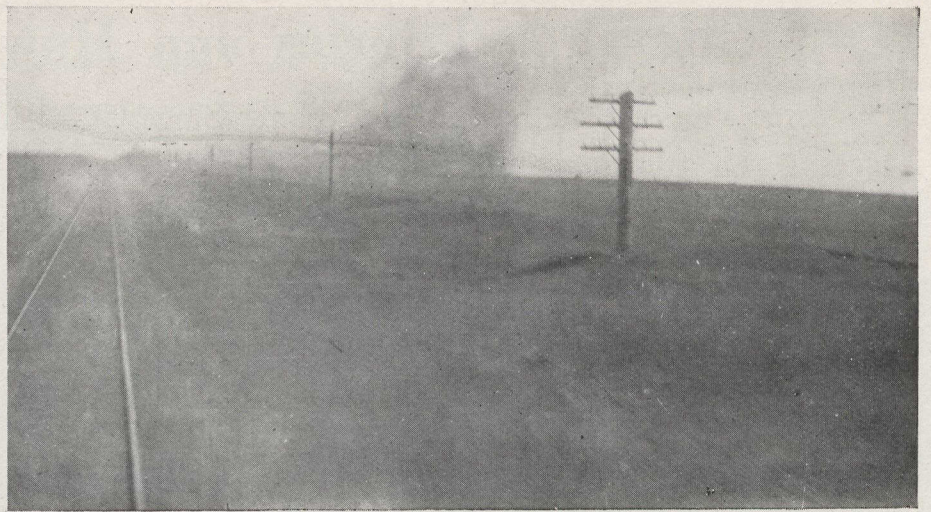


have the tree cut down and replaced with a younger one. It requires considerable hard and tedious work to gouge out decayed areas and fill the resulting cavity with asphalt or cement. These operations are, therefore, expensive and one can readily spend one hundred dollars or more on a single tree. There might be no objection to this cost if one could be absolutely certain that the tree would thereby be restored to permanent health and vigor. Unfortunately, however, no matter how conscientiously the work may have been done, one cannot always be certain of the results until some years have passed. It is not always possible to be absolutely sure that all traces of infection has been removed from areas difficult to reach, particularly since there is seldom a definite line of demarcation between sound and diseased wood. Small cavities in healthy trees can be treated and filled with a certainty of success, but it is in the cases of large complex cavities, particularly those in the upper part of the trunk involving split and decayed crotches, that we can not be certain of securing a permanent water-tight job.

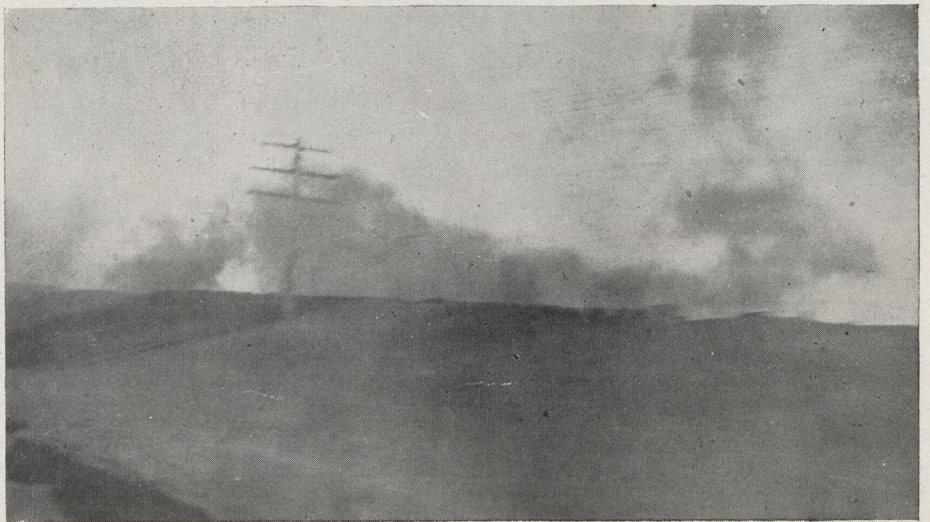
It is not the intention of the writer to discourage the reader and give him the impression that all tree repairing is useless. That is not the case. Many trees with extensive repairs have undoubtedly benefited by the treatment they have received and their life has certainly been prolonged. What it is desired to emphasize is the fact that we cannot always be certain that old trees requiring extensive and complex cavity repairs will be permanently restored to vigor and health when the work is completed and the owner should, therefore, understand that he is taking more or less of a chance before he spends a large sum of money.

#### Structure of a Tree.

To avoid making serious mistakes in repair work, it is necessary to have some general knowledge of a tree structure and the manner of growth. Upon looking at the cross-section of a tree trunk as the oak for instance, we may be able to distinguish four concentric circles. The dark centre area is the heart-wood with the lighter coloured sap-wood lying immediately outside it. Between the sap-wood and the darker outer circle of bark lies a very thin and less well defined cambium layer. This thin layer is inconspicuous and can best be observed in a freshly cut cross-section made in the spring or early summer. Those of us who have made basswood or willow whistles in our childhood days, will recognize this cambium as that most slippery layer which made it possible to separate the bark from the twig. This is the most important part of the tree. When it dies the tree dies. It alone has the power to produce new wood and bark. During the growing season this tissue is constantly forming new wood next the



Few readers of the Canadian Forestry Magazine who have not lived in certain sections of the prairie west can realize the seriousness of the soil-drift menace. Expert opinion is more and more accepting the conclusion that the most natural and most effective remedy can come only through the extensive planting of thick belts of trees to break the power of prairie winds. Our photographs show the plague of soil drift in action. Enormous damage has been wrought and each year witnesses no diminution of the evil.



sapwood and new bark under the old bark. Thus each year a more or less distinct ring of wood and bark is added to the tree. These layers of wood are the annual rings we see upon looking at the cross-section of a log or stump or branch. They are layed out throughout the whole length of the tree from the end of the tiniest roots to the tips of the smallest twigs. The cambium, it will therefore be seen, is the most active part of the tree and the remaining parts of the trunk or boughs may, in a sense, be considered dead. The chief function of the heart wood is to support the tree and give it rigidity. The sapwood also assists to support the tree but it also has the important function of conducting the raw mineral food dissolved in water up from the roots to the leaves. As the tree increases in diameter the sapwood nearest the centre gradually develops into the less active heartwood.

The outer bark of the tree merely acts as a protection to the cambium layer and wood within.

It will now be understood why it is

possible to remove the centre or heart-wood of a tree without causing serious injury except to destroy its rigidity. Old trees are frequently seen growing in which the centre of the trunk has largely decayed away, leaving little more than a shell. When new wood is formed at about the same rate the decay takes place, the condition may last for years. Sooner or later, however, the trunk becomes so seriously weakened that the first heavy wind twists it off.

#### Cause of Decay.

Decayed wood is the result of the growth of parasitic fungi. Discolored wood, hollow wood, jelly-like or leathery masses, toadstools or shelf-like projections frequently found attached to trees are an indication of the presence of such fungi. These fungi are plants of a very low order that send their mass of microscopic thread-like growths throughout the wood and feed on the contents of the wood cells or the wood itself. The part of the wood material that is left is discolored, fragile and broken. It is what is known as punky or rotten wood.



## The Tragedy of the Buffalo

A Graphic Story of Canada's Wild Life Treasure that once Blackened the Plains Fifty Miles in Width—What the Future promises through Wholesale Domestication.

In all the long history of the dissipation of natural resources following the opening up of this continent no chapter reveals what man's greed and innate instinct for destructiveness can accomplish in a brief time better than the story of the extermination of the American bison. Never, perhaps, was a natural resource of equal magnitude so completely and rapidly exhausted. It is said that of all the quadrupeds that have ever lived upon the earth no species has existed in such enormous numbers and few have compared in value to man. Dr. W. T. Hornaday, the distinguished American Zoologist, declares that even in South Africa, which has already been exceedingly prolific in great herds of game, probably all its quadrupeds taken together on an equal area would never have more than equalled the numbers of buffalo formerly found on this continent. Yet in less than half a century the entire species was wiped out, entailing a loss to future generations impossible to calculate. The Indians of some tribes believed that the buffalo issued from the earth continually like grass. Like the grass the buffalo were

indeed cut down, but unlike the grass, unfortunately they did not come up again.

Nature in her scheme for economy seems to have given to almost every part of the world some special gift for supplying the wants of the race which inhabit it. The Eskimo of the far north has his seal, the Korak of Siberia his reindeer, the native of Ceylon the cocoanut palm, all of which supply the main requisites of life. What was probably her finest gift,—the buffalo,—she reserved for the northern half of the continent. "With an acquaintance which includes fine living examples of all the larger ruminants of the world except the musk-ox and the European bison, a prominent American Zoologist declares, "I am sure that the American bison is the grandest of them all." For the Indians of the plains the buffalo spelled food, clothing and shelter. His flesh was as well flavoured and as nutritious as the finest of beef; his thick robe furnished covering and clothing for the bitter winter cold; his hide was used for teepees and boats; the horns were converted into spoons, caps, combs, bows, head-dresses and other ornaments; the horn-tips were used for blood-letting by

cupping in surgery; the hair was woven into belts, lassoes and many other things of use and adornment; hoofs, horns and scraps of skin furnished glue, while from the bones were fashioned knives, weapons and many useful implements.

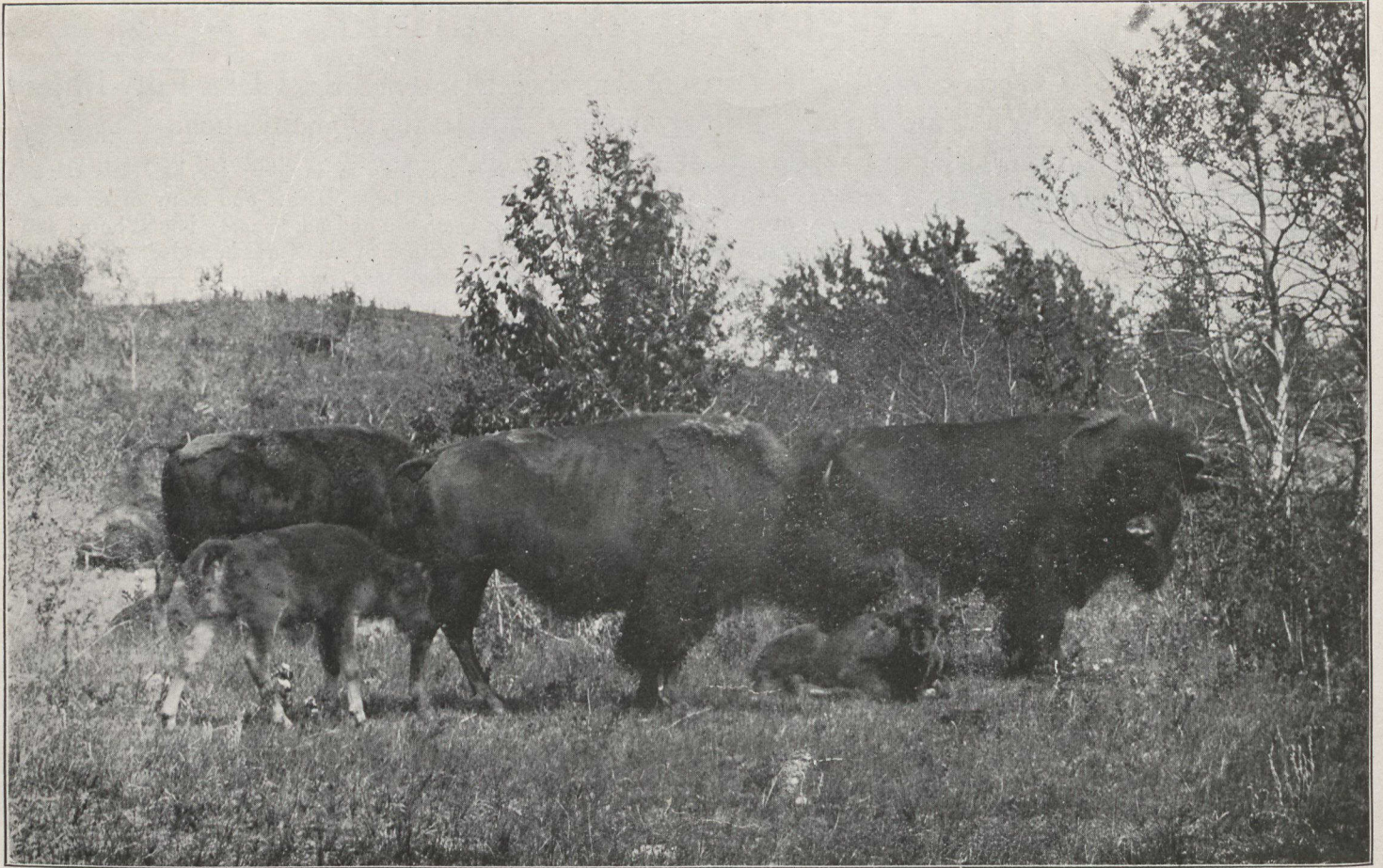
### A Blessing to the Pioneer.

The part the buffalo played in the development of the country can scarcely be estimated. It is bound up with the whole story of the early settlement of the west. Without the buffalo the great privations and hardships of the pioneer explorers and settlers would have been rendered incalculably greater. There is no diary of early exploration which does not contain some tale of a happy relief from starvation through a fortunate encounter with a herd of these animals. Pemmican—dried and pounded meat mixed with suet—formed one of the most nourishing of foods in a highly condensed form. Its "staying powers" and small bulk made it of inestimable value to the voyageur and overland traveller. In the absence of other food a handful of pemmican was sufficient food to constitute a meal and pemmican in the days of abundant



Monarchs of the Plains.





In Buffalo Park, Wainwright, Alberta.

buffalo sold for 2d. a pound in Winnipeg. The warm thick buffalo robe saved the life of many an early settler in a western blizzard. The hide formed the tires of his Red River cart in a country where iron was unknown. On the long trek across the prairie, buffalo meat, pemmican and wild fowl were his chief articles of food.

How many buffalo there were at one time on this continent can only be vaguely computed. The range of the species covered more than one-third of the entire northern half of the continent. Alvar Nunez Cabeza, a Spanish explorer, later known as "Cabeza de Vaca" or "Cattle Cabeza," who was shipwrecked on the Gulf Coast, west of the mouth of the Mississippi in 1530, reports seeing buffalo in large numbers in his wanderings through Texas. Samuel Argoll, an English navigator, in 1621 found "a great store of cattle as big as kine" near the head of the Potomac, probably only a few miles away from the site of the present city of Washington. Col. W. Byrd, who surveyed the boundary between North Carolina and Virginia in 1729, writes of the fortunate killing of a buffalo which Providence threw in their way just as provisions began to fail, adding feelingly: "It was the more welcome because it was change of diet. We had lived upon Venison and Bear till our stomachs loathed them almost as much as the Hebrews of old did their Quails." Other early explorers report finding buffalo in large numbers in the

Carolinas, Virginia, Pennsylvania, New York, Illinois and Louisiana. Roughly speaking its range extended from the Atlantic Coast, west across the Alleghenies to the Mississippi, south to its mouth and north to the southern shore of Lake Erie. But the land across the Mississippi, the Great Plains of the West, indeed the whole country from the Rio Grande north to Great Slave Lake, was the true stamping ground of the buffalo. Here it found its natural home and multiplied to countless numbers. In Canada the buffalo was apparently never east of the prairie country. Its range seems to have been from Winnipeg to the foothills though Dr. Richard-

son, author of "Fauna Boreali-Americana," states that they crossed the Rockies following the pass where later the Canadian Pacific was to lay its railway, in sufficient numbers to constitute a feature of the fauna of the western side of the range.

#### Herds Blackened the Plains.

According to Hornaday, the geographical centre of the distribution of the species up to 1800 was south Central Nebraska; from 1800 up to the time of disappearance, the Black Hills of Southwestern Dakota. The herds of the east probably counted their buffalo by hundreds but the herds of the west by tens and even hun-



An Indian Buffalo Hunt.



dreds of thousands. Dante's "Thick as the Leaves in Vallambrosa" and some of the classical descriptions of the hordes of locusts seem the only fitting comparisons for their vast numbers. Col. R. I. Dodge, in "Plains of the Great West," gives a graphic picture of a great herd through which he passed while driving from Old Fort Zara to Fort Larned in Arkansas in 1871. This herd was not less than 25 miles wide and 50 miles deep. It took five days in passing a given point. Looked at from an eminence, Col. Dodge says the whole vast space appeared to be one slow moving compact mass which completely covered the ground, drifting across the plain like a dark, irregular cloud. This was one of the last of the great herds. A careful estimate of its numbers shows that it probably comprised 4,000,000 buffalo and this was only one herd. Mr. Wm. Blackmore, an early westerner, quoted in the Great Plains of the West, said,—"In the autumn of 1868, whilst crossing the plains on the Kansas Pacific Railroad for a distance of upwards of 20 miles, between Ellsworth and Sheridan, we passed through an almost unbroken herd of buffalo. The plains were blackened with them, and more than once the train had to stop to allow unusually large herds to pass. In 1872, whilst on a scout for about a hundred miles south of Fort Dodge to the Indian Territory, we were never out of sight of buffalo."

"Unlike any other quadrupeds that ever lived" says Hornaday, "they lived and moved in great multitudes like grand armies on review." And like armies once in motion they went on regardless of everything. Boats, locomotives, trains of cars which came in their way—nothing halted their advance. It is said that after the train on one of the prairie roads had been derailed twice in one week by herds of buffalo, the engineer learned to bring the train to a stop until they had passed. It was this instinct for solidarity, coupled with an almost total absence of fear that helped to make their annihilation so fatally easy.



Herd of Buffalo in Buffalo Park, Wainwright, Alberta.

**Systematic Slaughter.**

The disappearance of the buffalo from the east was an inevitable result of the march of civilization. As the country became settled the buffalo gradually disappeared. He was the most valuable food animal procurable by the early settler and as soon as the consumption exceeded the natural increase, the buffalo was bound to go. Its extermination on the plains is a different story and a less creditable one. Up to the year 1820 although the buffalo had been gradually driven westwards and both Indians and whites had hunted it steadily for meat and robes, no serious inroads had been made on the western herds. About that year, however, the slaughter began to be systematic and organized. Trading posts were established at various points near the best hunting grounds and the Indians were encouraged to kill as many buffaloes as possible for their robes. About this

time, too, began the famous Red River hunting expeditions, the annual buffalo hunt by which the Red River settlers secured their winter's provisions. Up till then buffalo had been so plentiful that when a settler wanted to stock the winter larder all he had to do was to drive out on the prairie and shoot down what he required and bring it home. Now, however, the buffalo were growing scarcer in Manitoba and organized expeditions prepared to go a long distance had to be fitted out. The first great hunt was made in 1820. It comprised 540 carts, put together without a nail, with tires of stretched buffalo skin and a squeak which could be heard a mile away. The long train of carts trekking across the prairies must have made an imposing spectacle and if the buffalo had been a timid or sagacious animal the noise would undoubtedly have given him ample warning to get away to safety. Unfortunately he was not. Alexander Ross in his "Red River Settlement" shows how the number of carts assembled for the annual hunt increased. In 1825 he says the expedition numbered 680 carts, with Indians, settlers and half-breeds. In 1830 there were 820. In 1835 the number had increased to 970 and in 1840 to 1,210. As Hornaday says, the army which finally went forth to slaughter the buffalo was larger than that with which Cortez subdued an empire. By 1846 it was necessary to divide it into two divisions. One, the White Horse Plains Division, went west by the Asiniboine; the other, the Red River Division south to Pem-



Indians Hunting Buffalo in the Old Days.



bina. These great hunts were conducted under almost military discipline with an elected leader and subordinate captains and policemen. The laws of the hunt were strictly defined and rigidly carried out and woe to the man who killed a buffalo before the signal for the general hunt had been given. If caught he was certain to be publicly and severely flogged if he did not forfeit his life.

#### A Process of Extinction.

According to estimates made by Prof. Henry Hind and others, the number of buffaloes killed by the Red River settlers and Indians from 1820 to 1840 was at least 652,000. Steadily the species was killed off and driven back until by 1820 it was extinct from Fort Garry (Winnipeg) down to the Cheyenne River, to which the Red River hunt had gradually extended. The White Horse Plains division had also practically cleared the country in which it worked and the half-breeds and Indians, who would never work if they could hunt, turned their eyes to the hunting grounds of Saskatchewan. In a few more years, in what had once been the rich hunting country between the two branches of the Saskatchewan, the buffalo had also been exterminated.

