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Illustrated  
Canadian Forestry  
Magazine



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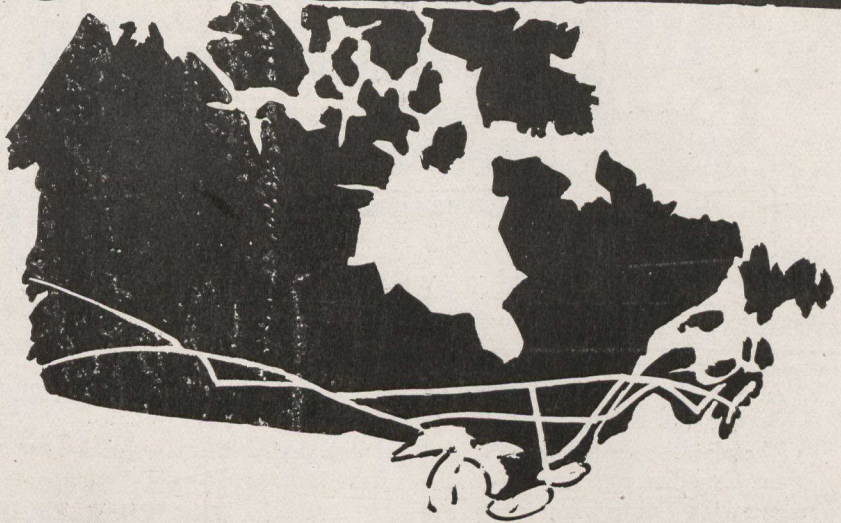
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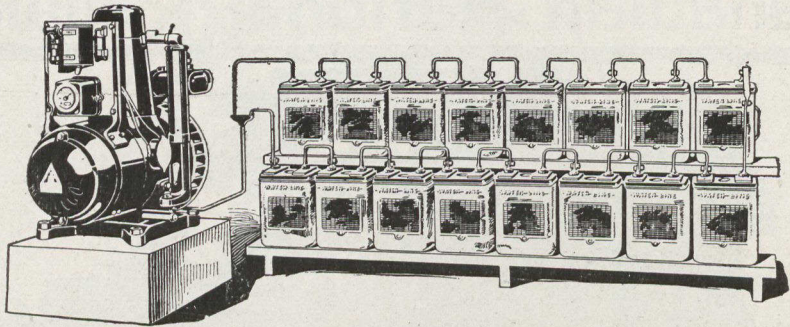
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Does a tree mean to you more than timber? Read Dr. Howe's unique article, "The Worship of Trees," commencing on opposite page.



# THE ILLUSTRATED CANADIAN FORESTRY MAGAZINE



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No. 5

Address all communications to Suite 224, Jackson Building, Ottawa.

## The Worship of Trees

By Dr. C. D. Howe, Dean, Faculty of Forestry, University of Toronto



### Strange Customs, Ancient and Modern of People Who Endow Trees With Human Susceptibilities



In explanation of writing on the above subject, I would like to say that the more I study trees in their various aspects, the work they accomplish in rearing themselves into the air, their delicate adjustments in the struggle for existence, their beauty of form in season and out of season, not only the greater is my appreciation of their value in the economy of Nature, but also the greater is my reverence for them. Since I have come to a sympathetic appreciation of the spirit of those who hold trees in greatest veneration, even worshipped them, it is only natural that I should desire to know something of the role trees have played in legend, folklore and mythology. So I propose to give the readers of the Canadian Forestry Magazine some of the results of my reading along these lines.

In my native village, I have a friend who is a wood-chopper. Nearly all his mature years having been employed in this profession, and being an observing man, a rare character in a way, he is very sensitive to the impressions of the forest in which he works and very sympathetic in his attitude toward all forest life. He believes that it hurts a tree to cut it down. The peculiar sound sometimes heard upon the withdrawal of the axe blade after a well-driven blow, the sounds of creaking and wrenching of

the wood when the tree falls, he believes are the protests of the tree's spirit on being so roughly handled. I don't know that he does it, but he says that he feels like apologizing to a tree every time he cuts one down.

#### Believers in Tree Spirits

It would interest my friend to know that certain Filipinos will not cut a tree until they have begged its pardon and recited some verses, which mean: "Be not uneasy, my friend, though we fell what we have been ordered to fell." Ancient East-Indian books prescribe that in preparing to fell a tree, a woodsman should lay a stalk of grass on the spot where the blow is to fall, with the words: "O, grass, protect him," and that he should say to the axe, "Axe, harm him not." When the tree had fallen, he poured butter on the stump, saying: "Lord of the Forest, grow with a hundred branches, and may we grow with a thousand branches." Certain natives of Sumatra dislike to disturb the spirit of trees and when compelled to, they blame it upon the Dutch authorities. Such a native will not ply the axe to a large tree until he has said: "Spirit who lodgest in this tree, take it not ill that I cut down thy dwelling, for it is done at no wish of mine, but by the order of the overseer." When he wishes to clear a plot of land for cultivation, he picks up a bit of paper which he pretends is a let-

ter and reads aloud an order from the Dutch Government, commanding him to clear the land without delay. Having done so, he says: "You hear that, spirits, I must begin clearing at once or I shall be hanged." Thus he absolves himself from blame and frees himself from any revenge on the part of the spirits. It is a common practice in various parts of the East Indies for the natives when they clear the jungle to leave standing trees to which the spirits they have dispossessed may go. Perhaps the origin of our "seed tree method" in silviculture could be traced back to some such practice as this. Certain tribes of the American Indians believed that the spirit of the cottonwood possessed an intelligence which, if properly approached, would help them in their undertakings. In fact, they ascribed their misfortunes in later years to disregard of the rights of cottonwood trees. Many Negro tribes in Africa believe either that all trees or certain trees are in reality spirits. Siamese monks will not break a branch of a tree, for thus they would forcibly dispossess its soul.