In the meantime the buffalo in the southern and middle western States were being steadily slaughtered by both Indians and whites. The danger of extermination was, however, yet a long way off. There were still millions left. In 1865 an event occurred which did much to hasten the action of the tragedy. This was the building of the Union Pacific Railway, the first Railway line across the continent. It passed through one of the most populous remaining buffalo territories and made the marketing of buffalo products easy and profitable. By a fatal coincidence, as Hornaday points out, this event was backed up by an unlimited supply of new and marvellously accurate breech-loading rifles and fixed ammunition, and then, he says, "there followed a wild rush of hunters to the buffalo country, eager to destroy as many as possible in the shortest time. For these greedy ones the chase on horseback was "too slow" and too unfruitful. That was a retail method of killing, whereas they wanted to kill by wholesale." The still or "sneak" hunt became the order of the day. Where it formerly took from 15 to 25 mounted hunters a whole season to kill 1,000 buffalo, a single still hunter with a long range breech loader could now kill from 1,000 to 3,000 in a season by his own efforts. Col. Dodge stated that he once counted 112 carcasses inside a semi-circle of 200 yards radius all killed by one man from the same spot in less than three-quarters of an hour. Another writer says that he saw one of the best hunters kill 54 buffalo with 54 shots at one stand.

The famous Buffalo Bill's record was 4,280 buffalo shot by his own hand in 18 months. In the early days buffalo robes were sold for as low as a dollar, but as the demand increased the price rose to three and four dollars and the business became a lucrative one. Traders bought robes from the Indians at a price of a pint of whiskey, and once the latter had learned the taste of fire water a new incentive was added to their zest for the hunt. Often nothing but the robes and tongues were taken, the carcasses being left to rot by hundreds on the plains. Indeed after the buffalo were gone the gathering of bones for fertilizers and refining purposes became a profitable industry. Old sketches show some of the immense piles gathered together and awaiting shipment and they speak more eloquently than words of the enormous waste of valuable meat which took place.

Much of the western Canada is by nature a grazing country. In the buffalo we had the ideal grazing animal—an animal, which could live where no other ruminant could, which could "rustle" for its own food summer or winter and which could face the severest blizzards. Experiments made with small herds in several parts of the country show that the buffalo can be domesticated or at least semi-domesticated without much difficulty. Whether great herds could have been driven out to the great ranching country of the foothills and north to the Peace River and guarded by range riders as the great ranches are today is a matter of conjecture. Twenty years from now when the experiments at present being made in connection with the government herd at Wainwright and in domestication by the University of Saskatchewan are carried out we shall be in a better position to figure up our national bill of loss.



A model of a pulp and paper town to suggest the industrial and municipal growth that are produced by the conserving of our own forest resources. This model is six feet long and five feet deep and was produced by W. C. Wilmore, of Ottawa, from photographs of the Espanola plant of the Spanish River Pulp and Paper Mills, Limited. The model, of course, does not pretend to do justice to the great dimensions of the Espanola mill. It is installed as one of the exhibits of the Canadian Forestry Association's "Forest Exhibit Cars" which has visited scores of communities this summer.

#### The White Man's Prodigality.

The inevitable happened so rapidly that even those who had the best reasons to know could scarcely believe that the buffalo were gone. In 1875 they were still numerous, in 1880 they were rapidly disappearing, by 1885 they were gone. By 1890 there was probably not a single wild buffalo left on the whole North American continent, with the exception of one herd which had wandered into the inaccessible region near Great Slave Lake, a herd which still exists and which for many years has been under the protection of the Canadian Government.

Speculations as to what "might have been" with regard to the buffalo are perhaps idle. Over the greater part of the continent his extermination sooner or later was inevitable. Once his habitat was invaded by settlement the buffalo had to go. His pasture grounds had to be turned into more valuable wheat fields. But there is no doubt that the end might, under a wise policy of conservation, have been considerably prolonged with great commercial advantage to the country and perhaps even indefinitely postponed.

#### INSTINCT VERSUS SCIENCE.

A party of foresters and surveyors were inspecting some difficult country when a heavy fog settled down on it, and they hopelessly lost their sense of direction. The day was closing in, and, in their anxiety to get back to camp before dark, they swung their compasses and discussed the way out, suggesting various cardinal points as the correct direction. Attached to the party was an aborigine, who, with open mouth and protruding eyeballs, listened to the party's wisdom. Presently the darkie remarked: "Well, genelman, nebbor mind about Nor', Sou', East, and West, I bin goin' home." And he forthwith went. Needless to say, the rest of the party followed him and experienced no difficulty about getting back to camp. —Australian Forestry Journal.



## A Tree Three Million Years Old

By Dr. E. M. Kindle, Paleontologist,  
Ottawa.

The mountain climber finds it good to pause at times and look back over the route traversed. The hills and valleys left behind are seen to fall into some definite scheme of topography which was not apparent when he was in their midst, and to possess a charm and beauty visible only from the vantage ground lent by distance. It may be equally profitable for the lover of present day forests once in a while to glance back over the geologic trail which the evolution of modern forests has followed. He will find much of the trail of evolution concealed in the obscurity of remote geologic time, but here and there it is clearly outlined by the fossil remnants of ancient forests, many of whose species have long been extinct.

Fossil forests can of course appeal only to those who wish to know how living forests came into existence. They have little to offer the man who can see in a living forest only so many thousand feet of lumber, material for pulpwood or the possibility of a new source of cattle feed in the shape of "hydrolized saw-dust." These of course are important assets of



Fig. 1.—A fossil tree, Red Deer Valley, Aiberta, that flourished three million years ago, and in the shade of which lived the giant dinosaur. This is the largest fossil tree in America and now reposes in the National Museum at Ottawa.

our forests, but their most important assets accrue only to the man whose eyes are not too closely focussed on the dollars

which they may yield. It is to the nature lover who can see in forest aisles, gothic cathedrals, which to many eyes are in-

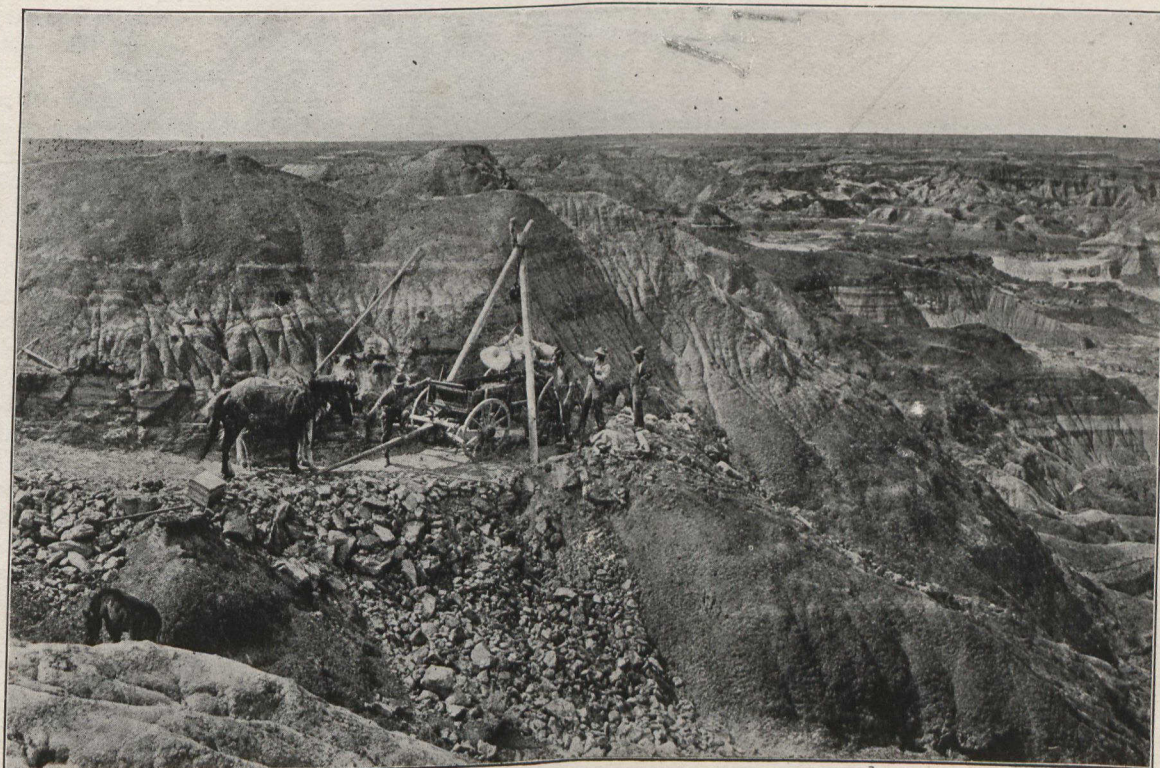


Figure 2.—The 30-foot skeleton of Gorgosaurus was taken up in five sections, the largest of which weighed over a ton. The sections, consisting of the bones held in place by the sandstone matrix, were swathed in burlap dipped in plaster of paris, preparatory to being packed in strong boxes and taken by wagon over the prairie to the nearest railway station. In the above view a section is being lifted by block and tackle into the wagon for removal to the prairie level.



visible, and who finds in the beauty of her forests Canada's greatest wealth, that the forests yield their real treasures. The ancient history of her living forests as revealed by fossil trees, can hardly fail to interest those who have in any degree this viewpoint, or that of Wordsworth as expressed in the following lines:—

"One impulse from a vernal wood  
"May teach you more of man,  
"Of moral evil and of good,  
"Than all the sages can."

In Canada we may enjoy the beauty and inspiration not only of living forests, but the fascination of seeing forests which flourished in ages long past if we choose to.

#### Treasures in the "Bad Lands."

On the plains of western Canada we have a veritable wonderland where not only the forests but the animals which lived in them in Cretaceous times have been fossilized and preserved. This geological wonderland is located in the Red Deer Valley in Alberta. The unique character of the "Bad Lands" scenery in which these records of an ancient and long vanished geography are found is as striking and impressive as the fossil trees themselves.

A fossil tree from this ancient Alberta forest, 52 feet in length has recently been placed on exhibition in the Canadian National Museum, (Fig. 1). This tree was discovered and collected by a field party of the Canadian Geological Survey. In length of trunk this tree surpasses any other museum specimen in North America. The American Museum in New York City has a fine specimen from the same fossil forest 45 feet in length. The trunk which is completely silicified and perfectly preserved, was embedded in Upper Cretaceous rocks which are approximately three million years old. The limbs are missing, but the points where they were joined to the trunk are clearly marked. A film of coaly matter on the under side of the tree indicates the former presence of bark. The upper surface which had been long exposed to the weather owing to the disintegration and disappearance of much of the original rock cover long before the tree was found has the appearance of a weather beaten tree trunk which has lain long in the woods. The cells of the wood are filled with chalcidony. The weathered part has the lignite or original woody fibre all removed, and mostly replaced by chalcidony. The trunk was originally round, but has been slightly flattened by the pressure of the overlying rock, probably during the process of changing the wood into lignite, and before the filling of the cells with chalcidony had gone very far.

The outer layer of coal or lignite probably represents chiefly the bark of the

tree. Dr. W. D. Matthew has pointed out that "the bark does not silicify so readily as the wood of a tree because the wood is made up of innumerable small tubes running up and down its length. These convey the sap while the tree is alive, drawing it upward by capillary attraction; after the tree is buried in sand and mud, of a lake stream, they may equally draw the mineral-bearing waters through from end to end of the tree and thus aid in depositing the mineral that petrifies the wood. But the bark does not have tubes or cells of this character, the mineralized waters are not drawn through it, and it remains lignitic, soft and crumbling when exposed to the air."

#### What Fossil Trees tell us.

Such a tree raises various questions and inspires many reflections. Did it live in a forest like our modern forests? How did this tree escape the decay which overtakes and completely obliterates in a few years the trees which die in our present forests? Did the creatures which enjoyed its shade and sought their prey beneath its branches resemble those we know to-day? What can fossil trees like this tell us of the climate of ancient Alberta?

These and many other problems are suggested to the Museum visitor who looks at this fossil of an ancient Alberta forest.

The dawn of modern floras appeared in the Upper Cretaceous times represented by this tree trunk. The *Lepidodendron* and *Sigilaria* forests of the Coal Measures had disappeared long before this. The great changes in the character of vegetation which took place during Triassic and Jurassic times lead up to a flora in the Upper Cretaceous age which included many generations still living.

Some of the more characteristic features of the Upper Cretaceous flora may be given in the words of Sir William Dawson:—

"The cycads, with their simple, thick trunks, usually marked with rhombic scars, and bearing broad spreading crowns of large, elegantly formed pinnate leaves, must have formed a prominent part of the vegetation of the Northern Hemisphere during the whole of the Mesozoic period.

"The pines present some features of interest. In the Mesozoic we have great numbers of beautiful trees, with those elegant fan-shaped leaves characteristic of but one living species, the ginkgotree of China. It is curious that this tree, though now limited to eastern Asia, will grow, though it rarely fruits, in most parts of temperate Europe, and in America as far north as Montreal, and that in the Mesozoic period it occupied all these regions, and even Siberia and Greenland, and with many and diversified species."

Another group of trees conspicuous in

Cretaceous forests were the Sequoias. "The genus *Sequoias* limited at present to two species, both Californian, and one of them the so-called "big tree," celebrated for the gigantic size to which it attains, is represented by species found as far back at least as the Lower Cretaceous, and in every part of the Northern Hemisphere.\* It seems to have thriven in all these regions throughout the Mesozoic and early Kainozoic, and then to have disappeared, leaving only a small remnant to represent it in modern days. A number of species have been described from the Mesozoic and Tertiary, all of them closely related to those now existing.

"The Sequoias form large forests in California, which extend along the coast as far as Oregon. Trees are there met with 300 feet in height and 20 feet in diameter. We know only two living species of *Sequoia*, both of which are confined to California.

"If we go back into the Tertiary, this same genus meets us with a long array of species. Two of these species correspond to those living at present. But, while the living species are confined to California, in the Tertiary they are spread over several quarters of the globe.

"In the Tertiary there have been found fourteen well-marked species, which thus include representatives of the two living types, *Sequoia sempervirens* and *Sequoia gigantea*.

"We can follow this genus still further back. If we go back to the Cretaceous age, we find ten species.

"Altogether, we have become acquainted, up to the present time, with twenty-six species of *Sequoia*.

"This is, perhaps, the most remarkable record in the whole history of vegetation. The Sequoias are the giants of the conifers, the grandest representatives of the family; and the fact that, after spreading over the whole Northern Hemisphere and attaining to more than twenty specific forms, their decaying remnant should now be confined to one limited region in western America and to two species, constitutes a sad memento of departed greatness. The small remnant of *S. gigantea* still, however, towers above all competitors as eminently the "big trees"; but, had they and the allied species failed to escape the Tertiary continental submergences and the disasters of the glacial period, this grand genus would have been to us an extinct type. In like manner the survival of the single ginkgo of eastern Asia alone enables us to understand that great series of taxine trees with fern-like leaves of which it is the sole representative.

"Besides these peculiar and now rare forms, we have in the Mesozoic many others related closely to existing yews,

\*In the Eocene of Australia.



## A Prairie University Invests in Beauty

By Archibald Mitchell.

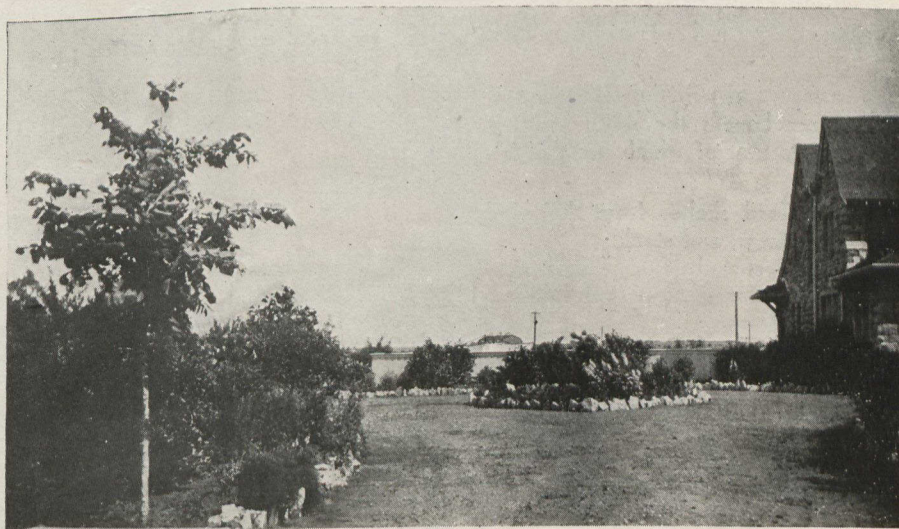
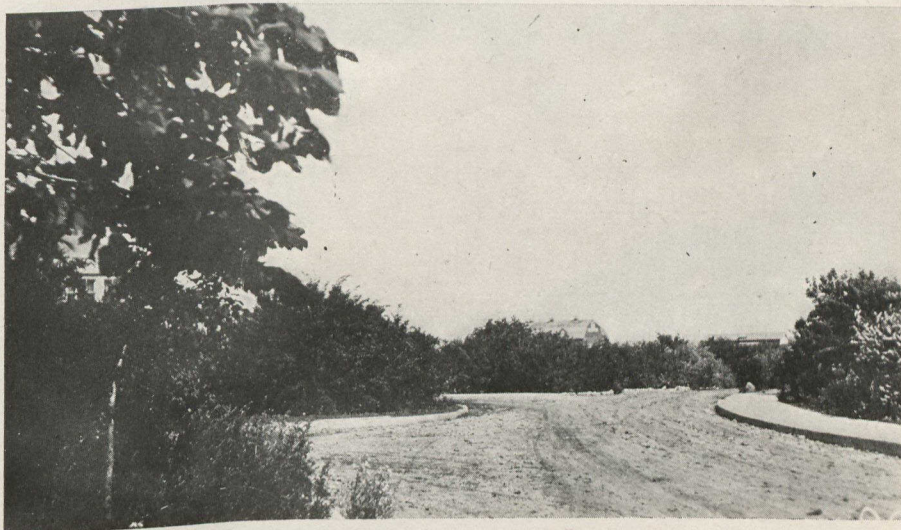
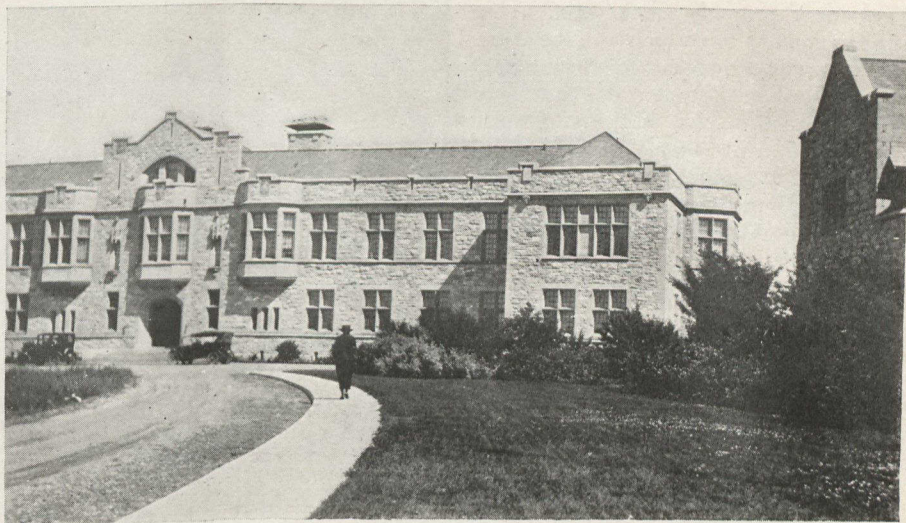
One of the most striking methods of inculcating a love of the beautiful in the people of the prairies is the grounds of the University of Saskatchewan at Saskatoon. There the fine, substantial, chaste-looking buildings are set in groups of splendid shrubbery through which the drives and walks wind between the different buildings, linking them up directly and yet observing those beautiful curving lines of landscape so rarely seen in such institutions.

Agriculture is the basic industry of Saskatchewan, and its recognition as such has been thoroughly emphasized in the teaching of the University, for the science of Agriculture is the principal course there and nothing is spared to make it so.

Young farmers and farmeresses to the number of 1,200 attend these classes during the year and if there is anything in the theory that environment counts for much in the moulding of character, then here, in the midst of the trees and shrubs, flowers and lawns of the grounds of the University is the place where the future leaders of the Province will unconsciously as well as consciously, absorb that love for the beautiful in home surroundings that is so valuable, and in which the west is so woefully deficient.

Returning to their homes these young people cannot fail to carry with them a realization of the possibilities in home improvement there, the planting of trees and shrubs and of the true principles to be observed in carrying out these improvements. It means a great deal to the future home makers of the province.

As a small instance of how short sighted in such matters people can be, we had the pleasure of visiting several other similar institutions lately. Splendid places with wide sweeping lawns and trees and shrubs too, but there were foot-paths here and there across these fine lawns leading from one hall to another; foot-paths made by the hurrying feet of students rushing from class-room to class-room, or from class to residence, an eyesore to the visitor and a bugbear to those in charge. It is a far cry to the days when the monks of old decorously paced the rectangular courts and avenues of the old Universities. They had plenty of time then to go around the corners, and they did it with all the dignity appropriate to the place and occasion. Now-a-days, we are in a different world, and besides classes there are fraternity meetings, literary meetings, athletic meetings, etc., of all sorts to be attended and young people have not the time to pace around the corners of dignity. They want to get there, and so the lawns were criss-crossed with footpaths. At Saskatoon



Set out on absolutely flat prairie, with few natural advantages the University of Saskatchewan at Saskatoon has followed the praiseworthy policy of adorning its walks and grounds by the generous planting of trees and shrubs. The buildings of the University in themselves are beautiful but without the aid of trees would have seemed uninviting enough. Note from the above photographs the enriching and humanizing effect that trees invariably give to prairie buildings and grounds.

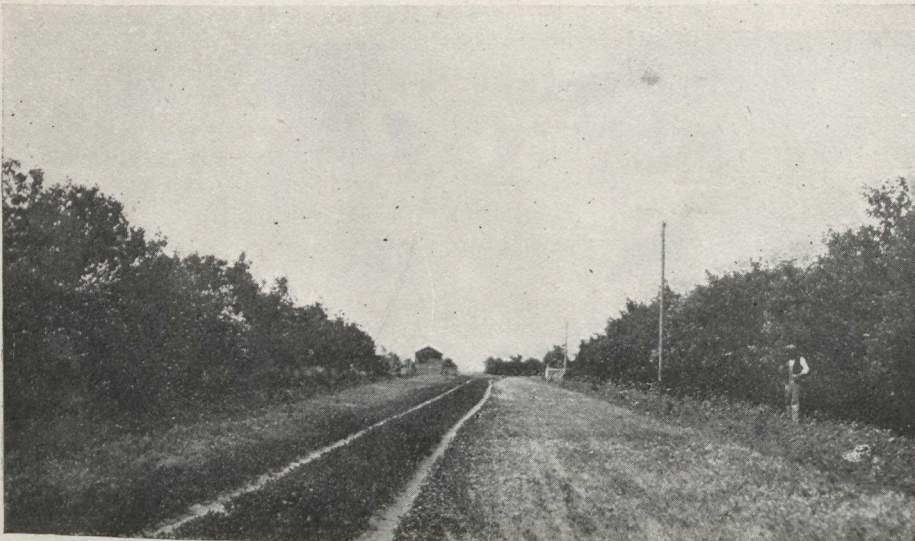


they have wisely recognized this and also the fact that only two things can prevent students—or anybody else—from making footpaths, and these are either by presenting an insurmountable obstruction or to provide a properly made walk. This has been done at Saskatoon and there are walks or roads convenient to every place. None of the dignity so desirable in such a substantial institution is lost, and a most valuable lesson in simple and effective landscape arrangement is certainly set before the students. Dean Rutherford takes great personal interest in the grounds.

#### FROM A CHIEF FIRE RANGER.

Hearst, Ont. "I look forward to getting your magazine each month and after reading it pass it on to others. It is a great help to me in many ways."

### Benefit of Tree Planting on Prairie Farms



In many sections of the prairies a grave error is being made in destroying entirely the natural bush and reserving nothing for future protection of the farm buildings and crops. Some day the error will be regretted and strips of trees will have to be restored by artificial planting.

Near Melfort, Saskatchewan, where an intelligent interest in the value of shelter belts is clearly manifest the native bush is being conserved along roads and on parts of the farm. This is sound policy.

There are several ways in which plantations of trees benefit the prairie settler, the most important of which are the following:

1. They afford shelter from the wind to crops, buildings, and stock.
2. They collect and hold the snow during the winter, preventing it from banking up around buildings.
3. They preserve and retain the moisture in the soil by breaking the force of the hot winds in summer, thus retarding evaporation. The snow also held by them in the winter, melting in the spring, furnaces a great deal of moisture to the land in the immediate vicinity which otherwise it would not retain.
4. Plantations will supply fuel, fencing material, and wood for repairs. If settlers would only realize that they can grow their own fuel and fencing material,



To the casual observer on a railway train, there appears sometimes to be very little tree planting observable on the "bare prairies." The records of the Dominion Forestry Branch show, however, that fifty thousand plantations have been formed from stock supplied by that branch. There is a very large number of other plantations of which no official record exists. The photograph shows the fine shelter belt of Mr. Kelly at Naseby, Saskatchewan, which has enabled him to grow an abundance of vegetables.

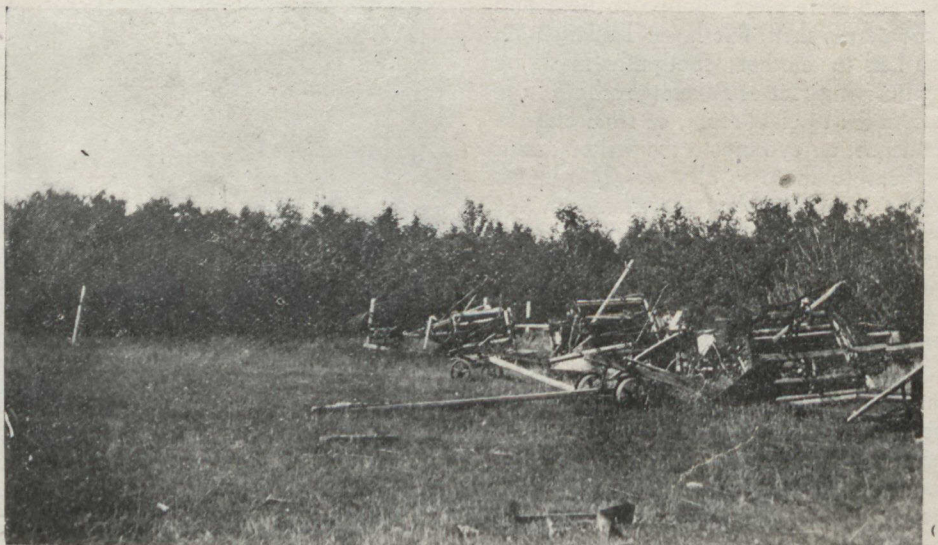
as they undoubtedly can, many more plantations would be set out, as this would mean to them a great saving in time and labour.

5. They are of aesthetic value, beautifying the landscape and making life on the prairie much more pleasant and less monotonous.

6. They greatly add to the money value of the farm. There is not the slightest doubt that a farm which had on it a well managed and productive woodlot of a few acres would, other conditions considered equal, sell for far more than one without trees.—Norman M. Ross, Dominion Forest Nursery Station, Indian Head, Sask.

#### FROM THE PREMIER OF ONTARIO.

To Canadian Forestry Association: "I am greatly interested in this work and I wish you every success in your tour throughout the different districts of Ontario."



This Saskatchewan farmer takes advantage of his shelter belt to provide "an open air implement shed," as he describes it. At least his implements are protected from wind on two sides, and his farm derives many other material benefits.



# How to Eliminate Grass in Prairie Shelter Belts

By Archibald Mitchell, of the Western Staff of the Canadian Forestry Association.

A question that comes up continually is that of grass in the plantations.

"What can I do to get rid of grass among my trees?"

"What have you tried for it?"

"Well, I have tried to hoe it out but it just seems to make it worse, and you can't plow it, the trees are too close."

"Have you ever tried mulching it with straw?"

"Yes, at least I have covered it with manure but it does no good."

"When did you apply the manure?"

"I put it on in the winter, just as it came from the stable."

"Suppose now, you had a fine rose bush, or a bunch of rhubarb or something to keep over winter, how would you protect it?"

"Oh well, I suppose I would mulch it with manure."

"Of course you would, and the mulching would protect it too. It would come out in spring in fine shape. Now, don't you think if a mulch protects a rose bush over winter it would be likely to do the same for a perennial grass, such as the 'blue joint'?"

"Well, it does seem reasonable."

"Yes, a winter mulch protects the grass, while a summer mulch destroys it."

"The best time to apply the mulch is about the middle of June, when the grass is in the flush of its growth. And use plenty of straw, ten inches to a foot deep, sufficient to smother it up and keep out the light."



A daily event at the Tree Planting Car of the Canadian Forestry Association in its visits to prairie communities. The school children march to the car and enjoy heartily an hour's description, through word and picture.

"Why sure" says another man "I remember laying a door down on the grass when it was growing, and when I lifted it a month later, the place was all black where it had been lying."

Yes, that's it, a summer mulch rots the grass, and the way to kill it among your trees is to apply it about the third week in June.

Many a plantation throughout the country is today in bad order just from

the want of this kind of mulch, and many a one that has been abandoned as a hopeless job, would have been saved if straw had been applied in time, and at the right time.

## When to Defeat the Grass.

Remember the right time is the month of June.

One objection to the use of straw mulch in a plantation is the fact that mice sometimes find a lodgment there, and damage the bark of the trees. While this is perfectly true, it is also just as true that many plantations are flourishing because of the straw mulch and without any injury from mice.

Indeed, so important is this matter of a straw mulch, that many a plantation is destined to become completely ruined by grass unless this method of giving it a new lease of life by smothering out the grass in June is adopted. If mice are likely to be plentiful, the straw can be raked back from the tree stems before winter."

A parallel question that is often asked is "How soon in the life of a plantation may the mulch be applied?" The answer to that is, anytime after the second or third year, but it must be applied in June if it is to kill grass.

## Your Initial Preparations.

Grass in a plantation is usually a sign of poor preparation previous to planting and the lack of information regarding its nature and the danger of allowing it to



Does the Public Respond to the Canadian Forestry Association's Campaigns? Here is a typical Audience Waiting for Our Cars to Open the Doors.



gain a footing in the plantation after the trees are planted. Naturally it takes time to get well established, and there is always ample time to check it when it is just beginning if its nature is understood. Usually too, this attempt is made, but it is done the wrong way. The hoe or the cultivator are used, and these, while they do dig up some of the roots, in reality only serve to aggravate the trouble by chopping them up into small pieces which immediately begin to grow afresh and so the area affected is enlarged. The only safe way to check grass is to fork it up when it first appears and throw it away. Then it is done with. And it is not such a big job either, for the roots are only about four or five inches beneath the surface of the ground.

These little centres of grass spread

## How the West Regards the Tree Planting Car

Compeer, Alta.

As a Representative of this Community permit me to express our sense of obligation to the Canadian Forestry Association that has made possible this visit of the Car. We have enjoyed the service rendered much, and would appreciate another visit at some subsequent date when other citizens may have an opportunity of hearing the instructive and interesting lectures and see the fine set of pictures.

The members of the staff with the car have done their work efficiently and well, being cordial and considerate in their attitude and willing to help in matters under consideration. The lectures were given in a manner creditable to the Association and the demonstrations were clear and enlightening.

This "note" is altogether unsolicited, but we wish to acknowledge our appreciation of the efforts of the organization to encourage better agricultural conditions and add a little of the aesthetic to the homes of our people. (Sgd.) Rev. Percy Halstead, Pastor.

### PERDUE'S VERDICT.

Canadian Forestry Assn.

PERDUE, Sask., July 25th, 1921.—At a meeting of the Directors of the Perdue Agricultural Society held on 23rd inst. a resolution was unanimously passed, instructing me to write on behalf of the society, to express the appreciation and satisfaction which was derived from the visit of the "Tree Planting Car" which visited here on July 6th.

I may say, that not only the members of the Society, but every one who attended the exhibition and lectures were well pleased and interested in the discussions, etc.

throughout the plantation are the result of improper sod rotting the year previous to planting. Little pieces of the roots have managed to survive, and form the centres of the trouble. There are never many of them to begin with and they are easily removed if taken in time.

But the grass-spread often, and indeed usually, comes in also from the two sides of the plantation. This can be hindered quite materially by plowing a furrow 9 or 10 inches deep, along the edge of the grass after the planting is done, throwing the soil in towards the trees. In time, the grass will work its way in, but meantime the plantation has become established and the trees are big enough to escape serious damage from mice when the straw smothering-mulch is applied.

The Society hope that you will be able to make arrangements to again visit our district on some future occasion, when I can assure you an appreciative audience.

Again thanking you on behalf of the Society.

FRED. J. BATRITE,  
Secy.-Treas.

### FROM A SASKATCHEWAN DOCTOR.

Should have written to you before to thank you and the Directors for having sent the Forestry Car to this place. Some who at present have no trees are going to plant. One man in particular and a bachelor at that, intends to plant over a mile strip and is getting his neighbours to do the same. He told me the other day that if all these fellows will do it we will make a change in the looks of this part, I might add that the land about him does not drift.

I spent several hours with Messrs. Mitchell & Cooch, and from the former learnt much about wind breaks. Though I have no land myself I could well see the advantages of tree planting. Their task is a hard one to try to make men put in trees in this country where all seem to be after the easy made dollar and do not look to the future. I presume the only thing to do is to keep at it and in time you will bring trees.

Yours truly,  
F. JOHNSTON.

### A TYPICAL DAY'S WORK ON THE TREE PLANTING CAR.

(From the Car Diary).

Nanton, Alberta: Worked in car all morning and had numerous callers. Amongst those who called were Mr. John Glendinning, ex-M.L.A.; Rev. Mr. Lytle,

and Mayor Holmes. There were also a number of farmers and one or two of the Councillors. Mr. Mitchell visited the town and advised different people about their tree and shrub planting.

The school children came over in two lots. Total audience, 287.

The evening lecture brought out 140 people and scores could not get into the lecture car. Many questions asked, all characterized by keenness and intelligence. Lectures lasted until after eleven. Everybody except those having children in their care remained to the very last.

### A MOST PECULIAR CASE.

By Douglas Malloch, the Lumberman Poet.

There was a man in our town  
With seven children that  
Inside a box-car settled down  
And used it for a flat.

Demurrage was not much a day,  
But rent? My lord, my word!  
In fact high rent he wouldn't pay,  
And so this man demurred.

The railroad, tho, at last declared  
The man would have to move.  
The man refused. To court they fared  
The law and fact to prove.

"You can't evict him," said the judge,  
"But you your car can haul;  
And, if the man declines to budge,  
Can move him car and all.

"And, if he boards aboard your car,  
The law relief affords—  
For you can charge whatever are  
The usual rates for boards."

And so an engine took the car  
And switched it to the line.  
The fellow said, "Ho-ho! Har-har!  
This travelling is fine."

But now his family was freight,  
From father down to pup.  
The railroad charged the lumber rate,  
The rate soon ate him up.

### FROM PERTH, N.B.

In enclosing his cheque for membership and subscription of a friend, Mr. C. O. MacDonald, Manager of the Royal Bank at Perth, N.B., writes: "It is always a great pleasure for me to bring to the attention of any friends the excellence of your work and of your publication, both of which I have seen demonstrated."

### HOW MEMBERS VIEW IT.

From a member in Briercrest, Sask.: Enclosed please find postal note to pay my membership fee. It is with the greatest pleasure I make this contribution.

### FROM HON. JACQUES BUREAU.

Three Rivers, P.Q. "I am heart and soul with the object of your association and think that everybody ought to join and try to make it prosperous and put it into a position to extend its operations as it is doing a world of good for Canada.



**FELLOW MEMBERS! THIS CALLS FOR YOUR PERSONAL DECISION!**

## A Plan to Enlist Young Canada in Tree Planting

A Nation-wide Essay Competition to Rouse the School Children to Action in a Practical Form of Timber Conservation.

The modern Canadian farm is land plus—

Good land plus a good farmer plus a good working plant.

The working plant includes a wooden house, wooden furniture, wooden barn, wooden fence posts, wood fuel, wood for implements, wood for annual repair.

Every Canadian farm whether on the southern prairies or in northern Ontario should possess one of nature's automatic wood factories, which the farmer calls a bush lot, or a wood lot. It grows on soil or in locations otherwise unproductive. It requires a minimum of care and gives abundant returns for the time and labor investment. But the farm wood lot does need some care, some intelligent programme applied to it.

The average farm wood lot in Eastern Canada is loafing on its job. Wheat and oats are giving higher and higher yields per acre. The wood lot is giving less. Should this be so? A lean wood lot means only that the owner's wood requirements must be satisfied at a distant lumberyard by cash payment. His farm profits, his farm conveniences, not to mention the beautifying amenities of bodies of trees, are needlessly sacrificed.

### Farm Forestry is Due for a Revival.

The Canadian Forestry Association wants the views of its members on a project for enlisting the school children of Canada in a farm forestry competition. The first stage will be a competitive essay for prizes. It will be operated through the schools and will stir up general inquiry and investigation and open the way for the spread of helpful information.

### We Want your Personal Opinion About the Plan.

Is this plan valid? Is it practical? Will it give results of positive benefit to Canada?

Many an elaborate plan gets launched on waves of effervescence and the impulse dies right there. This is not the way of the Canadian Forestry Association. If the plan is adopted—and that is for you to say—it will be given effect immediately. The Provincial Governments and their Departments of Education, their Forest Services will be asked to join hands, for we will need a clear path to the school-room and the home of every senior school boy and girl in the Dominion.

### Each Province a Unit.

The first stage will be the organizing of an essay competition, Dominion wide in its application. The subject cannot be identically phrased for all provinces, because of the fundamentally different forestry conditions. The preservation of existing trees as a source of wood supply, and the planting of new trees will, in general, represent the topic with which Young Canada will wrestle.

On the basis of "first things first," the competition will confine itself largely to economic considerations, namely the preservation and improvement (or re-establishment) of the farmer's wood lot from the point of view of commercial utility. In the case of the majority of school children on the southern prairies, most prairie tree planting has been done to beautify home surroundings and to protect stock, and crops against wind damage. So, the essay, as concerns the prairie provinces, will assume a special form, emphasizing the planting of trees for shelter belts purposes.

This does not sound as simple as the usual child essay on some topic of patriotic sentiment, such as love of flag, or military sacrifice. Nevertheless it is so identified with local interest and local need, so close to the human fondness for things that grow, that none need apprehend other than an enthusiastic response from Canadian boys and girls.

### The Prize Money.

Then the sporting instinct for a competition! We all share it. To compete and perhaps to win! The distinction of winning will be great enough and the prizes substantial enough to give the movement the proper impetus. Each of the nine provinces will be allotted five prizes of \$25, \$20, \$15, \$10, and \$5.

Comprehensiveness of treatment, and intelligence shown concerning the local forestry situation will govern the award. The length of essays will be limited to 1,000 words, less than a newspaper column.

The whole scheme narrows down to a question of stimulating a nation-wide spirit of enquiry concerning the forest resources, a nation-wide recognition that to burn down and cut down millions of trees year after year, without replacement, invites an ultimate disaster. When the timber supply of Canada fails, agriculture, mining, all branches of manufactur-

ing and transportation will cease to operate. Canada's present peril has been similarly disregarded by other great nations. Spending from the "bottomless purse" of forest resources, they have reaped consequences from which our Dominion must be safeguarded at any cost.

### The Children Hold the Future.

What will be the probable effect of the proposed competition upon the cause of forest conservation, upon reforestation of waste lands, upon farm forestry, upon tree planting on the northern prairies?