#### **Prayerful Axe Handlers**

My friend the wood-chopper does not share his belief alone with uncivilized or primitive people, for we find a writer of popular science, around 1670, saying: "When an oake is falling, before it falles it gives a kind of shriekes or groanes that may be hearde a mile off, as if it were the genius of the oake lamenting." Old peasants in some parts of Austria still believe that trees have spirits and will not let anyone injure them without special cause, for they believe that the tree feels the cut not less than a wounded man his hurt. In felling a tree they beg its pardon. On certain Greek islands, when the woodman fells a tree which he believes to possess a spirit, he is most careful when it falls to prostrate himself humbly lest the spirit should chastise him when it escapes.

It seems that the most primitive people believe the tree itself is the spirit or at least when the tree is killed its spirit is killed. Later the tree simply becomes the abode of the spirit which can leave its habitation at will. This conception leads to offerings and ceremonies of various kinds as a propitiation of the spirit when the tree is felled. Thus, the Negro, on the Slave Coast, who wishes to fell a certain tree sprinkles palm oil on the ground near it. The spirit comes out to get this delicacy, and as soon as it leaves its abode, the wily negro cuts the

tree. The natives of Central Celibes offer the tree spirit food when inviting it to leave before cutting a tree. The spirits inhabiting trees may be good spirits or bad spirits, or they may be the spirits of ancestors, departed friends or relatives. The latter conception led to the veneration and finally to the worship of trees.

#### **Druid Oak Worshippers**

From whatever race we may have come, our remote ancestors at some time worshipped trees. Among the Celtic peoples was the well known oak-worship of the Druids. This, doubtless, first began as ancestor worship, and gradually developed into the formation of a priestly class who were the educated class and the real rulers, and gradually declined into magic and sorcery and finally disappeared, before the spread of Christianity. Sacred groves were common among the ancient Germans and among the ancient Prussians who came from Lithuanian stock. The sacred oak groves of the latter were tended by priests who kept up a perpetual fire of oak wood in the holy groves. Traces of this worship extended down to the middle of the nineteenth century, when it is said that offerings of food were still made to the spirits of the oak. At Upsala, the old religious capital of Sweden, there was a sacred oak grove in which every tree was regarded as divine. The oak tree was sacred to one of the gods of the ancient Slavs. The sacred fig tree of Romulus in Rome was worshipped down to the days of the Empire and on the slope of the Palatine Hill grew a dogwood tree which was considered one of the most sacred objects in the city. Plutarch tells us that whenever a passer-by noticed the tree was dropping, he spread the alarm and people rushed from all sides with buckets of water to spread over its roots.

It is only natural that the primitive people of northern and central Europe should have worshipped trees, for at the dawn of history Europe was covered with immense primeval forests in which the scattered human habitations must have appeared like islets in an ocean of green. Their vastness, their solitude, and their mystery made a profound impression upon the imagination of a simpleminded people. It is only natural that they placed their gods in the forest on the same principle that other people living in a semi-arid, non-forested region of brilliant skies placed their gods in the heavens.

Thus the friend in my native village has a long train of companions in his belief that trees are the abodes of spirits. The idea may have come to him as a vestigial characteristic from a faraway ancestor, or more likely it came to him because of his long and sympathetic association with the forest.

### Tree Divinities for Human Control

The tree spirits were at first doubtless appealed to only in personal or family affairs, but as they came to be worshipped as gods they were given a more or less human form, and they gradually assumed greater or less control over the sequences of nature and the affairs of men. For example, trees or tree spirits were believed to give rain and sunshine. The spirits were appealed to on the principle of imitative magic. Thus in a village in Russia, when rain was much wanted, three men climbed the fir trees of an old sacred grove. One of them drummed with a hammer on a kettle to imitate thunder; the second knocked two fire-brands together and made the sparks fly to imitate lightning, and the third had a bunch of twigs with which he sprinkled water on all sides from a vessel.

Tree spirits were believed to make crops grow. Among the Aryan tribes of the Gilgit on the northwestern frontier of India, the sacred tree is a species of juniper. At sowing time, the wheat is placed in a bag mixed with sprigs of the sacred cedar. A large bonfire of cedar wood is made and the wheat to be sown is held over the smoke. Other wheat is made into bread baked on the same fire and given to the ploughman. Unless the wheat is thus mixed with the odor and essence of the sacred tree, it will not be fruitful. Many tribes in southeastern Africa will not cut down timber while the corn is green, fearing if they did so, the crops would be destroyed by blight, hail or frost. Other African tribes sacrifice goats or other animals to certain trees before they will begin their harvest. Swedish peasants to this day stick a leafy branch in each furrow of the corn field, believing that this will insure an abundant crop.

In almost every country in Europe the peasants of certain localities hold harvest festivals in which trees or parts of trees play a prominent part. Usually the tree or a large branch is decorated with the last portion of the crop to be harvested and brought home on the last wagon from the

field. After a ceremony of some kind the decorated tree is hung on the roof of the farmhouse or of the barn, in the belief that its presence has a vivifying or fructifying influence on the seed to be planted the following season.

These harvest festivals were held either on the 20th of September, the close of summer, or on the 21st of December, the beginning of winter, in ancient times, and are still held on the former date among the peasantry of Europe. As we have seen, trees or parts of trees are central figures in them. We have in America the lineal descendants of the September ceremonies, with the trees left out and their significance forgotten, and, of course, with the spirit adapted and modified, in our country fair, harvest home and Thanksgiving, while in the December ceremony the tree still plays the leading role in our Christmas.

### Talking Trees !

Barren fruit trees are sometimes considered to be the abode of evil spirits, and they must be driven out in order to make the tree productive. Thus among certain Malay tribes a man strikes a barren durian tree, which normally bears a delicious fruit, three times with an axe, saying, "Will you now bear fruit; if not, I will fell you." A man in an adjacent tree, personifying the tree spirit, replies, "Yes, I will bear fruit. I beg of you not to fell me." Odd as this mode of horticulture may seem, it has an exact parallel in Europe. On Christmas Eve many a Slavonian and Bulgarian peasant swings an axe threateningly three times against a barren fruit tree, while another man, standing by, intercedes in behalf of the tree, saying, "Do not cut it down. It will soon bear fruit." The peasants of Armenia and Greece treat barren fruit trees in a similar manner. The driving of nails or the inserting of various foreign substances beneath the bark, as is sometimes still done in the case of barren fruit trees, doubtless also had its origin in the belief of thus dispossessing evil spirits. In some localities in England it is believed that whipping a walnut tree not only increases its production, but improves the flavor of the fruit. I trust the reader will not misconstrue the sentiment, if I quote in this connection a popular rhyme:

"A woman, a spaniel and a walnut tree,  
The more you whip them, the better they be"

(To be continued)



Photos copyrighted by U. S. Rubber Co. The man in the foreground is inspecting the tree. It is his duty to see that the tappers do not wound the wood of the tree and that the proper "angle of cut" is maintained. If the cut is too near the horizontal, the latex spills over the bark instead of draining into the spout and then to the cup.

## The Story of the "Rubber Tire Tree"

What the automobile would be without rubber tires would be hard to imagine. Without rubber, some automobiles would undoubtedly be manufactured, but they would certainly be rattlebang affairs of slow speed and much vibration. It is quite true that following the invention of a successful engine, automobile development has been conditioned very largely upon the development of tires. This fact is amply demonstrated today, through the revolutionary changes taking place in motor truck construction due to the adaptation of the pneumatic tire to use on motor trucks, Germany had a chance to find out what automobile operation without rubber tires was like during the war, and she did not relish the experience.

It is the purpose of this article to show how it happened that when the automobile industry burst upon the world, with a need for rubber which the recognized sources of supply could not have begun to meet, there was found ready in a new quarter, a supply

so adequate that the progress of the industry has not been halted for a second by any shortage of rubber. In other words, this is the story of the rubber plantations in the Far East.

Until ten years ago, rubber meant rubber from Brazil. There were some other sources of supply of inferior grades, but practically all the prime rubber came from Brazil. Today Brazil's supremacy is gone. In less than a decade, the Far East has jumped to the front, and is now producing nine-tenths of the rubber of the world.

The history of the passing of the glory of Brazil in this particular, has a touch of romance in it. In the sixties an Englishman named H. A. Wickham spent much time in Brazil in the rubber field. He conceived the idea that the rubber trees which grow wild in Brazil could be cultivated and grown on plantations. But he was ahead of his time, and found little encouragement.



This is a typical Jungle scene in Sumatra. Before a Rubber Plantation can be laid out the Jungle must be cleared. The trees are cut down and burnt off, the stumps pulled out, the ground plowed and cleared of weeds and roots usually by hand.

Wickham finally enlisted the interest of Sir Joseph Hooker of Kew Gardens, London, who had been considering the possibility of introducing the trees to India. Hooker in turn interested the government of India in the project, with the result that Wickham was given a commission by the Indian Government for the introduction of the Brazilian tree into India.

The seedlings were sent to Ceylon because it was decided that the climate of the Island was better suited than that of India for the rearing of the precious trees. The gardens at Heneratgoda, sixteen miles from Colombo, were opened as their permanent resting place.

The planters in Ceylon did not take hold of rubber planting with the same eagerness as did the planters of Malaya. In Ceylon they were making good profits in tea growing, and had no need to make a change. But in Malaya the planters, and the financial interests in Europe who had sent them out, were sick to death of the struggle to make a living out of coffee and, though in fear and

trembling, began to plant this new thing, rubber, hoping if possible to save their estates from abandonment.

Lucky was it for Malaya that she fostered this new enterprise, for now within her territory lie the greater part of the rubber plantations of the world.

#### Fabulous Profits

The romance of plantation rubber, is the old, old story, a few resolute men working in eastern jungles, having faith in the ultimate success of the work they had undertaken, and that of those daring to put their capital into faraway lands. It was but a few years ago that practically all the planters were feeling acutely the pinch for funds to tide them over the early stages of the enterprise. Many cases could be cited where fifteen years ago \$25,000 to \$50,000 could not be found to carry on estates being planted in rubber, which are valued today at four to five millions.

When a market for plantation rubber began to develop, the needy planters were astounded at the fabulous estimates of pro-

fits which they figured out of their estates, and dared not present them to financiers until they had divided the probable profits by four. Even then, these estimates appeared in the light of a fairy tale, and London financial men shrugged their shoulders, buttoned up their pockets, and thought they had gone a good day's work when they had got rid of the importunate planter and his castles in the air.

The excitement culminated in the historical and regrettable "boom" of 1910. By good fortune, the bubble was deflated without bursting, and now the financial affairs of the plantations are on a very substantial basis.

### Nine Millions Cars

American interest was attracted to the plantation industry in 1910, when the British and other Europeans had invested between three and four hundred million dollars in estates. The United States Rubber Company, the largest consumer of crude rubber in the world, was one of the first of the American concerns to investigate the possibilities and enter the field. The Dutch island of Sumatra was chosen for the company's activities. This American corporation has established there the largest single rubber plantation in existence. The tract contains more than 70 square miles of trees in a high state of cultivation and close to twenty thousand employees are at work in the great orchard. The high standards of administration and scientific culture which have marked this project have implanted in the minds of the dwellers in that fair eastern clime a thoroughgoing respect for American efficiency.

While the nine million cars of this continent skim along on their tires made of plantation rubber, one cannot but pause to wonder again at the curious coincidence that has made it possible to furnish in abundance the necessary rubber.

Few of the planters who embarked in the early days on the plantations venture had even heard of the automobile, when they set out their trees. Those who had kept in touch with affairs in England might have heard of the horseless carriage preceded by a man on foot carrying a red flag as a danger signal, but none of them realized that this object of England's merriment was the forerunner of the great automobile industry of today.

### How Plantations have grown

By the end of 1907 only about 1½ per cent of the world's rubber had been produced from plantation rubber. At that time, about \$1.00 per pound was secured for this rubber at the plantations, which was considered a satisfactory price. By 1910 the price had risen to \$2.50 per pound and a great boom was created in plantations. The present area of rubber plantations of all kinds is estimated at nearly 2,000,000 acres and new areas are being constantly planted. The soil and climate of the Far East seem to be peculiarly suited to the successful growing of the Para rubber in plantations.