Tomorrow's public policies are being formulated today by the children in our schools. What forestry will amount to in 1930, whether timber conservation will be realized in action, whether living and crop conditions on the bare prairies will be enhanced by the presence of hundreds of millions of planted trees—the answers to such questions are being written in terms of finality this year, this hour, by the army of Canadian boys and girls.

A boy's first world is his home, his school, his few miles of land and woods and water within vision. Let him start his forestry right there. He has a problem at his back door. His father's wood lot (or "bush lot") is all too commonly the out-at-elbows member of the farm family. The best trees have been cut down; the crooked and diseased specimens left. Cattle or sheep graze under the branches and few young trees get a chance to live through a summer. This subject of the farm wood lot will provide the chief subject of discussion for Eastern Canada and British Columbia, for the farm is a voracious consumer of wood materials, three quarters of the entire production of our sawmills throughout America being used for farm buildings and repairs, fence posts, fuel, implements, etc.

After the essay competition has been completed, what? Will the newly-aroused interest in Forestry be permitted to die?

### The Second Step.

By no means. The essay competition is a first and essential step, leading to a second national competition in which the boys and girls translate into action their special instruction and newly-acquired interest.

However, the second stage is not our immediate concern. It will follow naturally, probably in 1922.



The Essay Competition should get under way this Fall.

Member! We have a question to put to you. The Canadian Forestry Associa-

tion is your organization. It is supposed to express your wishes. Will you say, by a mark of your pencil, whether you approve or disapprove of the project as

herein set forth? Please tear off the coupon and mail today:

## TO THE MEMBERS FROM THE PRESIDENT

*To the Members of the Canadian Forestry Association:*

Judging by the expressions commending its work, there can be no doubt that the years of effort of the Canadian Forestry Association appeal strongly to all those interested in conservation of the forest.

The two lines of accomplishment mentioned are:—

- (1) Propaganda work against fire.
- (2) The tree planting work.

In considering carefully their future course, your directors have decided that something additional is needed now, viz:—

“The Re-forestation of the Country Wood Lot.”

By this, is meant, not the “timber limit,” but the small portions of standing forest on farms, etc., undergoing the ordinary process of depletion.

Various suggestions have been made of methods to accomplish this, and among them has appeared the interest of the rising generation in the conditions in which they will live in after years. A naturally following thought is: why should not the school girls and school boys, each locality with its peculiar needs in mind, be able to tell that Great National Institution, the Canadian Forestry Association, what ought to be done, in order to provide trees on their farms for the years to come.

Old and young throughout life compete for the various prizes that life affords, (call them what you wish), why then, should not the school children of Canada compete for reasonable prizes for the best essay on how to reach this result in his or her particular locality.

The Canadian Forestry Association gains its best results by the “Team work” of all its Directors and all its members.

If the scheme briefly outlined above, is good and appeals to the members, please tell the Secretary so. If you don't approve of it, please say so. The majority of the replies will decide.

Your advice is needed, kindly give it.

For the Directors,

C. E. E. USSHER,  
*President, Canadian Forestry Association.*

(TEAR OFF HERE AND MAIL TO-DAY.)

**CANADIAN FORESTRY ASSOCIATION.**  
224 Jackson Building, Ottawa, Canada.

As a member of the Association I  approve  do not approve of the plan to stimulate an interest in farm forestry on the part of Canadian school children through an Essay Competition.

Remarks -----

Name -----

Address -----



# Timber Areas and Timbers in Australia

By C. E. Lane-Poole, Chief Conservator, Perth, W. Australia.

In the article appearing in the issue of the "Canadian Forestry Magazine" for March 15th of the current year, some of the references in regard to Australia are scarcely in conformity with the facts of the case, and the writer of the article has done but scant justice to some of the prime timbers of Western Australia. It is stated that "in Australia there are 70 million acres of timber of more or less commercial value." If in this estimate are included those areas on which a few trees sparsely segregated are to be found, possibly the figure is within the mark. Indeed it is safe to say that it is a good deal under the mark. But between Savannah timber land and forest land there is a wide gulf fixed and of forest lands, using the word in its proper sense, Australia unfortunately has no such area as 70 million acres. At an Interstate Conference on Forestry held at Perth in November, 1917, at which representatives of the Forest Administrations of every State were present, the questions of the forest area of the Commonwealth and of the minimum that was economically demanded if Australia were to continue to produce timber in the future as it has done in the past were discussed. One Chief Forester, in the course of discussion, put it this way:

"The position seemed to be somewhat as follows: Victoria had about 4,000,000 acres of State forest, New South Wales proposed to have 5,000,000, and might perhaps obtain 6,000,000. Queensland had 1,000,000 acres of State forest and 3,000,000 acres of temporary reserves. Much of the latter was of very little value for forestry, having been reserved many years



Wolf pups, caught on the Cypress Hills Forest Reserve, Alberta, on the ranch of P. H. Armstrong. Eight pups were found in the den and two saved for "pets."

ago, because the land was considered not suitable for settlement. They could afford to alienate some of that, and must endeavour to find more forest land in other localities, but it appeared impossible to obtain more than 4,000,000 acres of forest land for Queensland. West Australia apparently cannot look forward to more than 4,000,000 acres, while South Australia's area is too small to take into account in the calculation. This makes a total of 18,000,000 acres exclusive of Tasmania."

## Estimates Now are Lower.

These figures may be regarded as authoritative but, since they were published, a classification survey has been made of Western Australia forests, and it is doubtful at the present moment whether the total area of Crown forest will exceed 3,000,000 acres. The task towards which every Forest Department in the Commonwealth is now applying itself is that of increasing this area, and that this will be accomplished in time can scarcely be doubted. A good deal, of course, will depend on the extent to which land that really ought to be forest land may be alienated for other purposes, farming, etc.

The eucalypt, take the species all round, is a tree that attains dimensions much beyond the average obtaining in Europe or in America, and there are giants among the eucalypts. The karri of Western Australia, for instance, frequently reaches a height of over 250 feet and one measured not long before this article was written was found to be 278 ft. in height. In the Gippsland District of Victoria too, there are eucalypts of abnormal size, but no specimen has yet been found over 300 ft. in height. It may be, of course, that in the article in the magazine already referred to, in which it is stated that one variety of eucalypt found in Victoria reaches a height of 380 ft., this figure is a misprint for 300 ft. Certain it is that no tree in Victoria, or anywhere else in Australia for that matter, has been found of a height of 380 feet.

The jarrah and karri of Western Australia stand in a class by themselves. These timbers—particularly the former—have been exported in large quantities to Europe, Africa and Asia. It is admirably adapted for piling, as is stated in the article already referred to, but such a purpose does not by any means define the range of usefulness of the timber. It can be safely said that there is no purpose in building construction to which jarrah cannot be applied. In bridge, harbour and wharf work it is extensively used, but, in addition to what may be termed rougher

purposes, it can be utilized in other and superior ways. As a furniture and decorative timber, jarrah has scarcely any equal. In the Empire Forestry Exhibition held in London last year the display of high-class furniture and panelling in jarrah attracted a great deal of attention. Karri is a close relative to jarrah and it can be put to all the purposes to which jarrah is put, both rough and fine, with the sole exception that it does not possess the durable qualities of jarrah when in the ground.

## Why Not Import these Hardwoods?

These two timbers are exported every year to a value close upon one million sterling, and during this year it is probable that the million limit will be again passed, as it was on one occasion before the war. One of the anomalies in inter-Dominion trading centres round Canadian softwoods and Australian hardwoods. The Commonwealth is a large importer of Canadian timber. The Australian knows the value of the Canadian product and he uses it for a great many purposes. But information does not seem to have reached Canada about the qualities of Australian hardwoods, or, if it has done so, it has been confined to a comparatively limited



HOW COTTONWOOD GROWS.

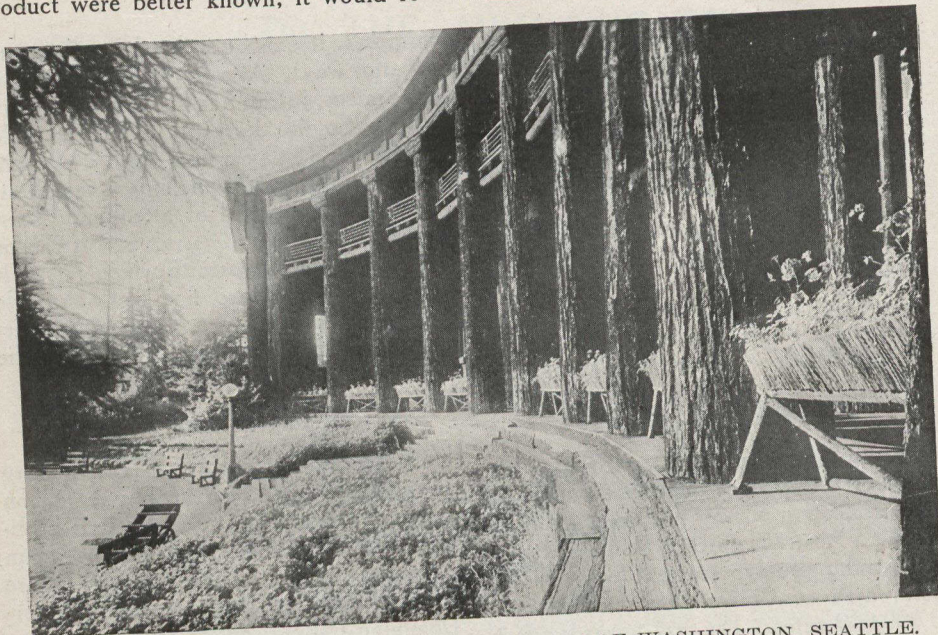
A specimen at Senneville, Quebec, that measures 16 feet 2 inches in circumference. Photo by J. N. Stephenson.



circle. And yet Canada uses a fairly large quantity of hardwood every year, and it is certain that, if the Australian product were better known, it would re-

ceive a general acceptance, and the monies now sent from Canada to foreign countries for hardwoods would be kept within the Empire.

all winter in the Edgewood Lumber Company camp at Arrow Park. Sceptics may see, at this office, samples of the clinkers mentioned above."



THE FOREST SCHOOL OF THE UNIVERSITY OF WASHINGTON, SEATTLE.

This unique structure, so admirably suited to the nature of the school, readily attracts attention by its massive pillars of solid logs. The success of this institution, especially in the teaching of logging engineering has gained for it a wide reputation.

### A FOREST FIRE PHENOMENON.

The District Forester at Nelson, B.C. reports the following phenomenon in fighting fires in his district:

"We had a 400 acre slash fire the last week in May near Arrow Park. Heavy rains in June apparently obliterated all trace of fire but we kept a couple of patrolmen on to dispose of stubs. Something over 100 of these, many 4 feet on the stump, have been felled and the most remarkable feature is this—each of these punky hemlocks has one to two bucketsful of clinkers, red hot, which have formed within the green shell. They show no

smoke but by careful observation heat waves may be detected. Periodically there is an explosion of confined gases and these hot clinkers are propelled in all directions like the fragments of a bursting shell. Naturally they started up many ground fires until felled and extinguished. I may add the original fire ignited these trees any way up to 80 or 90 feet, burning the top off and then proceeding to work down inside the trunk. I am today forwarding a preliminary fire report on a fire which we have every reason to believe was held over in punky hemlock from last year, and we have an authentic case of hemlock smouldering



The Museum of the Forest School, University of Washington, Seattle.

### TREES TO CUT FOR IMPROVING WOODS.

Trees which are well suited for firewood, and the removal of which will be an improvement for the remaining trees in the stand.

Trees which have been overtopped by others and have had their growth stunted.

Diseased trees, or trees seriously injured by insect attacks, or trees extremely liable to such injury; for example, chestnut in the region subject to blight or birch in the gipsy-moth area.

Badly fire-scarred trees.

Trees of the less valuable species.

Crooked trees and large-crowned, short-boled trees which will not make good lumber and which are crowding or overtopping others.

Slow-growing trees crowding fast-growing species of equal value.

Sound dead trees, both standing and down.

### PROTECT WOODS FROM FIRE.

A tree will make a million matches—a match may destroy a million trees.

Take no chances with lighted matches, tobacco, brush or camp fires.

Forest destruction is quick—forest growth slow.

Burned timber pays no wages.

When fire is discovered, put it out if you can. Get help if you need it.

### An APPRECIATIVE WORD.

From Manly H. Craig, Deputy Land Surveyor, Perth, N.B.: "I have just received the August number of the Canadian Forestry Magazine and to me is a very marked improvement over the former issues. I want to assure you that this one copy is worth to me a full year's subscription and membership and would not part with it for \$2 if I could not get another."

### VALUED APPROVAL.

From Colonel Henry S. Graves, Washington, D.C., lately Chief Forester of the United States:  
Canadian Forestry Assoc.:

"I enclose my subscription for 1921. I wish to express my appreciation of the excellent work which is being done by your organization. Foresters on this side of the border are watching your work with a great deal of interest and one hears many times expressions of commendation of what you are doing."



## A New Method of Cutting Christmas Trees

(From the Journal of Forestry.)

I was very much interested in the article that appeared in the Journal for March under the title "Christmas Trees Cut Without Destroying the Parent Tree." It happens that there is a student in one of my classes who has cut Christmas trees on a plantation for several years past. The plantation is situated in Monroe County, Pa., and consists of spruce and balsam fir. I am informed that the method of cutting these trees is invariably to leave one branch of the lowest whorl of bran-

ches so that the stand may continue to be productive almost without interruption. During the past 20 years as many as seven trees have been taken from some of the stumps. In fact, the rule is never to cut the trees below the lowest whorl unless a thinning is necessary.

LAWRENCE SMITH,  
Instructor in Forestry.

Department of Forestry,  
State College, Penna.

them through the summer when they were too large to cultivate. But when I explained to him that I intended to plant only three rows, four feet apart, in each strip, and the trees four feet apart in a row, and promised to cultivate and keep them clean for a few years, after which I was sure we should have irrigation developed here to keep them going, the inspector then said that as I was so keen he would consent to furnish the trees free the following spring. He suggested my planting Russian poplar in the centre row, every other tree maple and ash in the east rows, and willow in all the west rows of each strip, the rows to be four feet apart. He took a drawing of my plans, and the trees were furnished the following spring.

I followed the instructions given me in putting in the trees. The maple and ash were furnished as seedlings, while the Russian poplar and willow were cuttings. I put the cuttings in with a shovel at an angle of 45 degrees, allowing only one bud to be exposed, and packed the soil well on top of each cutting. The seedlings were laid at the same angle in a plowed furrow, and covered also by the plow at least three or four inches deeper than they were in the original nursery. I packed them by running a wagon wheel up and down the rows just over the roots of the seedlings, taking care not to run over the tops. It took two of us only four days to complete the job. I don't believe over 25 trees out of the five thousand died, and the secret is to properly prepare the ground a year previous to planting, and then to plant prop-

## Germany's Paper-using Customs

Former Postmaster General, A. S. Burleson, who has been in Germany investigating the possibilities of marketing American cotton, reports that Central Europe has become so accustomed to using paper substitutes for many textile articles that the task of getting back the market there for American cotton is an extremely difficult one while the German mark remains at its low and widely fluctuating value. White paper table cloths and napkins have been in general use for nearly five years, and even the best hotels in Berlin no longer feel it necessary to pro-

vide linen or cotton cloths for their tables. Great rolls of heavy crinkled paper are kept in all restaurants and hotels. Waiters cut table lengths from these as required. The same system is resorted to in private houses. Germany has an abundance of paper and the price is low. Woven paper cloth has replaced cotton, woolen and silk fabrics almost entirely as upholstery and drapery material in car furnishings. Woven paper towels and tablecloths have been perfected which can even be washed two or three times.

## Remarkable Success in Tree Planting

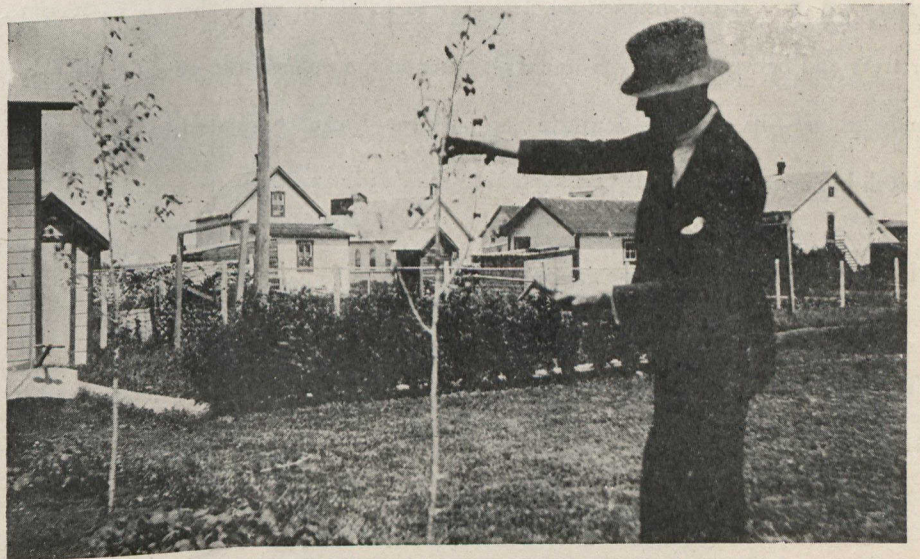
By N. J. Anderson, of Barnwell, Alta.

It was after Mr. Anderson had failed in his attempt to prepare a "dust blanket" over his land, in order to preserve moisture for the growing of crops in the dry farming district of Southern Alberta, that he conceived the idea of planting trees. We give the interesting story in his own words.

I always believe in profiting by the experience of others, and if there is anything new comes out in methods of agriculture, I am usually one of the first to try it for better or for worse.

While on a trip to the Lethbridge Experimental Farm, the idea came to me to plant trees. I set to work and plowed three strips, each one rod wide, and arranged these strips 40 rods apart through my 160 acres, dividing my homestead into 40 acre plots running north and south. These I ploughed about twelve inches deep and thoroughly cultivated all summer, taking care to keep all the weeds down. My grain was re-sown, and made a fine growth, but was thrown late and injured by frost in the fall.

Having plowed and prepared these strips to plant trees the following year, I applied to Mr. Norman M. Ross, of the Dominion Forestry Nursery at Indian Head, Sask., for five thousand trees. My large order attracted the interest of the



Mr. Archibald Mitchell, in charge of the Canadian Forestry Association's tree planting campaigns on the prairies is here shown giving a demonstration in correct methods of tree pruning.

tree inspector, and he came to my home to inspect the tree plots. I well remember his objecting to my plans, saying the plots were not wide enough to be self-supporting in the future, as a windbreak must consist of several rows in a plantation form to be successful, in order that they might hold enough snow in winter to pull

erly and, above all, pack well, after planting. The first season's growth was from 3½ to 4 feet, and looked a perfect picture. The inspector called at this time, and was more than pleased. He found them perfectly free from weeds and well cultivated, which he said was the whole secret. I have two children who have



spent an hour each day of the summer holidays hoeing these trees where it was impossible to reach with a cultivator, and that has been sufficient to keep the whole five thousand trees clean, and has also encouraged a home-making interest in the children.

The trees are now an average of ten to twelve feet high, and the coming year will for the first time see a stream of water running beside each windbreak, as we now have irrigation. I intend to use these rows

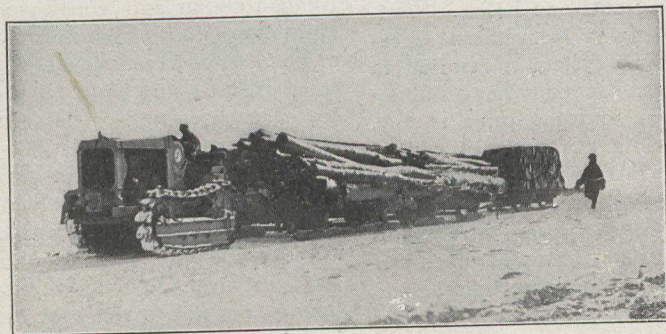
in the future not only for windbreaks for the land, but for shade for cattle, when I will use two of these 40 acre plots for pastures. I will irrigate the one while pasturing the other; then change about. Hay and grain will be raised in the other two plots.