There are said to be over \$400,000,000 invested in rubber plantations and they supplied in 1919 about 83 per cent of the total world's requirements.

### How rubber is tapped

The methods of tapping and reducing the latex have been greatly improved over the systems in vogue with wild rubber, although it cannot be said that they have reached a finality of development. A common method is to make a series of V-shaped incisions on four sides of the tree up to a height of 5 to 7 ft. from the ground. The latex is collected in a cup hung at the apex of each V. The "herring bone" plan with a vertical incision and lateral channels on either side is used as well as the spiral system. Daily incisions are made at 45° until the trunk is nearly covered with scars. When the bark of the trunk is almost completely covered with cuts to induce the flow of latex, a period of years is generally allowed to elapse before beginning to retap the tree. Small sharp knives are employed in making the incisions instead of the axes or large cutters used in Brazil.

Instead of the primitive and wasteful method of reducing the latex of crude rubber, as followed in the forests of Brazil, the fluid is collected in large tanks or casks. It is coagulated by the admixture of an acid, usually acetic acid or lime juice. The coagulation gradually separates as a soft, white, or yellowish mass. This is washed by first passing through washing machines, and then through other machines, which compress it in thin sheets or long ribbons called crepe. These are hung up and dried. Plantation rubber enters the market either in the form of crepe in sheets or biscuits or in the form of large blocks made by compressing the sheets of crepe together.





A weeding gang drawn up to undergo the annual experience of having their photographs taken, before they start out to clear the weeds between the trees. Owing to the quick growth of vegetation in the tropics it is necessary to weed continually.



Two-year old rubber trees. The ground must be kept clear of all weeds and undergrowth because of the danger of fire and disease caused by decaying vegetable matter.



The forest ranger's post box at the end of his lonely patrol along the Nelson River.



A forest survey party on the Nelson River.

## The Forest Ranger as a Specialist

By W. N. Millar, Toronto



### What a Ranger Should Know, and How He Should Be Trained



It is almost platitudinous to say that the success of any administrative organization depends primarily on the character of its personnel. The great fundamental problem in all organizations having a number of employees is the improvement of the standard of these employees. One need only recall the revolution which the efficiency expert has produced in modern industrial plants, the training school for employees maintained by so many of the more complex manufacturing and distributing industries, such as department stores or electrical supply factories, or the naval and military service schools which train the men to greater efficiency in their duties, to realize that everywhere, in all branches of industry, the need of special training is realized and active steps are being taken to provide it. In the work of forest protection and administration this need is in no degree less urgent. In European countries such as Germany, France and Switzerland, employees in the governmental forest services are required to undergo a long and painstaking course of training and to serve an apprenticeship extending over years. In the British India forest service men are trained for rangers and higher positions at the forest academy established and maintained since 1878 by the Imperial Government at Dehra Dun, where instruction is given both in English and in the vernacular. In the United States all employees of the service below the grade of Associate United States Forester are required to pass a rigid practical examination to qualify for employment and are then employed only in subordinate positions on probation and are required to demonstrate their fitness for permanent employment before being accepted by the service. Higher positions are filled only by promotion from lower grades, and promotion and increase in salary are given for merit alone.

#### The Canadian Custom

In Canada the fact that forest employees require any special qualifications of training has scarcely yet been realized. It might be well to call attention to the variety of employees in the Dominion service in one district alone. These include twelve distinct classes, as follows: — Forest Supervisors, Forest Assistants, Forest Rangers, Fire Guardians, Surveyors, Book-keepers, Stenographers, Carpenters, Cooks, Packers, Teamsters and Labourers. The qualifications for a cook, a surveyor, a stenographer or a carpenter are fairly well defined and can be readily appreciated by anyone.

So also the forest assistant must have a technical training in forestry which involves a college course in the science as a general rule. But when we come to the forest ranger no such special requirements are realized. There is an almost total failure to appreciate that the work of a forest ranger is a highly specialized employment calling for a physical and mental equipment and training no less susceptible of exact definition than is the profession of the surveyor, the cook or the book-keeper. Present-day methods of fire protection for standing timber are as much advanced over the methods of twenty years back as is the modern motor fire-truck an improvement over a bucket brigade. In similar measure have the requirements for the position of forest ranger advanced, although this has not been generally realized. No longer in those countries where forest fire protection has been developed along modern scientific and practical lines, is the forest ranger handed an axe and a badge and told to go out into the woods and prevent fires, any more than is the modern soldier given a war-club and told to go out and fight the enemy. The present-day ranger is a unit in a highly perfected organization. Fires are located for him by lookouts station-

ed on peaks selected with all the care of a topographer choosing triangulation stations, and equipped with rangefinder, telescope, compass, maps and telephone. He receives his call to action by telephone, telegraph, wireless or heliograph. Instead of rushing out coatless and hatless to wage a single-handed fight with whatever tool is handiest, he considers his carefully drawn fireplan, notes on his topographic map the lie of the land at the fire; decides upon the forces necessary for its control and the quickest way to get them on the ground, and then by means of his telephone he sends to that fire enough men and horses fully equipped with tools and provisions to smother it in its very incipency in less time than the old-style ranger would have taken to gather together his grub-pile and saddle his horse. This is no idealistic picture, but an actual accomplishment fully developed and regularly employed by government and private owners of timberlands who control more timber several times over in the United States alone than stands in all Canada.

Moreover, fire protection does not by any means exhaust the duties of a ranger on the reserves. It is now generally realized that forest reserves are not created to take out of use but to put it to use under methods of scientific forest management that will insure its continuation as a permanent crop instead of permitting it to be exhausted at one cutting. If it is realized that it takes from four to six years of collegiate training to give men the fundamentals of this art of forestry it will be conceded that the forest ranger, upon whom falls the duty of carrying out the plans for scientific forest management, cannot be fitted for these duties unless he has been specially trained for them. It might well be asked, if a forest ranger is not simply a man who can ride a horse and swing an axe, what his qualifications are.

#### **What should a Ranger know ?**

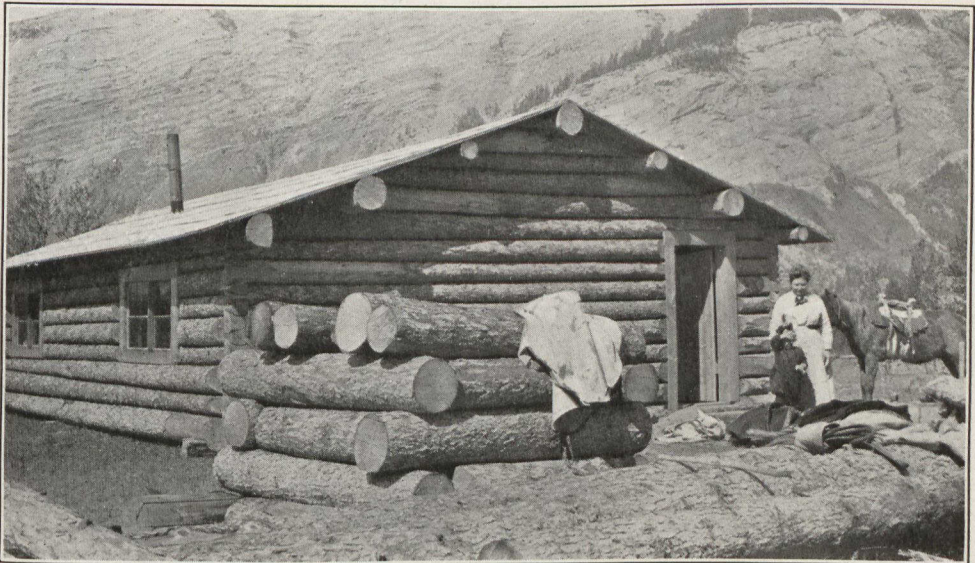
Putting aside the fact that rangers in the Canadian service are not infrequently unable to produce even these rudimentary qualifications, it might be answered that a forest ranger should be a man in perfectly sound physical condition, not too old to endure the hardships of wilderness travel — say, between 20 and 45 — a first-class experienced woodsman, able to pack, cook, establish camps in a sanitary manner, and handle horses and boats. He should be ei-

ther a practical lumberman acquainted with both the woods and the milling end of the business or a practical stockman, or both. He should have at least a common-school education. He should be able to make all kinds of compass, surveys and prepare simple maps, to cruise timber, to lay out, estimate and construct trails, to erect forest telephone lines, install instruments and maintain them in working order, to plan, estimate and construct ordinary log and frame buildings, to handle crews of men, to deal tactfully with forest reserve users and mountain travellers and sportsmen. He should have some knowledge of elementary silviculture, know the common trees and forage plants of the region, know something of the habits of the fish and game animals and enough of forest insect and fungous diseases to recognize an infestation on sight. Needless to say, he should have had previous practical experience in fire-fighting before being placed in a responsible position involving the direction of such work. A ranger must also be able to write concise, intelligent reports on all lines of his work, to maintain the necessary office files and records and must be thoroughly conversant with all the various laws and regulations which he is called upon to enforce and administer; being empowered to arrest without warrant, he must be familiar with the legal machinery of his province and know how to present and handle his case in court, to collect evidence, and establish his charge with competent testimony.

It may well be asked where men with such varied qualifications are to be obtained, and it must be admitted that they cannot be found in Canada to-day. Yet forestry as it is understood and practised by almost every civilized and progressive nation in the world, demands that men with these qualifications be secured to form the very foundation of a forest organization. The experience of foreign countries is enlightening. In Germany, and other European states where forestry has been practised for generations, forest academies conducted to a large extent under government auspices prepare men for the grades that correspond to the forest ranger, and subsequent training at their own expense in government employment completes their preparation. In India, the Philippines and Japan, government training



A fire patrol boat at Athabaska Landing.



A sturdily built forest ranger's cabin on one of the Alberta forest reserves.



Amphitheatre ranger station, British Columbia.

schools have been established. In the United States, training has been supplied to some extent by special ranger schools, of which quite a number exist in connection with state and other universities, and also by the government itself through its ability to se-

lect only suitable candidates, as determined by a qualifying civil service examination, and then train these men in its organization, under civil service rules that require a man to show satisfactory results or suffer dismissal.



A party of forest rangers, Northern Alberta.



Forest Rangers packing on the trail, Coast District of British Columbia



**The Careless Smoker**

Apologies to Kipling

A fool there was and his pipe he lit  
 (Even as you and I)  
 On a forest trail where the leaves were fit  
 To become ablaze from the smallest bit  
 Of spark — and the fool he furnished it  
 (Even as you and I)

The forest was burned to its very roots,  
 Even beneath the ground,  
 With the flowers, the birds and the poor  
 dumb brutes,  
 Old hoary oaks, and the tender shoots  
 Which might have made logs but for such  
 galoots,  
 Allowed to wander around.

The lumberjack has now passed on,  
 His pay-day comes no more,  
 And the screech-owls haunt the camp at  
 dawn  
 Where the cook's tin pan woke the men of  
 brawn:  
 But the mill is silent, the trees are gone,  
 The soil and forest floor.

A deadly sight are those hills of rocks  
 Which once were beds of green:  
 No hope for the human, no food for the  
 flocks:  
 The floods must be held by expensive locks,  
 While the harbor is silted to the docks—  
 The ships no more are seen.