Around my residence I have planted Norway poplar, cottonwood and laurel willow; also caragana for hedges. I have evergreens growing in the shelter of the above-mentioned trees. Beside my home

and at the back I have two separate enclosures of an acre each, with six rows of trees around the outside, making an ideal place for garden and small fruits. I have nothing original to tell you, only I was willing to try what others said could be done, and I declare that there is no spot in Canada too dry to grow trees, for I have tried it, and in 1918 and 1919, when we had insufficient rainfall to raise crops of grain, my trees grew from three to four feet each year, and practically every tree is alive, and pulled through two of the driest years I have seen since Albert was settled. In 1919, when even the grass never became green as a result of drought, my whole farm looked like an oasis in a desert, and my trees were really the only thing that was green on my home, and were a great comfort to us all.

It is wonderful to think that only four years ago a mere bud of a cutting projected an inch out of the ground and seedlings possibly 18 inches. Many of my neighbours predicted failure in my attempt, but year after year the trees grew taller as their predictions grew smaller, and now I am supplying these same people with cuttings, while they could just as well have had trees twelve feet high, doing away with the barrenness of the prairie, breaking the wind, creating joy in home-making, and showing that our lives and surroundings are just what we choose to make them.

## The Tractor for Logging Lumbering and Hauling



**JT** TRACTOR HAULING LOAD OF 24 TONS AT 20° BELOW ZERO.

The **JT** is dimensioned for its ability to go ahead where there is no road—under trees and between them—its traction is sure in the underbrush, on solid, swampy or sandy ground—its control is sensitive and positive—it can be handled to the fraction of an inch in narrow passages.

It will snake logs when teams are out of the question.

The **JT** will turn in a radius of 6 ft., its width over all is 60 inches, and it has a caterpillar traction of 1,628 sq. inches.

Write for Catalogue and full particulars.

**THE GENERAL SUPPLY CO. OF CANADA LIMITED**

OTTAWA, :: ONT.

MONTREAL,

TORONTO,  
NORTH BAY,

WINNIPEG,

MONCTON.

VANCOUVER,

### COMPANIES EAGER FOR FORESTERS

MILFORD, Pa.—“That forestry has advanced in the last fifteen years from a mission to a recognized profession is in no way better evidenced than by the manner in which the paper industry has provided positions in its organizations for the technical forester,” said O. M. Porter, Assistant Secretary of the American Paper and Pulp Association, himself a Yale forester, to the students at the Yale summer school at Milford, Pa., at their camp fire tonight.

“There are now so many foresters engaged professionally by paper companies that there is a special department, the Woodlands Section, in the American Paper and Pulp Association, composed of foresters and woods superintendents of paper companies and the Executive Secretary of the Association itself, Dr. Hugh P. Baker, is a Yale Forest School alumnus.

“These foresters are carrying into this great industry, both in the United States and Canada, their profession by practicing it, and I am proud to say that they are recognized as delivering the goods so effectively that their methods, once regarded by practical woodsmen as fanciful theories, are now recognized as making a profit for their employers.



## Russian Poplar on the Prairies

By Archibald Mitchell.



Well worth the trouble of planting, but this prairie farmer has not made a complete success of his work. Cattle have been allowed to browse about the shelter belt of Russian poplar with evil results, the wind protection near the ground being seriously decreased. Also the belt was not planted thick enough in the first place.

In some parts of Saskatchewan, notably around Saskatoon and along the Goose Lake Line to Zealandia and beyond, among the older plantations the farmers are approaching another stage in farm forestry.

Many of the old plantations consist of Russian Poplar about 16 years old and 30 feet high.

They have usually been planted with the rows 6 to 8 feet apart, and the trees 4 feet apart in the row.

The lowest branches of practically all of the trees are dead and dropping off, and there are also many dead branches higher up, even the tops of some of them being dead.

The dying of the lower branches is caused by the light being shut off from them through the dense foliage of the tree tops, and is a natural condition seen in all close grown forests.

It is different with the dead upper branches for they are an indication that all is not well with the health of the plantation. Many of the trees have canker spots on them showing large blisters of dead bark, which increase in size from year to year. This is an indication of disease and such trees will in time die.

The number of diseased trees is increasing, and soon instead of fine dark green vigorous looking plantations round the farm premises, refreshing to the eye and indicative of progress, we shall see only a lot of broken skeletons of tree groves, and another failure will be registered in the history of tree growing.

Underneath these trees, the ground is often covered with weeds, the worst and most persistent being perennial blue-joint grass. The ground is hard and dry,

sometimes trampled by stock, and just about everything a forest floor should not be.

This is the general condition of these groves and while it is not pleasant to contemplate the result of our planting twenty years ago becoming a wreck, still from what we know of the Russian Poplar, it is only what we can expect.

There is really no reason to be alarmed, only we have to realize that the first stage of these plantations is over and it is now time to attend to the second.

The Russian Poplar is, at best, but a short lived tree as trees go. We know some of them will live thirty years, but we also know many will not live twenty.

That is about all we know about them. They have not been tried out much more than thirty years in the west. Meantime, these Russian Poplars around Saskatoon and down the Goose Lake line, have served their purpose. If more planting of this kind had been done the country would have been stimulated to a much greater degree than it has been all over the country.

What is required now is first to kill the perennial grass underneath the trees, and restore the condition of the soil.

The grass is killed by covering the ground with about a foot of straw in the month of June, when it is in the vigor of its growth.

**Note:**—The month of June or early in July is the only time of year this can be done successfully.

The lower branches may be pruned 4 or 5 feet up for this purpose if necessary.

Two years or so after, when the grass is all choked out and the straw mulch has become well rotted, the ground below the trees will be found to be moist and mellow, different altogether to what it was before the mulch was applied.

It is now ready for the next stage in the life of the plantation, underplanting with Spruce. Small plants about a foot high should be used and they should be planted 4 to 6 feet apart in holes under the trees. They will not need any cultivation, the rotted straw mulch and the shade of the older trees will preserve plenty of moisture for them. Spruce is besides, a lover of shade in its younger stages and it will rapidly become established. In about 5 or 6 years, when the trees are four or five feet high, the Russian Poplar can be gradually cut out from over them, leaving in time a pure plantation of spruce. This is the way these plantations should be managed.

### Jellied Salad à la Bovril

Take cold sliced potatoes, tomatoes, a few pieces of onion cut very small, asparagus tips, cauliflower heads, or other suitable cold vegetables. Place in moulds and cover with hot Bovril in which has been dissolved powdered gelatine in the proportion of a heaped teaspoonful to a pint. Chill and turn out on fresh crisp lettuce leaves. Serve one mould to each person.

This dainty and unusual dish is not only light; because it is made with Bovril it is *nourishing*. Bovril contains the goodness of the beef. Use it in all your cooking.



## Close Planting for Trees

By Archibald Mitchell.

A constant subject of discussion among western tree planters is the closeness of planting.

"Don't you think the Forestry Branch trees are too closely planted?"

"Why? What makes you think so?"

"Well, in three or four years they are so close you can't cultivate them any more."

"What do you want to cultivate them for?"

"Well, to keep in the moisture, isn't it?"

"That's right, it's to preserve the mois-

ture for the use of the trees. And why do we have to preserve it?"

"Because we don't get enough."

"For trees? Oh no, that's not quite it, for we do get enough every year for trees, even in the driest years. If we did not, all the trees planted on the prairie during the past twenty years would have died in the last three or four years, wouldn't they? But they have not. There are thousands of them living and flourishing too, many of them making several feet even in such a dry season as last year.

"We cultivate our trees for something

else, not because we don't get enough rain for them, but because we want to keep what we do get. That's what we cultivate for, to keep the moisture.

"And when we talk about keeping the moisture, that naturally brings up the question of 'How do we lose it?', doesn't it?"

"And how is it we do lose it?"

"We lose it mostly through the action of the sun and the wind, and this brings us back again to the original question about the close planting. We plant the trees close, 4 x 4 ft. apart or 4 x 6 ft., so that their branches will meet as soon as possible and shade the ground from the sun, and shelter it from the wind.

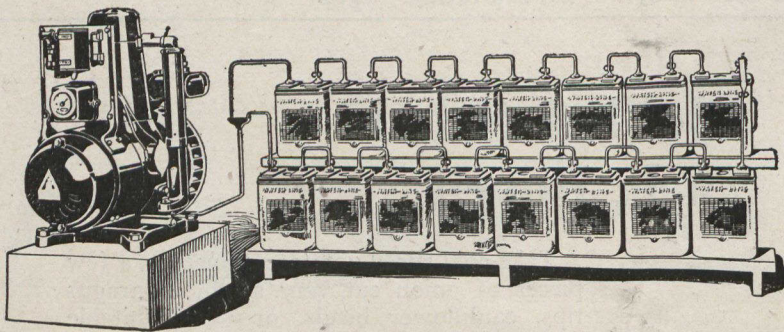
"This is the way nature does, as may be seen any time on examining a bluff of native trees. There you will find close planting and dense foliage shade to perfection."

"Add to close planting, the free use of shady trees, and the planting of broad belts from 60 to 700 ft. wide, and you have the whole secret of success in farm planting.

## BLUE PRINTS AND PLAN REDUCTIONS

We offer exceptional Facilities for  
the Reproduction of Plans to Re-  
duced Scale.

**The CRABTREE CO. Limited**  
ARTISTS ENGRAVERS BLUE PRINTERS  
OTTAWA



**DELCO LIGHT**

**THE COMPLETE ELECTRIC LIGHT AND  
POWER PLANT**

At a minimum of trouble and expense Delco Light gives a maximum of Service and Safety. Write for free information.

The plant illustrated above is identical with that used on the 1921 Tour of the Canadian Forestry Association's Eastern Exhibit Car.

**ELECTRICAL SYSTEMS LIMITED**  
Toronto

**A. R. WILLIAMS MACHINERY CO.**  
St. John

**THE CHARLEBOIS CO.**  
Montreal

**JOHN STARR SON & CO.**  
Halifax

### LANDS CONTRACT BY AEROPLANE.

When J. D'Ersby, of the D'Ersby-Dewar Co., contractors, Vancouver, B.C., arrived at his office one morning he found that he had until noon to submit certain figures to a local concern to be in the running for a big building contract. These figures, or many of them, were in the hands of his partner, who was in Mons, sixty-eight miles north of Squamish—and no telephonic communication.

There was only one possible chance of getting the required information, and Mr. D'Ersby took it. He phoned Major Earl Godfrey, manager of "Aircraft Manufacturing, Limited," and arranged to have one of that company's aeroplanes take him to Mons. Mr. D'Ersby arrived there in record time, located his partner, and returned to Vancouver at 11.50 a.m. He got the contract.

### FALL BURNING OF BRUSH.

**Request Issued by New Brunswick Forest Service.**

"The Department is anxious that you should do all you can to encourage fall burning of brush instead of spring burning. This would eliminate much of our spring fire trouble and also the person clearing land would be able to work the land earlier in the spring instead of waiting until the brush, etc. was dry enough to burn, when usually the surrounding country is also dry and dangerous. Anything you can do along this line will be appreciated."



**A TIE SUPPLY FOR THE NATIONAL ROADS.**

Jack-pine ties predominate in the quantities of ties used in Ontario, Quebec and the Prairie Provinces to-day. Hemlock comes second, and in certain sections where it is cheaper and more available timber it exceeds the quantity of jack-pine used. Hardwoods follow third in quantity, and are increasing in favor in Southern Ontario and Quebec, particularly on Grand Trunk lines.

Where jack-pine timber is available it is frequently cheaper, as the hewing is more easily performed, and the tall, straight tree more adapted to getting out ties in quantity, but the supply of jack-pine tie timber is more limited than the operators themselves often imagine. Timber cruisers who are thoroughly familiar with the tie supply situation between the East and the Rockies are seriously wondering if the supply will last twenty years. This shows the imperative need of preservative treatment, and the wisdom of C.P.R. in erecting the Sudbury plant. The national lines are said to have considered the erection of a plant of the same capacity.

The yearly tie requirements of the C.P.R. are understood to be around six million—the C.N.R. the same, but with the addition of the Grand Trunk with the national lines, the national tie requirements will probably be around ten million.

Jack-pine a few years ago was not in demand for lumber purposes, but to-day it is being sought extensively and throughout Northern Ontario in particular. Pulp companies, especially kraft mills are using it—the news print mills utilizing a larger quantity yearly.

It is not improbable that many new uses will result in jack-pine for ties not being available in quantity in a few years. The life of an untreated tie being six years, and a creosoted tie almost three times that length, it seems as if the responsible authorities should urge preservative treatment before their installation in the tracks.

**SAVING TIMBER BY CREOSOTE.**

*(From the Financial Post.)*

SUDBURY.—With the shipment of a train-load of creosoted ties this week, another Ontario industry, The Canadian Creosoting Plant, has taken its first step towards meeting the heavy demand of Canada's Railways for ties, fifteen million of which are yearly required. The new plant is located on the road between Copper Cliff and Sudbury, and it is the intention of the company to first take care

of the immediate demands of the C.P.R. for ties, before accepting work from other roads or handling timber, other than ties.

Creosoted timber and ties are one move in the direction of the conservation of timber resources and for building purposes, and the treatment also places timber in a position to stave off the inroads concrete and steel were making. Creosote extends the life of timber some 7 or 8 years in ties, and 300 to 00 per cent in buildings, and so in a measure, makes up for the constantly increasing cost of timber production.

It is only in the last few years that creosoting has been adopted in Canada. Heavy inroads on our timber, especially the most desirably located limits, has yearly added to the cost, and so to-day, the creosoting system in vogue in France for 30 years, and in the U.S. since 1885, is being universally adopted. Of course the rapid extension of Canada's steam roads, and different radial systems, has had much to do with increasing the tie demand. As an evidence of this, it is noted that the C.P.R. is calling for tenders for the delivery of a million ties for use



Thousands of railway track ties stacked in the yards of the Canada Creosoting Company, Trenton, Ont., awaiting the creosoting process that will almost double their endurance.



A great many acres of this timber have been "drowned" by the sand dunes of Prince Edward County, Ontario. The white light through the trees is not the sky but a thirty-foot wall of sand which will soon reach the woods.



on the central lines in Ontario and Quebec, for 1922.

The new Sudbury plant is expected to treat over a million and a half ties yearly and at a later date will start the treatment of bridge and other timber. At present 10 to 15 thousand ties are treated daily, and there is a stack of over half a million ties in the yards, to work on, with train loads coming in daily.

### RAPID GROWTH OF TIMBER FOR PAPER.

An intensive survey of Canadian timber lands, by Edward F. McCarthy, one of America's best known foresters and forest investigators, has shown that surprising crops can be secured from cut over pulp wood land by proper handling.

An address before American foresters, attending the annual convention of the

Woodlands Section of the American Paper and Pulp Association, told of his investigations on a 19,000 acre tract of timber land. He showed that there is a startlingly rapid growth of new timber on cut over pulp wood lands of mixed hard and soft woods, when protected from fire.

Mr. McCarthy was the first forester on the faculty of the New York State to make a series of investigations of Canadian forests for the Canadian Commission of Conservation.

Mr. McCarthy's investigations showed that ten years after an original cut of 2.9 cords per acre on virgin mixed timber in the Canadian region, there was a stand of 4 cords, and at the rate of growth maintained in the last ten years, in another ten there will be  $6\frac{1}{4}$  cords per acre, and 7.6 cords in 15 years. His investigations, however, showed a serious mortality due largely to insects.

### WOOD SHINGLES FROM BRITISH COLUMBIA.

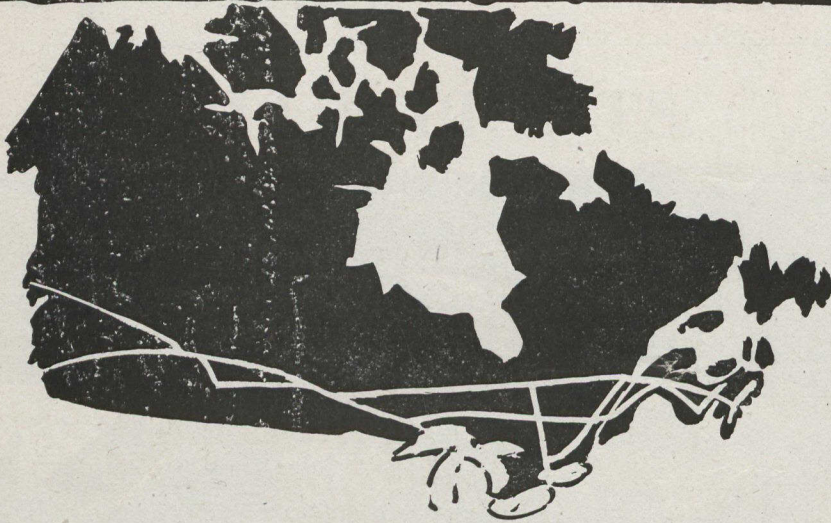
(American Forestry)

Last year fifty thousand homes and buildings in the United States were roofed with cedar shingles which came all the way from British Columbia. We now rely on this well timbered Canadian province for one-seventh of all the wood shingles used in this country. It is indeed well for us that we have this outside source of supply, for it is estimated that the combined red cedar resources of our greatest shingle producing states, Washington and Oregon, amount to less than forty billion feet, which, if it were forced to fill all our shingle needs, would be entirely exhausted in less than eight years. The use of other woods, such as redwood, cypress, white cedar, pine and hemlock serves to reduce this drain on the red cedar supply, but unquestionably red cedar now stands pre-eminent among all shingle woods.

The Canadian Government has estimated that there is over seventy billion feet of good shingle cedar in the Province of British Columbia, nearly twice that remaining in our northwestern states. Until reforestation can begin to compensate for our own consumption we will grow each year more dependent upon British Columbia for shingles, or we must be prepared to pay much higher prices than ever before.

The proposal that shingles be made one of the articles to receive a high tariff will, if adopted, place squarely before everyone the present and immediate need of taking steps to conserve our forests. It will be a bitter pill to swallow, but one that should prove effective.

## Canadian National Railways



**A WEALTH of RAW MATERIAL  
ABUNDANCE of WATER POWER  
Unequalled Agricultural Opportunities**

**Forest Products.** The forest resources of Canada are served, in the main, by the Canadian National Railways. The pulp and paper mills, with few exceptions, are situated on its lines.

**Minerals.** Practical information on the mineral resources of Canada, and opportunities for development.

**Intelligence Service.** The Industrial and Resources Department of the Canadian National Railways has the widest range of information on Canada, and which is available to the public.

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

R. C. W. LETT, General Agent,  
EDMONTON, ALTA.

J. WARDROP, General Agent,  
WINNIPEG, MAN.

C. PRICE GREEN,  
Commissioner,  
Industrial and Resources Dept.  
TORONTO





**WHAT THESE FIRES MEAN!**

Forest fires in the United States annually destroy more than 2 billion feet of timber, or material enough to build a 5-room frame house every 100 feet on both sides of a road extending from New York to Chicago, according to the Forest Service, United States Department of Agriculture. With four people to a house, these 100,000 or more buildings would provide a home for nearly one-fourth our yearly increase in population—a number sufficient to populate a new city each year the size of Cincinnati, New Orleans, Minneapolis, Kansas City, Mo., or Seattle.

**REVENUE FROM FORESTS OF INDIA.**

The Inspector General of Forests has furnished the following official statement of revenues, for the period 1909 to 1918:

	1909-10	1910-11	1911-12	1912-13	1913-14
Gross Revenue .....	\$8,675,265	\$9,135,151	\$9,685,786	\$10,403,266	\$11,100,515
Expenditure .....	4,976,885	5,081,341	5,648,855	5,769,270	5,847,818
Net Revenue .....	3,701,713	4,053,810	4,036,931	5,000,666	5,252,663
Total area in square miles.....	224,551	243,478	242,960	238,923	245,612
Area under forest W. plans.....	49,421	50,183	50,892	51,722	53,926

	1914-15	1915-16	1916-17	1917-18	1918-19
Gross revenue .....	\$9,903,261	\$10,372,122	\$12,353,977	\$13,656,419	\$15,606,077
Expenditure .....	6,068,817	6,197,538	6,247,961	7,052,354	9,625,168
Net revenue .....	3,834,445	4,174,587	6,106,008	6,604,064	5,980,908
Total area in square miles.....	249,867	249,000	246,579	251,512	251,468
Area under forest W. plans.....	55,629	57,444	58,588	60,724	60,670

The total acreage for 1918-19 is about 161,000,000 acres.