But the fool smokes on in the forest still,  
 Leaves campfires burning too,  
 While the patient public pays the bill  
 And the nation's wealth is destroyed for nil.  
 If the law doesn't get him, the Devil will—

**Smoker, it's up to you**(Written by the District Forester  
at Ogden, Utah)**Grouping of B. C. Forest Trees**

In a lecture before the Cowichan Field Naturalists' Club, at Duncans, Mr. C. S. Cowan, assistant chief forester for B. C., described in most interesting manner the forest growth of the Vancouver forestry division, which includes Vancouver Island and the lower mainland. There were, the lecturer said, five distinct groupings as the trees occurred in the natural forest. He classified these as follows:

1. Douglas fir — Red cedar group, with 50 per cent fir, 25 per cent cedar, the remainder mixed.

2. Red Cedar — Western hemlock group, with 50 per cent cedar, 25 per cent hemlock, balance mixed.

3. Western Hemlock — Sitka spruce group, with 50 per cent hemlock, 25 per cent spruce, balance mixed.

4. Western Hemlock — Balsam group, 50 per cent hemlock, 25 per cent balsam.

5. Subalpine and muskeg group — not of much economic importance.

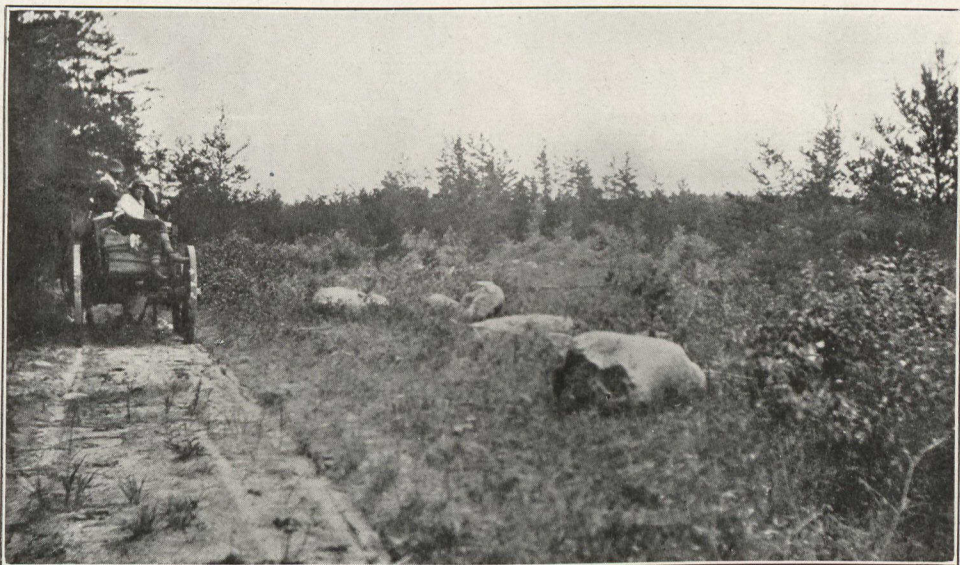
Types of each tree were described, their individual characteristics pointed out, the range of altitude and latitude of each, and average age and height of each given. Diverging to the subject of forest control on water run-off, Mr. Cowan ascribed the serious floods in the lower Fraser valley to the burning of the forests along the slopes of the watershed from various causes. Eighty per cent of the melting snows run off quickly instead of being held back by the forests and allowed to run off slowly.

**Wooden Ships a Hundred Years Old**

"Wooden ships do occasionally last a hundred years", says a sea captain of Pensacola, Fla., in a recent letter to the Literary Digest. One of them, a schooner, he saw two years ago at a Danish port. It was owned by a former mate who said that he was doing well with his more than one-

hundred-year-old ship. The captain vouches also for another ship which sailed between Denmark and Greenland from 1801 to 1900. After its sailing days were over, it was used as a restaurant ship and later as a stationary training ship. The letter was written to uphold the claim that there are some centenary ships.





Canada's real timber problem is not to use less timber but to grow more. Millions of acres of timber lands, such as shown in the picture, are not reproducing more than a fraction of their original values.

## To Make Our Forests Self-Sustaining— Which Method?

By Frank I. Ritchie

Manager, Wayagamack Pulp and Paper Co., Three Rivers, Quebec.



### A Comparison of Artificial Tree Planting and Natural Reforestation.



**T**HIS subject is one that has been seriously considered for a number of years by the Directors of the Wayagamack Pulp & Paper Co., Ltd., of Three Rivers, Que., who, having gone into the matter very exhaustively, now submit the views of their Forester, Mr. Henri Wickenden, and ask other Companies similarly interested to take up the question and criticize, and at the time put forth their own ideas on the subject.

After carefully watching the operations and methods of older companies, it was felt that for proper conduct of this part of a pulp and paper company's business it was essential that there should be two depart-

ments in the woods, working in very close harmony one with the other. These were, Firstly: the Operating Department, whose duty it would be to cut the timber and bring it to the mills at the least possible cost to the Company, and secondly: the Forestry Department, whose duty it would be to see that the Woods Operating Department carried out their part of the work in the most scientific and approved manner, so as to insure as far as possible wood economy and a good regrowth in the cut-over areas, and in addition to this to take up the question of replanting where deemed necessary or advisable, and at the same time to study and watch everything that affected the

growth of the forest, such as insect-pests, tree diseases, soil conditions, drainage and climatic conditions, etc.

After making very careful enquiries it was decided that of all the various European countries that had developed and made a study of forestry, Scandinavia offered the best school, as the forest conditions and climate of these countries most nearly approximated our own, accordingly Scandinavia was chosen as the place in which to carry on our studies.

The next point was to obtain a Forester, and here the question arose as to whether it was more advisable to send a man from this side to learn Scandinavian methods, or to bring a forester from Scandinavia who would have to make a study of Canadian conditions before he would be in a position to give the full benefit of his knowledge. In either case it meant a delay of several years before a man could be properly equipped to carry out this work.

The Company finally engaged Mr. H. R. Wickenden, who had just completed his Civil Engineering Course at McGill, who was fluent in both French and English, and who had in addition spent five seasons with the St. Maurice Forest Protective Association.

Mr. Wickenden was sent to Norway and Sweden, where he remained for several years attached to the Chief Foresters of such companies as the Kramfors Company, owning nearly two thousand miles, of which Baron Mannerheim, who visited Canada last year in connection with the pulp and paper industry, is Managing Director; the Uddeholm Company, one of the most important companies located in the centre of Sweden, operating over one thousand miles of territory where conditions are very similar to the St. Maurice, the Finspong Company, operating on some of the largest and oldest plantations in Sweden, also various other Government and private forests located in middle and southern Sweden and Norway, such as Baron Adelsward in Atvidaberg, Storra in Kopparbergs, Bergslag in Dalarna, completing his study with a course in the Royal Institute of Forestry, Stockholm.

Since returning to Canada, Mr. Wickenden has spent two years in the Company's forests, carefully comparing them with Scandinavia.

Appended to this article are some of the conclusions at which he has arrived as being

most adaptable to the various kinds of forests which he has touched upon, and which conclusions have had the hearty co-operation of the Chief Forester of the Province, Mr. G. C. Piche, who is on the eve of departing for Sweden, where he intends to look over the work which is being done by some of his assistant foresters whom he has sent over to study Scandinavian methods.

There are two methods of reforestation: Artificial Reforestation and Natural Reforestation.

#### **Artificial Reforestation**

This has been experimented with by several of our leading paper companies in the Province of Quebec and the result of these experiments can be seen by anybody who wishes to visit the various plantations.

Mr. Wickenden is of the opinion that artificial reforestation can be carried out on a commercial basis only where land can be had cheap, of suitable soil and in close proximity to an abundant labour market.

The Companies who have experimented along the lines of artificial reforestation, today practically admit that it is not commercially successful. Were this method feasible from a cost point of view, it would be impossible to find sufficient waste or suitable land on which to plant trees to take care of the enormous annual cut of the various Companies operating in the Province, without practically turning a very large part of the farming land back into forest.

While this method may be and is practicable in some places, he is of the opinion that it cannot be carried out along the Northern St. Lawrence, and therefore, there is no object in giving very serious consideration to this first method.

#### **Natural Reforestation**

After two years of careful and thorough forest research and surveys, carried on in the St. Maurice district to determine the exact conditions of the forests and what has been the effect of the previous handling, this study shows that nature here does much the same as in Scandinavia. Basing his decisions on the findings of his research, it will be possible to formulate a plan of operation by which natural reforestation and perpetuity will be practically assured, since nature when not hindered, but aided by the work of man, will effect its own regrowth.

Frank J. RITCHIE, Manager.  
Mr. Wickenden's views are hereto appended.

## Make Nature Our Tree Planter

By Henri Wickenden, Forester of Wayagamack Pulp and Paper Co.

**F**ROM my observations in the Forests of the St. Maurice District, I found in the old cuttings, made in accordance with the Government regulations, conditions existing as follows:—

The trees left standing after cutting operations were largely old mature trees, which had been hindered in their growth, and were left because of their not having reached the minimum diameter allowed to be cut, and in fact they never would. These trees were also unfit to supply healthy seed in sufficient quantities for the regeneration of the forest. About sixty per cent of the trees left standing had been blown during the first ten years or so, this along with the debris formed a dense abatti, which in many cases hindered the growth of the young trees and was a nest for insect pests and tree disease. In many cases the old cuttings had been burnt over.

Generally speaking, if all the merchantable timber had been cut, it would have reduced the wind-falls, and hence the fire risk, and the quantity of timber obtained per acre would have been much greater.

My studies of the virgin forests show, that, if the methods of operation which I here-with outline are carried out, the above conditions would be largely cured.

### The Saint Maurice District

*Proposed Method of Operating and Regenerating Mixed Type of Forest.*

*Spruce, Balsam, Pine, Birch, Poplar, etc.*

Mixed wood, as per above heading, is the most predominant in this region, occurring in sites where leaf species and conifers grow equally well. Almost all of these woods are over mature, that is to say, the trees are mostly beyond the active growing stage, and in fact have reached the point where the loss by rot, insect, and wind damage, exceeds the wood growth laid on the sound timber. We find that practically all the present forest areas have been burnt over at one time or another, and that stands take about one hundred years, more or less, to mature, and if cut before or at maturity, the quantity of sound timber obtained per acre would be much greater than at present. It is characteristic of old age to be suscep-

tible to attack by disease and to physical strain: likewise old trees being low in vitality fall an easy prey to insects and fungi or being partly rotten are readily broken down by wind storms or by winter snows and sleet.

The depletion which is now going on is being slowly replaced by seedlings which come up in large numbers in the openings left by fallen groups of trees, in fact, in any place where light and heat are sufficient to cause the bacterial action or soil decay necessary to the development of seedlings. Natural reforestation can be greatly aided by handling the mixed wood type of forest in such a way as to prevent wood waste through disease and insect ravage and by aiding nature in bringing about a strong increased growth.

The mixed woods in the region occur under varying conditions:

(1) We have mixed wood growing on fertile ground showing a great wood producing capacity.

(2) On soil where the humidity varies from moist to fairly dry, the wood production is fair and the method of cutting outlined later on is especially suited to this type and can with few exceptions be carried out over large and continuous areas.

(3) We also have the exposed areas where discretion will be exercised in cutting to prevent ravage due to wind storms. This applies to mountain tops, light shallow soil and generally exposed positions.

### How Nature Operates

On investigating the natural process by which the forests are perpetuated one finds several positive features for regenerating the forests.

Wherever well drained but not dry conditions exist, one finds masses of balsam and spruce seedlings coming up in openings sufficiently large to admit plenty of sunlight and heat. The soil seems to be altered under these conditions; moss disappears and the debris decays rapidly making an ideal seed bed. In the present mixed wood such openings exist where wind storms have blown down all the trees, where a clearing has been made by man, or where a forest fire has killed the trees (without destroying the



A particularly bad piece of windfall whereby as much timber was wasted as was taken off.

soil). Fifteen years or so after such clearings have been made, the balsam is generally so dense that it is impossible to walk through it. In case of forest fire, where it has only skimmed the surface, one finds very similar conditions to these, namely, that the seed remaining uninjured by the fire soon causes a dense young growth to spring up. Birch and poplar generally thrive best of all and come up first in large numbers due to the enormous masses of seed blown in from outside and the large amount of direct sunlight which they receive on an old burn. The birch and poplar evidently act as a protection and are part of the natural process of regeneration.