**FORESTRY CAR AT FREDERICTON.**

Sixteen Hundred Children from Fredericton's public schools attended the lectures and moving pictures in connection with the Canadian Forestry Association's visit. It was necessary to hold two meetings to accommodate all the school children, while a third meeting was held to accommodate the Provincial Normal School students and the public. Moving pictures of fire fighting provided by the Canadian Forestry Association, with fishing and hunting scenes on Cains River and Salmon Lake, N.B., provided by Harry Allen, President of the N.B. Guides' Association, were appreciated by old and young; many of the children had never seen a live moose. Lectures on fire prevention were given by Col. T. G. Loggie, Deputy Minister of Lands and Mines, His Lordship Bishop Richardson, Dr. C. C. Jones, of U.N.B., Dr. B. C. Foster, Principal of the High School, and Dr. H. V. Bridges, principal of the Provincial Normal School, and R. D. Hanson, Secretary of School Trustees. Through the active co-operation of the N.B. Forest Service, the city school board and Harry Allen, of the Guides' Association, the meetings were most successfully arranged and conducted.

**THE VOICE OF PATRIOTISM.**

From Jos. A. Wright, Winnipeg: "Please find closed order for five dollars. I take great pleasure in accepting a contributing membership in this far-reaching cause. I have been over burnt tracts of forest and unless one has been it is hard to realize the awful destruction of one of our greatest assets? Wishing this great association the greatest success."

CANADIAN FREE SEED.  
NORTHERN GROWN FOREST TREES.  
SHRUBS AND CHINESE PEONIES.  
**EDYE-DE-HURST & SONS,**  
Dennyhurst, Dryden, Ont.  
Shippers to H.M. Government.  
Telegraphic Address, "Dennyhurst,  
Dryden, Ont."



**PROFESSIONAL**

**Timber Estimating and Mapping  
Boundary Surveys,**  
Manager of Forest Properties,  
Supervision of Lumbering-Observations  
Forest Planting.  
**COOLIDGE & CARLISLE**  
Forest Engineers  
(Associated)  
P. T. COOLIDGE,  
31 Central St.  
GEORGE T. CARLISLE, Jr.,  
127 Columbia St.  
BANGOR :: :: MAINE

PATENTS  
SEARCHES, APPLICATIONS, ETC.  
TRADE MARKS  
DESIGNS REGISTERED in all COUN-  
TRIES TECHNICAL AND INDUSTRIAL  
RESEARCH  
HANBURY A. BUDDEN  
ADVOCATE, Reg'd U.S. Pat. Atty  
CABLE No. 1088  
ADDRESS 712 DRUMMOND BLDG.  
"BREVET" MONTREAL

**Gagnon & Morissette**  
TIMBERLAND CRUISERS  
LUMBER CONTRACTORS  
FOREST INDUSTRIES  
CHICOUTIMI, - P.Q.

**TIMBERLAND SERVICE**  
Estimates Maps Graphic Methods  
JAMES W. SEWALL, Forest Engineer  
Old Town, Maine. SANFORD, FLORIDA. Munsey Building,  
Washington, D.C.  
Largest Cruising House in America

**Hibberson Bros.**  
Forest Engineers and Surveyors  
Cruising, Mapping, Logging Costs,  
Flumes Logging R.R.'s  
Appraisal on Timber Holdings for Banking  
Interests a Specialty.  
Information on B.C. Timber supplied at  
low cost.  
Sixteen years experience cruising  
British Columbia Timber.  
Suite 701-5 Belmont House, VICTORIA  
B.C.

**LT.-COL. L. J. D. MARQUIS**  
FOREST ENGINEER  
Former Member of Quebec Forest Service.  
Member of the Assn. of Forest-Engineers.  
Twelve Years of Experience:  
Forest Cruising and Mapping  
Appraisal for Banking Interests  
Insurances Losses.  
Supervision of Lumbering Operations  
Management of Forest Properties.  
General Information and Maps on:  
Quebec Limits, Freehold and Crown Lands.  
GIFFARD, QUE. - Phone 5831 R II.



**ALL GRADUATES EMPLOYED.**

The Faculty of Forestry of the University of Toronto had in attendance during the last session 55 students, a total slightly above that of the session 1914-15, when war broke out and the ranks were consequently reduced during the following years. Of this number one of the students was for occasional work only and

one for special work. There were six students in the Senior year, on all of whom the degree of B.Sc.F. was conferred at the Convocation held in June. Two of these have secured permanent positions with the Dominion Government, 15 in the Forestry Branch and one in the Entomological Branch, 16 by the Ontario Forestry Branch, and 11 by private pulp and paper and lumber companies.

**FOREST RANGING IN FAR NORTH.**

(Cochrane Post.)

Mr. A. E. Trowse, Deputy Chief Ranger, in charge of the works along the rivers north of the C.N.R. returned last week from a trip through the mouth of the Moose river. He went down the Massanabie in three days to Moose Factory, and made the return trip via the Mattagami and Kapuskasing, taking seven days for the return trip. The rangers which are patrolling the rivers north are at the same time cleaning up the different portages, making them safe for campers, and good work has already been done this season. Only in one instance had a camp fire got away, but luckily was checked in time to prevent it from running into the green timber. Mr. Trowse confirms the fine stand of timber to the north, right up to the James Bay, and reports that the Hudson Bay Co., who have two sawmills in operation, are cutting this year some 300,000 feet of lumber. The big boom at the bay contains some fine big logs, he claims. Moose Factory is quite a town, he thinks, with good substantial buildings, and it was rather a surprise to see the Indians there having a football team. Quite a large number of the Indians around there are returned men, as the Moose country furnished the bulk of the Indians for enlistment during the war.

**WOODS MANUFACTURING CO., OTTAWA**

SOLE MANUFACTURERS OF THE WORLD FAMOUS

**Arctic Eiderdown Sleeping Robe**

FROST HAS NEVER BEEN KNOWN TO PENETRATE THE INNER RECESSES OF AN ARCTIC

**COMFORTABLE WARM LIGHT SERVICEABLE**

Ask the man that owns or has used one or write to us

MUST BE USED TO BE APPRECIATED

**WOODS MANUFACTURING CO. LIMITED****OTTAWA****FROM R. C. HENDERS, M.P.**

"I wish to express my approval of the work your Association is attempting to carry on and to assure you that you can count on me for co-operating to the fullest extent."

According to current reports the Canadian lines are postponing erection of a creosoting plant because they do not now own a sufficient supply of timber to warrant the expenditure. The Province of Ontario, however, may see its way to get over this difficulty which at present embarrasses the future of the National railways.

**A SPECIAL BARGAIN IN THE OUTDOORSMAN'S HANDBOOK.**

320 pages, well illustrated, cloth covers. Chapters on camp and trail, camp cookery, woodcraft, big game hunting, rifles and pistols, bass and musky fishing, trout fishing, and a host of outdoors subjects. Every chapter by an authority. The Canadian Forestry Magazine secured a small number of copies for readers. Only thirty left, to be sold at cost, \$1.25 each. Add ten cents for packing and postage. 224 Jackson Building, Ottawa.



THROUGH contact with every phase of placing fire insurance on big risks and as a result of the exhaustive and constant study of insurance conditions which is essential to secure the best protection at the least cost, we are able to render to our clients a peculiarly valuable service.

# Hardy & Reynolds

## INSURANCE

Specialists in LUMBER and WOODWORKING Plants  
BOOTH BUILDING, OTTAWA, ONTARIO





**DO YOU KNOW THESE FACTS ABOUT THE ASSOCIATION?**

Not unnaturally, some who have belonged to the Canadian Forestry Association a short time, confuse the character and purposes of the Association with those of the Government Forestry branches. Sometimes we find that members regard the Association as a body of timber owners. In both cases the understanding is erroneous and unless corrected is apt to weaken the individual member's interest in the Association.

The Canadian Forestry Association is an educational league of 12,000 Canadian citizens, four thousand of whom live in the prairie provinces. A thousand live in Toronto and 1,100 in the city of Winnipeg. The members are not an appendage, but constitute the body and brain through which the Association does its educational work. Each member receives the Illustrated Canadian Forestry Magazine, but more important than being a reader of our magazine he is a personal shareholder and exerts a personal control over the widespread educational enterprises in forest fire prevention and tree planting, from which Canada derives a mighty benefit.

The Association has no relation to the work of fire ranging or tree distribution or tree planting, all of which are the duties of Governments or limit holders organizations. The Canadian Forestry Association is purely educative. Its work is spade work. Its duty is not to fight forest fires but to prevent such fires from ever being started. Its zone of action is not in planting a few thousand trees but in persuading a few thousand men each year to plant a few million trees.

The Association is a chain of 12,000 links. Its work is wholly for the good of Canada. It is citizens' work. It cannot be shoved off on the back of "Let-the-government-do-it."

The great thing is to keep your membership in fighting trim. If your membership and subscription stand unpaid, your personal share in the Association's great enterprises is largely nullified.

**Canadian Forestry Association, Ottawa, Canada.**

Did you like the August issue of the new Illustrated Canadian Forestry Magazine. Many members are writing in that "it is a big improvement." Plenty of good things await you in the next four issues.

**PAPER AND LUMBER MANUFACTURERS!**

IF YOU WANT EXTRA QUALITY

**MILL BROOMS**

SEND YOUR ORDERS TO

**THE PARKER BROOM CO., - OTTAWA**

**PETERBOROUGH CANOES**

ALWAYS RELIABLE

**Our Canvas Covered Canoes**

are especially adapted for hard work in the woods.

We carry a good stock in all standard SIZES.

Also SKIFFS, OUTBOARD

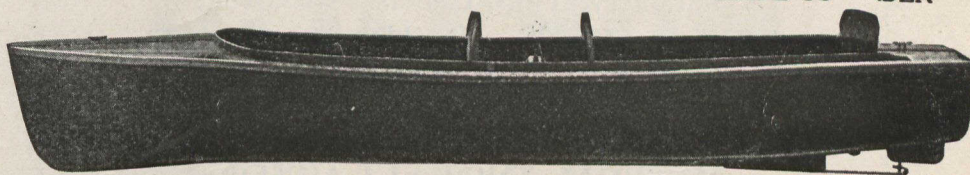
MOTOR BOATS, etc.

LIFE BOATS and

SPECIAL CRAFT  
MADE TO ORDER



**MOTOR CRAFT**  
in all sizes.



This is our 16 ft. SHALLOW DRAFT MOTOR BOAT. A very convenient craft that can be operated anywhere a canoe can go. The Propellor runs in a TUNNEL.

**PETERBOROUGH CANOE CO. LIMITED** 292 WATER STREET  
PETERBOROUGH, Canada.

**Abitibi Power and Paper Company**

LIMITED

Head Office - - - MONTREAL, Que.

Manufacturers of

NEWSPRINT PAPER

SULPHITE PULP

GROUNDWOOD PULP

**MILLS AT IROQUOIS FALLS, ONT.**



## Forestry Increases Farm Income By:

1. Making waste lands yield a profit by growing timber on
  - Poor soils,
  - Steep slopes,
  - Rocky lands,
2. Furnishing paying employment for men and teams during the winter.
3. Utilizing timber better on the farm and avoiding waste by

- Wet lands,
- Unused corners,
- Eroded lands.

- Cutting low stumps and small tops,
- Using substitute woods in construction,

Treating non-lasting woods.

4. Increasing crop yields by planting forest tree windbreaks.
5. Growing more and better timber on the farm through

Protecting the woods from fire and overgrazing,

Selecting for cutting the mature, defective, overcrowded, and inferior kinds of trees, and leaving the straight, thrifty, and better kinds,

Planting to fill openings in woods.

6. Marketing the higher grades of wood products direct to consumers at fair prices as

- |                  |               |
|------------------|---------------|
| Saw logs,        | Posts,        |
| Poles,           | Pulpwood,     |
| Piling,          | Firewood,     |
| Cooperage bolts, | Spoke blocks, |
| Handle bolts,    | Tannin bark.  |

MAKE YOUR WOODLAND PERMANENTLY PROFITABLE.

# Sampson Office Service

SUPPLYING WHAT YOU HAVE  
LONG WANTED—

A Super Service in

ATTRACTIVE PRINTED MATTER

Stationery, Tags, Labels, Advertising Matter, Catalogs, Booklets, etc. Copy prepared by experienced ad-men.

## SYSTEM INSTALLATIONS

Looseleaf or cards—Invoicing, Costing, Filing or Accounting. Strictly modern ideas. Maximum results.

## MULTIGRAPH LETTERS

The recognized medium for form letters, bulletins, price lists, direct selling by mail, etc.

*A Highly Efficient Mail-Order Department Awaits  
Your Commands.*

**Sampson Office Service**  
Limited

317 Lisgar Street

OTTAWA, Ont.

## THE PRACTICAL WAY OF INSURING THE NATION'S TIMBER.

Here are a few extracts from the daily diary of forest protection meetings held in connection with the Forest Exhibits Car of the Canadian Forestry Association in Northern Ontario and Quebec:

La Reine, P.Q.—“I procured the school-room here and moved batteries and motion picture machines across. The hall was packed and overflowing. The parish priest gave a fine speech and our Mr. Lemay followed with usual forcefulness. About 300 people were turned from the doors for lack of accommodation.

La Sarre, P.Q.—Crowd was so large that we had to take equipment out of doors. About 600 persons all told.

Makamik, P.Q.—300 persons visited car in afternoon; 1,200 were at the evening meeting and great enthusiasm shown.

Cachrane, Ont.—Train late in arriving, but we had 500 persons for an open air meeting, including Mayor, President of Board of Trade, etc.

Moonbeam, Ont.—We decided to try the basement of the church which seats 250. The hall was packed that night, and it would have done your heart good to hear the cheering when the movies were being shown.

Timmins, Ont.—Two thousand people visited us here, our largest audience in the north country.

Montieth, Ont.—Fully eighteen hundred people went through the Exhibit Car, several of them Ontario cabinet ministers.



**THE FOREST AND THE PRESS.**

(From Forest Leaves, Pennsylvania.)

The relationship between the forest and the press is one of the most vital economic problems of today. This is truly a paper age, and even more truly a newspaper age, which is the same as saying that it is an age of wood.

To most readers a newspaper is a thing to be hastily scanned. Few men who run while they read stop to think what a close co-ordination of service from the lumber-jack to newsboy is needed to produce a 2-cent and up-to-the-minute resume of the world's happenings in society, politics, industry, science and education. Still less do they realize that the newspaper which he holds in his hand is the only constituent of newspaper print. This is why the forest problem touches so intimately every man, woman and child in the United States.

After all is said and done, the newsprint situation goes straight back to the woodpile; and the size of the available woodpile is now and will hereafter be the determining factor in the paper supply.

Few people know how large a pile of wood is used annually in the United States for the production of paper. Our annual consumption is now over 6,000,000 cords. If stacked upon an acre this number of cords would make a solid pile four miles high. Government experts estimate that the consumption of pulpwood in the United States will reach 10,500,000 cords by 1930 and 16,000,000 cords by 1950.

I know of no way by which the real economic significance of the forest situation may be understood more clearly than by considering briefly the history and present condition of the paper, particularly the newsprint situation.

Before 1850 cotton and linen rags, esparto grass, hemp, straw and other vegetable fibres were used in the manufacture of paper. It was not until 1840 that Keller patented his process in Germany for a wood-pulp grinding machine. The process was not placed on a commercial basis until 1854, and it was introduced into the United States by Warner Miller as late as 1866.

The growth of the paper industry in America was prodigious. Within a half century it has developed from practically nothing to a total consumption of 2,000,000 cords in 1900, and in 1920 the total consumption exceeded 6,000,000 cords—an increase of 200 per cent in less than two decades. In 1880 the average person in the United States used about 30 pounds of paper per year. Today the average person uses 147 pounds per year.

We all know that the demand for newsprint has been increasing by leaps and bounds. In 1899 there were consumed 569,000 tons, while in 1918 our consumption had risen to 1,760,000 tons—an increase of about 200 per cent. In 1880

the average amount of newsprint consumed by each person in the United States was 3 pounds, and in 1919 it was 33 pounds—an increase of 11 times in 40 years.

The first newspaper in America was published just 231 years ago. Today there are about 26,000 daily, weekly and semi-weekly newspapers in the country. The daily papers alone have a circulation of more than 28,000,000 copies. There are 60 dailies whose circulation exceeds 100,000 copies and one Sunday paper claims more than a million circulation. This rapid growth shows the increasing demand for pulpwood, and the enormous present drain upon our forest supplies.



*Everybody Smokes*

**OLD CHUM**

CANADA'S FAVORITE  
PIPE TOBACCO





**QUEEN'S  
UNIVERSITY**  
KINGSTON,  
ONTARIO

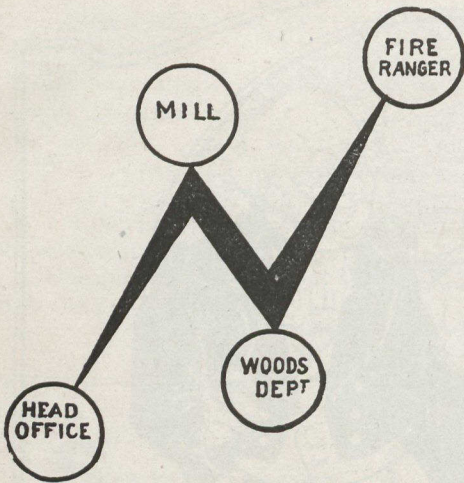
**ARTS**  
Part of the Arts course may be covered by  
correspondence.

**MEDICINE      EDUCATION**  
**APPLIED SCIENCE**  
Mining, Chemical, Civil,  
Mechanical and Electrical  
Engineering

**SUMMER SCHOOL      NAVIGATION SCHOOL**  
July and August.      December to April

26      **GEO. Y. CHOWN, Registrar.**





## Communication

### What is it worth to you?

Prompt—"On the Dot" Communication—that keeps your Mill and Woods Department in touch with your office in all weathers.

Uninterrupted communication between your Fire Rangers or Aeroplane Patrols.

## MARCONI WIRELESS

Telegraphs  
and  
Telephones

MANUFACTURED, INSTALLED AND OPERATED BY

The Marconi Wireless Telegraph Co. of Canada  
LIMITED

Vancouver  
Winnipeg  
Toronto

11 St. Sacrament St.  
MONTREAL

Halifax  
St. John's  
Nfld

## FORESTRY IN CHINA.

Since the establishment of the Shantung Forestry Office, the "Social Report" (Chinese) says, much activity has been shown in the province.

At the request of the Silk Merchants' Association of Chefoo, no fewer than 52,000 trees—both quercus Mongolica and Mulberry—have been transported to the bsiens within the jurisdiction of Kiachow. A small number has been also sent to Chefoo.

For the protection of the Chefoo-Weihsien and Tehchow-Linz motor roads, the Tsingchow Forestry Bureau has bought 30,000 trees for planting on the highway borders.

The Tsinan Forestry Bureau, too, reports progress. In the Spring of 1920 more than 1,000,000 trees of all kinds were planted and 2,000 oaks were the record of the autumn activity. This year 1,500,000 shoots of pine have already been purchased and are being planted every day.

An exchange for Forestry shoots was started last year, and 40,000 seeds have been circulated throughout the province.

The Forestry Office is undertaking the publication of books on the subject. The first, "Shantung Forestry Questions" is already in circulation.

# 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—

THE STANDARD PAINT COMPANY OF CANADA, LTD.

52 VICTORIA SQUARE, MONTREAL, QUE.

## WHAT THE PRAIRIE PROVINCES HOLD IN TIMBER.

It seems a contradiction in terms to speak of timber or lumber in a country known to the Eastern Canadian as the bald prairies. The "prairie provinces," however are mineralized provinces, and timbered provinces over more of their total area than will ever come under action of the farmer's plow. Only the southern areas of Manitoba and Saskatchewan and Alberta, with such exceptions as in sections of Northern Alberta, can strictly be called prairie.

### Five Hundred Million Acres.

It has been estimated that there are about 500,000,000 acres of forest lands in Canada about half of which is covered with merchantable timber, and the value of the forest products in 1918 was \$279,548,011. The prairie provinces contain about eight million acres of commercial timber lands, 5,400,000 acres of which are in Alberta, 1,920,000 acres in Manitoba, and 750,000 acres in Saskatchewan. In addition to this, there are large resources of pulpwood upon which no really accurate estimate has been made.

Manioba is about seventy per cent wooded, and in this province the principal heavily timbered sections have been set aside as government forest reserves located west of the Red River in the southern part of the province. On the upper pla-

## PLIBRICO

Jointless Fire Brick for  
Furnace Lining.

Used by the largest Mills in the Dominion.

## BULL

Bearing Alloy "Better and Cheaper"

BEVERIDGE SUPPLY CO., LTD.  
MONTREAL.



teau of this section are spruce, jack pine, and tamarac; in the lower plateau are found poplar and white birch; in the coulees elm, oak, basswood and white pine. The principal trees in order of present importance are white spruce, black spruce, jack pine, tamarac, balsam fir, aspen, cedar, burr oak, paper or white oak, balsam, balm of Gilead, black ash, basswood, Manitoba maple, cotton-wood, red ash, and mountain maple.

Whilst little extensive commercial use has been made of these woods from the lack of exploitation due to conditions already noted, they possess a potential worth commercially of some magnitude, and have already been extensively made use of locally.

Alberta is estimated to contain about twenty-one billion board feet of saw timber, the principal species being spruce, lodgepole pine, Douglas fir, poplar balsam fir, white birch and tamarac. Fires have wrought destructive havoc in the forests of the province much of which have been devastated and on the burnt-over areas the reproduction is mainly lodgepole pine with areas of poplar and birch. Lumbering operations are principally confined to the Rocky Mountains Reserve which contains all the lumber at present merchantable in Alberta. There are nearly eight hundred square miles at present under license on permits issued prior to the establishment of the reserve.

**Saskatchewan's Forests.**

In Saskatchewan the area actually timbered with merchantable trees is about 750,000 acres, the country to the north-east being timbered with spruce, tamarac, and jack pine. Prince Albert is the centre of Saskatchewan's lumber industry.

Though the timber trade of the prairie provinces has not as yet made a startling record in Dominion figures, it is provincially of a high value and of great local importance, and the economic history of the great plains would have been very different but for their possession of the northern woods. Whilst little if any of the timber cut ever gets beyond the borders of its native province, there is a local market whose demands are increasing yearly. The prairie provinces are showing a steady expansion perhaps unprecedented in the history of new countries and their cities and towns, and above all their agricultural areas, have need of lumber in ever increasing quantities.

The lumber cut for the year 1918, the latest return available, for the prairie provinces, was, according to the Dominion Bureau of Statistics, 152,270 million feet B.M. valued at \$3,836,053. This is divided among the three provinces as follows: Manitoba 54,047 million feet worth \$1,240,052; Saskatchewan 75,835 million feet worth \$2,122,307; and Alberta 22,388 million feet worth \$473,694. The

total cut of the three provinces represents nearly three per cent of the cut all over the Dominion.

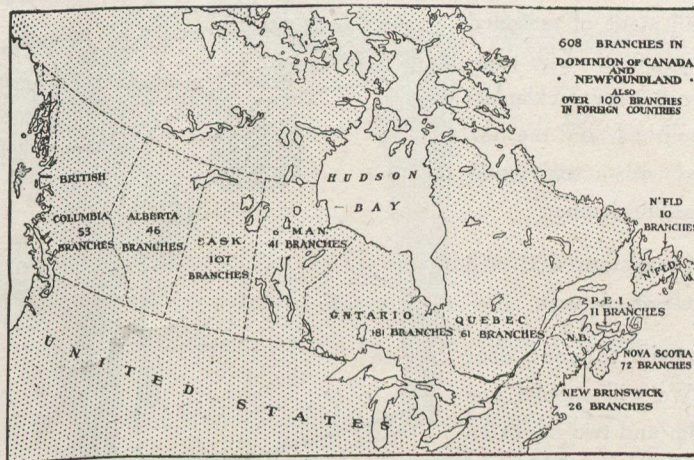
**Administered by Dominion.**

In the provinces of Alberta, Saskatchewan and Manitoba, in common with the North West Territories and the Railway Belt in British Columbia, the forests are administered by the Department of the Interior of the Dominion government from whom leases of timber or permits to cut upon forest reserves must be secured. There are thirty-nine forest reserves in

Western Canada, twenty-six of which, with an aggregate area of nearly 32,500 square miles, are situated in the three prairie provinces.

Little has yet been noted of the pulpwood resources of these provinces, an important item at the present time in view of the heavy call being made upon the forests of the east and the commencement made upon those of British Columbia on the Pacific coast. Roughly it may be stated that the prairie provinces have substantial resources of the raw material.

*Dominion and Foreign Banking Facilities for Your Home and Overseas Trade*



**THE ROYAL BANK OF CANADA**  
Total Resources \$515,000,000

**Lumbermen and Pulp Manufacturers**  
**Attention !!**

WE HAVE UNEXCELLED FACILITIES FOR HANDLING LARGE LINES OF INSURANCE ON LUMBER AND PULPWOOD

ALSO PULP AND PAPER MANUFACTURING PLANTS

**The E. A. Whitehead Co.**  
INSURANCE BROKERS

509 LEWIS BUILDING, - MONTREAL



**Fire - Auto - Riot**  
Security \$46,500,000

Chief Canadian Office:  
14 RICHMOND STREET EAST  
TORONTO

Alfred Wright - - - Manager  
A. E. Blogg - - - Secretary



**WHY FARM FORESTRY PAYS.**

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

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

making spokes, handles, spools, boxes, barrels and excelsior.

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

Trees improve and build up the soil. The leaves, small twigs, and other tree litter decompose and form a layer of dark-colored vegetation mold, which enriches

the soil and stores up soil moisture. By means of this layer of mold, the binding of the soil by the roots of the trees, and the resistance of the trunks to the rapid flow of water, the woods prevent floods from gullyng or destroying the land by erosion, particularly on steep slopes.

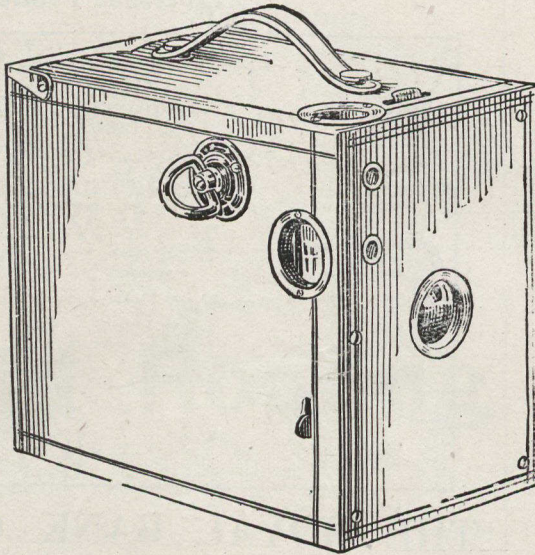
Even if a farmer sells no timber the woodland pays. The firewood, fence posts, and material for repair and construction on the farm, the time and money saved by having them conveniently on hand, and the protection against extremes of weather afforded the crops, farm buildings, and stock are worth considerably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

**THE BUSTER BROWN CAMERA**

Takes a picture  $2\frac{1}{2} \times 4\frac{1}{4}$  and is well made of seasoned wood throughout. The trimmings are heavily nickleplated and polished, and the box is covered with a seal grained composition leather.

Simple to operate and will take excellent pictures.

Postage paid to your door \$3.80. We will supply one roll of film and two books on the taking and finishing of pictures with each camera.

**PHOTOGRAPHIC STORES LIMITED**

65 SPARKS STREET, OTTAWA.

Send us your films for Developing and Printing. Prompt Service.

**TEN HELPS IN MARKETING WOODLANDS PRODUCTS.**

1. Get prices for various wood products from as many saw mills and other wood-using plants as possible.

2. Before selling, consult neighbors who have sold timber and benefit from their experiences.

3. Investigate local timber requirements and prices. Your products may be worth more locally because transportation is saved.

4. Advertise in papers and otherwise secure outside competition.

5. Secure bids if practicable both by the lump and by log-scale measure.

6. Be sure that you are selling to responsible purchasers.

7. Get a reliable estimate of the amount and value of the material before selling.

8. Market the higher grades of timber and use the cheaper for farm purposes.

9. Remember that standing timber can wait over a period of low prices without rapid deterioration.

10. Use a written agreement in selling timber, especially if cutting is done by purchaser.

**HELP PREVENT WOODS FIRES.**

BE SURE your match is out before throwing it away.

DON'T throw away burning tobacco.

CHOOSE a safe place and make your camp fire small.

PUT OUT your fire with water and then cover it with earth.

DON'T make large brush heaps. Choose a still day for burning, and plow furrows to protect nearby woods.

BE CAREFUL WITH FIRE.

**Riordon Sales Company, Limited**

MONTRÉAL

Largest sellers of Bleached Sulphite Fibre in the Country

Very Easy Bleaching Sulphite

Spruce, Pine and Hemlock Lumber

Sulphite Screenings

T. J. STEVENSON

GEO. E. CHALLES

SALES MANAGERS



**NEW BRUNSWICK LOSS FROM FIRES.**

At the meeting of the advisory board of the New Brunswick Department of Land and Mines, held at Fredericton, it was stated that the present season has been one of the worst on record in the number of forest fires. The department has fought upwards of 300, and the expenditure has been heavy. Two of the fires required an expenditure of \$6,000.

The board discussed the question in all its phases. The value of the lookout towers, which have been constructed at various points of vantage throughout the province, was recognized by the members of the board. It was decided to proceed with the erection of four additional lookout towers as soon as possible. The department will co-operate with the Geodetic Survey of Canada and private owners.

Chief Forester G. H. Prince was authorized to purchase additional speeders for railway patrol. On account of the number of fires occurring this season as the result of carelessness on the part of fishermen it was decided to press for legislation requiring every angler entering the woods in the fire period to have a permit. The legislation required will go so far as to make it possible absolutely to prohibit anglers entering portions of woodland which may be menaced by fire. It was generally recognized that several forest fires had been incendiary.

The spring burning of brush is to be discouraged, and if possible done away with. Fall burning is to be encouraged. A penalty for a member of a fire fighting crew leaving his work without the consent of the foreman is to be provided.

**FIRE FIGHTING BY PLANES.**

Experiments in forest fire patrol from the air continue to show encouraging results. Two instances have been reported recently to the Air Board from which the value of the planes in forest protection is well evident.

While flying to Clear Water Lake, Ontario, to sketch timber types, R. N. Johnston, of the Ontario Forestry Branch, and A. W. Carter, pilot, of the Sioux Lookout Mobile Unit, spotted a fire and on the return trip, about three-quarters of an hour later, found it greatly increased in size. Extremely dry conditions in the woods made quick action essential. On arriving at Sioux Lookout at 4.15 p.m., two rangers volunteered to proceed by air to the fire and allowing time for preparations, they arrived at the scene of trouble, 75 miles away at 7 p.m. Working that night and the following day, the fire seemed practically overcome, but fresh winds sprang up and drove it out of control. The plane arriving at 4 p.m. the men returned for

provisions and assistance to Sioux Lookout. By using two planes, four men were carried back to the fire, and with the aid of two other rangers who had arrived by trail, it was fought and extinguished within two days.

Another graphic experience was encountered by the Manitoba Patrol which discovered three fires in Manitoba and two over the Ontario boundary. None of these fires was discernible from the ground in its first stages. Taking the only seaplane available at the time, a small

machine, Major Basil Hobbs, accompanied by H. I. Stevenson, Acting Forest Inspector, and one ranger, flew to one of the fires and by working from 4.30 a.m. until noon, managed to extinguish it. The other fires were burning in muskeg and were too large to tackle with such a small force. According to the last information received from the district the party returned home and arranged for a larger fire fighting party to return in other flying machines the following day.

## Matches That Are Never a Fire Menace

The "no after-glow" feature of Eddy's Silent Five Matches is a point worth remembering where fire prevention is concerned.

They light when struck, and go out completely when blown out. No flying heads or dangerous sparks. Just a clear steady flame when you need it. Then—blow it out and it is out.

Eddy's Silent Fives are sold by good dealers everywhere.

Made in Canada, by Canadians.

*The E. B. EDDY Co. Limited, Hull, Canada*

## ONTARIO PAPER COMPANY

Thorold, Ontario

MANUFACTURERS OF

**Newsprint Paper**



## Can the Tractor Drive Out The Horse?

The day of the horse is passing in the logging camps declares the American Paper and Pulp Association.

The cost of the horse compared with the records of the motor vehicle in several recent carefully checked tests, show that the use of power equipment cuts the cost of log hauling as high as 70 per cent.

These figures were presented by prac-

tical woodsmen during the recent convention of the Woodlands Section of the American Paper and Pulp Association, who have been forced to substitute power operations for animal hauling by the far greater economy of the motor hauler.

These figures given by these operators apply equally well to lumber operations as to woods camps of the paper industry,

for the hauling problem is identical in both types of cuttings.

O. L. E. Weber, of the Watab Paper Company, Sartell, Minn., told of extensive use last winter of tractors, under conditions where horses could not be used at times, but he made his comparison of costs on the basis of horse equipment on passable roads. He figured that a 10-ton tractor would do the work of 36 horses, and a 5-ton machine of 16 horses. He made his cost comparison on the basis of 5,000 cords of pulp wood, 35,000 tamarack and cedar ties, 30,000 cedar posts, and 750,000 feet of Norway pine where he actually used tractors, but where he estimated the cost of horse operation under conditions of previous years. The cost of the job with tractors was actually \$3,150. The cost with horses would have been \$10,100, including cost of equipment in both cases.

Stanley H. Sisson, of the Racquette River Paper Company, operating in Northern New York, told of hauling 23,000 cords of 16-foot peeled wood 10 to 12 miles, an average of 65½ cords per day per tractor, handling 15,000 cords in 38 days. His comparison with horse equipment was as follows: One team hauling 9 cords per trip, double headers at landings, costing \$15.50 per day, or \$1.72 per cord. The tractor cost, on a basis of 60 cords, with two trips daily to landings, was \$43.06 per day, or \$.717 per cord. He, like the other woods superintendents, said that care in repairs and maintenance of tractors was vital to their successful operation, and also urged care in dispatching trains or sleds or wagons, with extra equipment being loaded or unloaded while the machine was on the road.

C. L. Tolles, of the Phoenix Manufacturing Company, of Eau Claire, Wis., giving figures for a steam hauler, with long trains of sleighs, said that the motorized cost was only about one quarter that of horse operations.

E. A. Drott, of Drott & Newall, handling another Wisconsin logging operation, said his motor hauling cost him \$1.50 per thousand feet of lumber, board measure, while natives using horses were forced to pay \$10, and then failed to get all their timber out. This was on a 10½ mile haul, and on a 7½ mile haul, the motor equipment cost \$1 per thousand, as against \$7 for horse hauls.



JAMES SMART PLANT

BROCKVILLE

CANADA

**BROMPTON PULP AND PAPER COMPANY**  
Limited

East Angus, Quebec

*Manufacturers of*

**NEWS PRINT PAPER  
KRAFT PAPER  
FIERE PAPER  
MANILLA PAPER  
BOX BOARD  
SULPHATE PULP  
GROUNDWOOD PULP**

...and...

**LUMBER OF ALL KINDS**



**The JOST COMPANY, LTD.**  
Bought — PULPWOOD — Sold

285 Beaver Hall Hill, MONTREAL

Quotations on Request



## Sweden Banks on Applied Forestry

By Edward Beck.

STOCKHOLM, Sweden, May 21.—The forest areas of Sweden cover some fifty-five million acres, of which about two-thirds are in private ownership and the rest government owned. The community of interest between the government and the private owners is readily apparent. It manifests itself in close co-operation by both interests for the protection and betterment of existing forests and of provision for their perpetuation. On the surface, at any rate, there is complete harmony. It is true that "the future of Sweden lies in her forests" and that the State is trying to increase its holdings by the purchase of private forests wherever possible, but there is no general demand for the confiscation, by purchase or otherwise, of the private holdings.

All cutting, whether on private or public lands, is subject to the same strict regulations. Private owners willingly submit to whatever rules are imposed for the general good. The nature and extent of these rules and regulations will be dealt with later.

It is of interest to note that the public forests are not sold or leased to private interests as in Canada. When the Government has pulpwood or other standing timber to dispose of its foresters go into the forests and mark each identical tree to be cut down with an individual number. These trees may be scattered over a wide area and separated by considerable distances or they may be grouped together, as circumstances dictate. The right to cut the trees thus selected for cutting is then disposed of at public auction to the highest bidder. There is seldom any lack of competition, as most of the pulp and lumber companies are only too anxious to conserve their own resources by buying when they can buy to advantage.

### No Diameter Limit Here.

An outstanding feature of the Swedish timber regulations is that immediate profit from the felled timber is never made the chief consideration. Everything is subordinated to the purpose of ensuring a permanent yield of wood. Selection of trees for cutting is made on the basis of improving the remaining forest. The "diameter limit" regulation, as observed by some of the Canadian provinces, under which all trees cut are required not to fall below a certain prescribed minimum trunk measurement, appears to have no place in Swedish forests. Weak and immature trees are first to be taken out in order to give the sturdier ones a better chance for development. If there is any

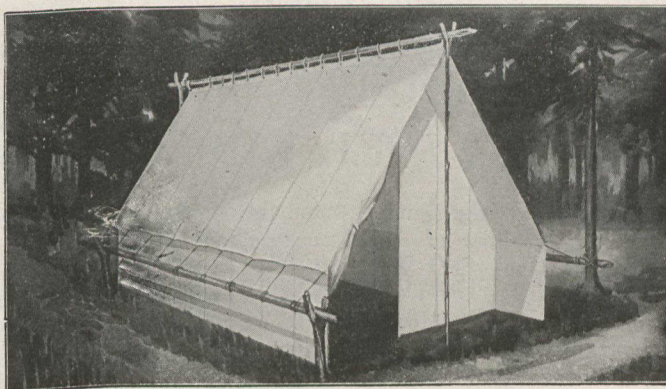
hard and fast rule employed, it would appear to be that no tree capable of increased development is allowed to be cut until it has reached its maximum growth, unless for the purpose, as already stated,

of giving a more promising tree a better chance. There is no such thing as indiscriminate cutting. All waste is eliminated. Trees are cut to within three or four inches of the ground. High stumps

## Grant - Holden - Graham

LIMITED

147 Albert Street, OTTAWA, ONT.



Manufacturers of Tents of all descriptions.  
Lumbermen's Clothing, Blankets, Etc., Etc.

## GREENSHIELDS & CO.

—have assisted in the initial financing and distribution to investors of the following securities which will be quoted on request:

Brompton Pulp & Paper Co., Common (6%) Stock  
and General Mortgage 6% Bonds

Howard Smith Paper Mills, 8% Pfd. and Participating Stock

Riordon Pulp & Paper Co., Common (10%) Stock  
Mattagami Pulp & Paper Co., 7% Convertible Debentures

Wayagamack Pulp & Paper Co., First Mortgage 6%  
Bonds and Common (6%) Stock

Dryden Paper Co. Common Stock

We shall be glad to answer inquiries in regard to Canadian Government, Provincial and Corporation bond and stock issues.

Our Monthly Review which for many years has helped to keep investors in the United States and Canada in touch with the Canadian situation will be sent on request.

### Greenshields & Co.

INVESTMENT BANKERS

17 St. John Street, Montreal

Toronto ♦ Ottawa



are unknown. Slash and other debris is never left on the floor of the forest to incite forest fires or serve as a breeding place for wood-destroying insect pests. Swedish lumbermen aim to utilize every waste product from their lumbering operations. Top logs, even down to one or two inches in top diameter, are bundled and strapped with steel wire and floated to the nearest charcoal plant to be converted into charcoal. What waste cannot be utilized is destroyed.

Swedish forests, as a rule, are com-

prised of about 80 per cent conifers and 20 per cent broad-leaf species. Trees mature under the most favorable conditions in from 75 to 80 years. In some instances, however, they require two or three times as long. Reforestation, which is carried on, on an ever-increasing scale, will be dealt with later.

An important feature in helping to bring about these desirable results is to be found in the fact that the logging in Swedish forests is supervised by the forester. In Canada, in most instances the

forestry and the logging departments are separate and independent institutions. They are frequently antagonistic. The former is usually concerned with scientific forestry and with making the most of the raw material; the latter's principal object is to make as many logs at a low cost as possible. In Sweden the forester is in full charge. He will not permit the sacrifice of the future forest even for a temporary benefit of cheap logs. It is a point well worth the consideration of Canadian lumbermen and limit-holders.

## Contented Workers— Comfort is a Factor

*That is one reason so many mill and lumber operators prefer*

### KENWOOD ALL WOOL BLANKETS and KENWOOD SOFT WOOL SOCKS

A second reason is the unusual wear resisting qualities of these Kenwood All Wool, Soft Wool products.

Ask us to send you full particulars—or better yet, send us your order for a dozen Kenwood socks or a sample Kenwood blanket—

note the strong wool, the sound construction, the warmth and service qualities. Then if satisfied that here is a product which is to your advantage place your order for the season's requirements—but place the order early.

**Kenwood Mills, Ltd., Arnprior, Ontario**

## Laurentide Company

LIMITED

GRAND MERE, QUEBEC

*Manufacturers of*

GROUNDWOOD PULP

SULPHITE PULP

NEWSPRINT PAPER

CARDBOARD

### A TREE THREE MILLION YEARS OLD.

(Concluded from p. 382.)

cypresses, pines and spruces, so that the conifers were probably in greater abundance and variety than they are at this day."

From these fossil trees we can restore in imagination about the shores of the shallow Cretaceous lakes and meandering rivers, a forest wall in which the Sequoia was dominant. The forest included no doubt a rich and varied flora. Stately palms with their graceful columns probably formed feathery pictures set in the contrasting foliage of the Sequoias. We know that the fig tree was also a member of the Cretaceous forests. From the summits of the Sequoias down to the ground hung living ribbons of climbing plants of diverse kinds which formed a jungle comparable with some present day tropical jungles.

### In the Days of Dinosaurs.

Although the trees of these old forests differed from those of the present, the animals which lived among them differed still more from those of the present fauna. It was indeed a strange assemblage of giant reptilian beasts that lived in and near these old forests. The majority of them belonged to the Dinosaur group. Many of the dinosaurs were gigantic creatures of fantastic appearance. One of these called Gorgosaurus, which has just been mounted in the National Museum when stalking about in the forests in search of prey must have stood at least 15 feet high. Its villainous looking long teeth pointing backwards clearly indicate its predatory habits. Beside its foot prints which were three feet in length those of an elephant would appear almost fairy like. With a body poised like a kangaroo this amazing beast when near its prey was probably capable of leaps of 50 feet. Figure 2 shows the character of the region in which this creature was found. Some of the dinosaurs of those days looked like the last word in preparedness. One of them possessed an enormous shield shaped skull with six powerful horns pointing upwards, backwards and sidewise. Still another of these



weird creatures, one of the armored dinosaurs, depended upon its tail as a means of discouraging unfriendly behavior on the part of its associates. This organ terminated in an enormous bony maul-like expansion. When used as a war club this weapon must have wrought havoc among the enemies of its possessor.

In the Museum alongside the Cretaceous tree which has been described, the fossil remains of many of the strange animals which were its contemporaries have been mounted. These include two nearly complete skeletons of dinosaurs, each about thirty feet in length. So perfect has been the fossilization of some of the dinosaurs of this region that the finest details of the curious polygonal scales which covered the skins of the Trachodonts and some other dinosaurs are preserved.

In but few places have the enveloping sands of the rivers and lakes done so perfectly the work of recording for a distant time the history of an extinct fauna and flora as they have in the Cretaceous rocks of the Red Deer River country. Both the trees and the giant subaquatic reptiles which they have preserved for us furnish conclusive evidence of a subtropical climate vastly different from that now prevailing in Alberta.

Canadians will no doubt eventually see to it that these great Cretaceous archives with their intensely interesting records are set aside by which the tourist can find his way into them.

If the study of written human history helps the student to interpret the present and forecast the future, it is not too much to claim that geological history with its vastly greater scope gives him an entirely new conception of the significance and origin of his environment and of the factors in it which evolution is likely to preserve and those which will be eliminated. Palaeontology places in the hands of its students a telescope which enables them to look far back toward the dawn of life and gives them a demonstration of the philosophy of evolution.

They will learn among other things that the most perfect animals from the standpoint of attack and defence ever developed have gone into the scrap heap of evolution. Not a single dinosaur has survived. Their places in the great geological drama have been taken by animals relatively defenceless but with much larger brains.

Published with the permission of the Director of the Can. Geol. Survey.

**FISHERMEN AND CAMPERS—**

Quick Relief from the many minor accidents and bruises you receive on your vacation is afforded by Minard's Liniment. Put a Bottle in your outfit.

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

**FIRE HOSE**

**FIRE DEPARTMENT SUPPLIES; GENERAL RUBBER GOODS**

**FIRE EXTINGUISHERS**

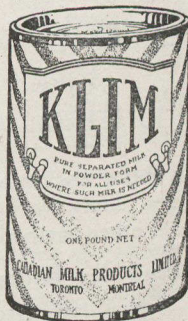
**LINEN HOSE FOR FOREST FIRE FIGHTING.**

Having supplied a number of the Forest protective Associations, we are thoroughly familiar with the specifications of their requirements for fighting forest fires, and, carrying it in stock, are prepared to furnish such equipment on short notice.

**THE CANADIAN FIRE HOSE COMPANY, LTD.**

30 St. FRANCOIS XAVIER STREET, MONTREAL

To assure its freshness we only sell KLIM Brand Powdered WHOLE MILK direct to the consumer or through certain selected dealers in cities and towns and at outfitting points. Write us for their names. Or send \$1.00 to our nearest office for a trial 1 1/4 pound tin.



Another convenience! KLIM Powdered Skimmed Milk. For cooking or table use. Supplied by all retail and wholesale grocers.



**PUT IT IN YOUR KIT.**

Milk supply is one of the outdoor man's biggest problems. Milk, with its nourishment, flavor, and goodness, is a thing much missed when not available. Is it any wonder then that KLIM Brand Powdered WHOLE MILK is so popular with outdoor men? Pure pasteurized whole milk—in powder form—it is always handy for drinking, cooking or table use. Unaffected by winter's cold or summer's heat. Easy to carry, store and use. All the richness and quality of fresh new milk whenever you want it.

**CANADIAN MILK PRODUCTS LIMITED**

10-12 St. Patrick St., Toronto.

Montreal

St. John

Winnipeg

**TIMBER LIMITS**

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



**Canadian Woodlands and Pulpwood Agency**

REGISTERED

600 McGill Building, MONTREAL, CANADA

Cables: "GEFORT, MONTREAL."

Telephone: MAIN 3281.



**UNIVERSITY OF N.B. EXPANDS.**

Mr. Bertram E. Claridge has been appointed Professor of Forest Engineering at the University of New Brunswick. He will begin his duties September 1. Mr. Claridge is a graduate of the Yale Forest School, and has just completed a year's study in Sweden. Until now the University has been getting along with one technical forester.

**A BUSINESS OPPORTUNITY.****British Guiana Rice Growers' Association.**  
**Head Office:**

Mahaicony, E. C. Demerara.

10th June, 1921.

The Canadian Forestry Magazine.

I am very much interested in your Association, and will be thankful for information relative to the formation of such company; a company to open our interior which abounds with timber,

hausite, gold, diamonds, etc., is imperative in this colony, if worked under the community system, as presently labour is scarce. We shall welcome any information your Association can supply relative to the development of our forest land.

Trusting you will assist us. Awaiting early reply.

Yours faithfully,

S. PERSAUD,

Sec.-Treasurer.

**FAIRBANKS--MORSE  
FIRE  
FIGHTING PUMP**

These outfits are replacing many men and doing work impossible by any other method.

Send for Information  
**THE CANADIAN  
FAIRBANKS-MORSE  
CO., LIMITED**

Offices in  
Every large  
Canadian City



## A Canadian Observer in Norway

By Edward Beck.

CHRISTIANIA, Norway, July 2, 1921—Norway has been in business of forest cultivation for more than sixty years. In 1907 the golden anniversary of the beginning of Norway's present efficient forestry system was officially celebrated. A volume containing a history of the development and progress of the forests was published. The lapse of sixty years, however, has, according to the leading Norwegian forest authorities, merely enabled them to make a fair start. Norwegian forests, they say, are still in their infancy; cultivation ought to have begun a century before it did. They are hoping to make up for lost time.

There are in Norway, as in Sweden and Finland, both State and private forests. The latter largely predominate. Altogether, the forest lands comprise about 28,000 square miles, or about 23 per cent of the country's total area which consists of about 124,450 square miles. Compared with Canada's forest area that of Norway appears almost insignificant, yet Norway regards her forest possessions as of the utmost importance and spares neither money nor effort to keep them in a state of constant production. Her national vitality depends upon them.

Norway's natural resources are strictly limited in extent. The surplus of timber ranks among the first and most important. It furnishes the main source of Norway's export trade and provides fuel, building material, and other wood necessities for home consumption. One-sixth of Norway's laborers find their employment in the wood-refining industries; one-tenth in the paper industry. Norwegian railways derive more than 12 per cent of their total traffic revenues from the pulpwood, cellulose and paper industries; some of the railways depend almost exclusively upon the revenues so derived. Appreciation of these facts has not only led Norway to the adoption of a policy of strict observation of her remaining forests, but also to employ all available means for the building up of a forest supply for the future. Today the country is not forest self-sustaining and is obliged to import considerable quantities of wood from Finland. Formerly wood was also freely imported from Russia.

### The State Dominates in Forestry.

The productive timber lands of Norway consist of about 21,825 square miles, of which 11,500 are held by peasants and other small owners, 5,575 by incorporated companies, and 4,750 by the State, the latter including communal lands, parish and other endowments. The tendency at present is to discourage the further acquisition of forest lands by private ow-

ners. Incorporated companies are, in fact, debarred by law from increasing their holdings by purchasing lands from peasants and other individual holders. Wherever possible and practicable the State is resuming ownership of these lands and using them to build up new forests.

Private ownership in the past, before the State established control of the forests, was charged with wasteful methods and irresponsible care, resulting in de-

pleted and sterile forest lands. These practices are what led to the present national forest policy. The private owners of today, however, need no restrictive laws to compel their lesson. The forest lands owned by the incorporated companies in Norway are the best kept of any, as well as the most prolific in their annual yield. The companies spend much more proportionately than does the State on their upkeep.

However, Norwegian forest laws do not

## ELECTRIC PLANTS FOR EVERY SERVICE

32 or 110 Volts

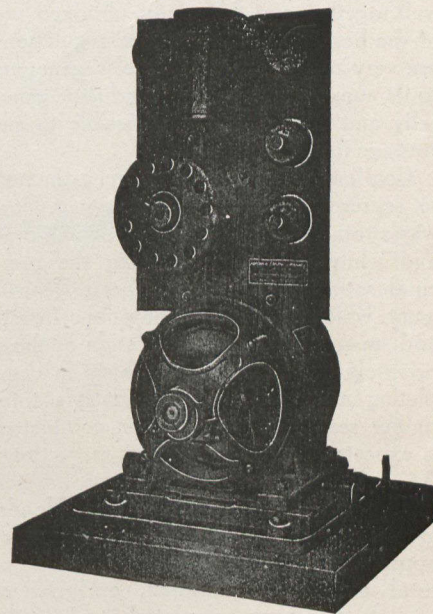
Belt Connected Plants—Direct Connected Plants—Wires and Supplies—Water Systems.

THE BELT DRIVEN PLANT MAKES THE INSTALLATION OF ELECTRICITY IN THE VERY SMALLEST MILLS PRACTICAL AND ECONOMICAL

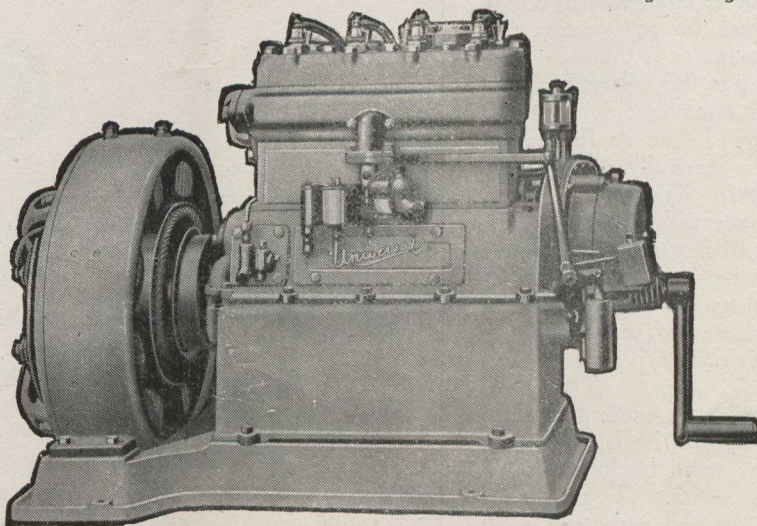
The belt connected unit illustrated can be driven from any power shaft. Twenty-four hour service is obtained by the use of 16 cells of TITAN storage battery.

The Plant is 32 volt and has a capacity of 32 lights direct from the generator or 67 lights for five hours when combined with TITAN 216 ampere hour battery.

Complete stocks of 32 volt belt driven or direct connected plants and standard wiring material always on hand at our Houses.



Belt connected Plant—operated from any good engine.



110 Volt D.C. Universal Plant.

## Northern Electric Company LIMITED

Montreal      Quebec      Toronto      Winnipeg      Calgary      Vancouver  
Halifax      Ottawa      London      Regina      Edmonton



leave it entirely to the owner to say what shall be done. The owner cannot do as he pleases with his woods. All cutting is done under government prescribed regulations. So-called clean-cutting, which is permitted in Sweden and Finland under certain conditions, is practically prohibited in Norway. Selective cutting is the only approved method. All cutting is done with regard to its effect upon the standing forest, rather than for the immediate yield. Norwegian foresters are unusually successful in maintaining their forests by natural means. Seeding and planting are seldom resorted to, cutting being done in such a way that Nature replants the cut-over area in a remarkably short time, maintaining the forests in a state of constant development.

The State and the private owners work well together and the results obtained are of the best. Violations of the regulations are very rare. The State is also generous in its support of the forest industry generally and does everything possible to encourage its development.

Coniferous timber areas are estimated to represent about 82 per cent of Norway's total productive forests, Scotch pine and white spruce constituting the principal species. The State Forest Department, which administers the public forests and supervises the administration of those privately owned, is now engaged in completing a survey of the country's total timber resources which, when completed, is expected to lead to further restrictions. An unofficial estimate, covering thirteen million acres of productive forest lands, gives an average of 9.2 cords per acre, or approximately 3,675,000 cords. The total annual consumption, exclusive of imports, has been calculated at about 1,320,000 cords for the wood-using industries and at about 4,765,000 cords of the wood used for fuel, for construction and other domestic purposes is taken into account. According to this calculation Norway is consuming annually from 25 to 30 per cent more wood than its forests are yielding. This is generally admitted by Norwegian foresters. They say, however, that the discrepancy will be overtaken by the development of new forest areas now under way. For the present, expansion of the saw-mill industry has stopped. A decline in other classes of wood products during the next few years is generally anticipated.

As already indicated, more than half of the productive forest lands of Norway is represented by small holdings, principally peasant properties. The small proportion owned by the industrial companies represents land acquired many years ago. Most of the pulp and paper companies of Norway have to depend upon purchased timber for their raw material, a development which, according to some of the companies, places them at a

distinct disadvantage in comparison with similar companies in Canada.

#### Perfect Co-operation.

Competition between Norwegian wood-buyers for the available supply of domestic pulp-wood is becoming increasingly keen. Most of the mills are located in the south-eastern part of the country on the Glommen, Drammen and Skien rivers, which afford access through the water connections with the best timber areas of southern and central Norway. Contracts for wood supply are made to run from six

months' periods and call for delivery of the wood at the river bank, roughly barked and cut to standard lengths. Timber is scaled and stamped by the purchasers' agents or through competitive timber-driving associations which handle all the timber floated on the principal rivers. Cost of handling wood from point of delivery to mills are pooled and distributed on the basis of quantity and distance. Both buyers and sellers are organized, but conditions do not favor the elimination of competition altogether.

## THE BELGO-CANADIAN PULP AND PAPER CO., LIMITED

Shawinigan Falls, :: :: :: :: Que.

NEWSPRINT

Groundwood Pulp

Sulphite Pulp, Lumber

H. BIERMANS, Gen. Mgr.

Railways: Canadian National—Canadian Pacific.



## A FIRE ALARM

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

## OUR FORESTS

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

This space devoted to the cause of forest conservation by

## CANADA PAPER CO.

WINDSOR MILLS, P.Q.





## 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.

## DEPARTMENT OF COLONIZATION AND DEVELOPMENT CANADIAN PACIFIC RAILWAY

MONTREAL: C.P.R. Bureau of Canadian Information, 335 Windsor St. Station.  
 WINNIPEG: J. F. Sweeting, Industrial Agent, C.P.R. Depot.  
 CALGARY: M. E. Thornton, Supt. U.S. Agencies, Dept. of Natural Resources Building.  
 NEW YORK: C.P.R. Bureau of Canadian Information, Wilson Building, 1270 Broadway.  
 CHICAGO: C.P.R. Bureau of Canadian Information, 163 East Ontario Street.  
 LONDON: A. E. Moore, Manager, 62-65 Charing Cross.

E. G. WHITE,  
 Superintendent,  
 MONTREAL, Que.

J. S. DENNIS,  
 Chief Commissioner,  
 MONTREAL, Que.



# AIRCRAFT FOR FORESTRY SERVICE

## AIRPLANES USED SUCCESSFULLY IN FOREST SERVICE

### Firefighters Carried To Scene of Blaze and Prevent Spread of Flames.

PRINCE RUPERT, B. C., April 17.—  
"Fire on the Nechako river!" The  
words came distinctly out of the air.  
"Where?" asked a watcher at the  
forest patrol station near Prince George.  
The word whirred off into the sky.  
Traveling on aerial vibrations it shot  
across the forests. Thirty miles away  
another station caught it.  
"Forty-two miles south-by-east of  
Stuart lake," was the answer returned  
out of the void of space.

#### PROMPT ON SCENE.

An airplane rose swiftly from the  
Prince George station. Under full  
power it skimmed through the sunlit  
silence over the wilderness of spruce  
and fir. Far off the three men in the  
fusilage spied a cloud of smoke boiling  
up from the horizon. Straight as the  
flight of an arrow they steered for it.  
Twenty minutes after the alarm was  
sounded they were on the ground fight-  
ing in the red track of the flames.

Before a strong wind the conflagra-  
tion might have turned a hundred  
leagues of evergreen woodland into a  
black desert crowded with the gaunt  
skeletons of charred trees. The timely  
arrival of the fire fighters confined its  
destructive sweep to the compass of  
a few square miles.

Possibly a million dollars worth of  
good timber had been saved by the wire-  
less telephone and the airplane.

More than this had been saved. The  
farm homes of settlers have transformed  
the Nechako and Bulkley valleys along  
the Grand Trunk Pacific railway into  
garden spots. Thriving villages dot the  
region. Lumbering camps and sawmills  
are numerous.

All these would have been wiped out  
if the flames had not been stopped in  
mid-career.

Government statistics show that 390,-  
000 acres of British Columbia forests  
were destroyed by fire in 1920. This  
represents a loss of 238,000,000 feet of  
timber, valued at \$299,000. The damage  
to young growth is estimated at  
\$186,000, making a total loss of \$485,000.

Of the year's fires 345 or 28 per cent  
were put out before they had spread over  
a quarter of an acre and 391 or 31 per  
cent were extinguished before they had  
covered ten acres. The effectiveness  
of fire fighting under modern methods  
has greatly reduced losses as compared  
with former years.

We have had quite a little experience in the develop-  
ment of planes for use over forest areas—and  
would welcome the opportunity of discussing this  
experience with you and possibly adapting the use  
of airplanes in the solution of your problems.

## DAYTON WRIGHT COMPANY



Dayton, Ohio, U.S.A.



MANUFACTURERS OF COMMERCIAL AIRCRAFT IN THE CITY  
WHICH WAS THE BIRTHPLACE OF AVIATION

PUBLIC LIBRARY  
EDMONTON, ALBERTA.