From the above it is evident that the natural regeneration of the coniferous trees requires certain fixed conditions, First, the direct action of light and heat on the ground, Secondly, a certain amount of protection (in this case given by birch and poplar). Thirdly, plenty of tree seed.

Guiding my judgment on extensive local research which has brought to light the above facts, and finding support for my deductions in good Scandinavian practice, under exactly similar conditions, I would propose the following method for handling the mixed wood stands.

Instead of as heretofore, leaving only undersized trees, the runts of the forest, to wither and struggle in the stand, either shad-

ing the ground too much or falling down and hindering most of the mature seedlings, we would clean up the ground as far as possible during logging, by removing all damaged trees over certain areas, and leaving a number of young, or at any rate, most vigorous and well shaped trees to cast seed over the ground. The old top storey of birch would act similarly to the birch in the burn, and remain until the time came when balsam and spruce grew over it and stifled it. The seed trees remaining being healthy and vigorous trees as far as such can be found, would lay on a certain amount of growth. This is contrary to the present system by which eventual growth after cutting is laid only on the smaller and damaged trees.

#### Where seed can come from

Since two of the conditions can be obtained by cutting properly, the one vital question remaining is the production of seed. A few vigorous trees can cast hundreds of thousands of seeds over the small area surrounding them. The seed being winged, one finds them on the March snow carried by the wind one hundred feet and more from the mother tree. One single tree can obviously produce many times as much seed as one could ever hope to sow broadcast should one attempt this method of regeneration.

According to extensive research in several countries the fact is well established that

young and vigorous growing trees produce the best fertile seed and the most seed. Spruce trees reach the above stage at about fifty years and more of active growth. A healthy tree should reach 7" or more diameter breast high at that age, and a height of forty-five feet and over. A seed tree should be sound and have a very full crown; incidentally this type of tree is one of the least susceptible to being blown down by storm.

Considering that trees can cast such great distances, the leaving of seed trees a fair distance apart would ensure a plentiful supply of seed.

#### **Cut the Balsam Clean**

I propose that considering the tendency of the balsam to crowd out the spruce also its great facility in reproducing itself, and its susceptibility to rot and insect pest, it should be cut clean in this region. Even then the amount of seed in the ground and the number of seedlings already established will give the balsam the upper hand in most stands, that is to say the balsam is to be treated as a sort of weed and all attention given to encourage the valuable spruce.

The general procedure to be adopted will be the marking out of the spruce seed trees

over the proposed cut. The size of each cut area would depend entirely on its exposure. Well protected locations could be cut all at once. Wherever there was any danger of wind falls one could do the cutting at two different periods, say ten years apart, the first cut to be carried out along narrow belts irregular in figure and direction (due to topography and disposition of the timber) which would not give sufficient play-room to the wind. The whole section could be gone over the first time to remove all damaged and diseased trees, that is the decrepit and dying trees which would not survive ten years.

Particular pains would also be taken during cutting operations to make use of all merchantable fallen timber, so as to clean up the ground and decrease the chance of forest fires. The trees remaining after the cut, being healthy, would profit by the increased light; that is, they would produce more and better seed (besides laying on growth to themselves). A few years after the cutting, the young growth would be well established and one could remove, if one wished to, both the seed trees and the trees left as wind breaks.

### *Proposed Method of Operating and Regenerating the Jack-Pine Type of Forest*

The Jack-Pine invariably comes up on burnt land, and it is doubtful if any other phenomena could bring about a successful regeneration. It is one of, if not the most rapid grower, and assures a supply of good pulpwood. The young stands are patchy and in places are so dense that one can hardly make way through them while all over one finds very thinly wooded spots occurring.

As the Jack-pine comes up after burning, it is necessarily even aged stands. The method of exploitation heretofore pertaining has been to remove trees over a certain diameter and this practice has in reality caused the removal of the fine trees while leaving the poor and smaller trees which, as a rule, have been growing in the denser stands and hence have been well supported on all sides, these are now bent down and broken by the wind, snow, sleet, etc. The loss due to the above cause is considerable.

I am of the opinion that the following outlined treatment will benefit the forest, by stopping the enormous waste due to the

present method of cutting and at the same time it will greatly increase the natural wood growth. I am further of the opinion that in all dense groups of younger stands, that is, forty years and under, that a thinning should be carried out by means of a first or preliminary cut, which will remove the suppressed or choked trees and leave about 50% of the original stand. In the stands of over forty years, a general thinning should be done taking the fully matured as well as the suppressed or choked trees, thus leaving well set trees with good crowns to grow until the final cut takes place, in, say ten to thirty years.

Eventually the question of regeneration of these stands after the final cut will have to be dealt with, and it is more than possible that this will require to be accomplished by applying light and controlled burning to the areas, as certain soil conditions necessary for the germination of seed will be brought about by the action of fire, and the formation of ashes on the ground.

## *Proposed Method of Operating and Regenerating the Black Swamp Spruce Type of Forest*

The Black Spruce in a swamp grows under very different conditions to the Black Spruce on dry soil, which is dealt with later, and yet it is one of the easiest types to handle.

The minimum diameter which the Quebec Government permit the lumberman to cut in Black Swamp Spruce is seven inches on the stump, yet I have seen many patches of swamp spruce remaining after the cut has been made where none of the trees reached the Government Minimum, hence, the lumberman was compelled to leave them to die.

This class of wood grows extremely slowly, and many trees one hundred and twenty-five years old will be found of only four and five inches diameter, while this type of tree will commence to wither and decay at about one hundred and fifty years.

The ground, of course, is marshy, and covered with moss. The development of this

type of tree is very slow, as above pointed out, and the growth and decay are occurring simultaneously, that is, the forest is reproducing and dying at the same time, young trees just coming up and old trees of one hundred and fifty years commencing to wither and die.

The Black Swamp Spruce is practically the only type where one finds a fairly even distribution of trees of all ages, and I advise the removal of trees on the age basis, as hereinafter outlined as the surest means towards actual regeneration.

I propose that this type of tree be treated by simply cutting trees over the average size of trees of fifty years of age in each stand, also that all trees which are sickly or damaged be removed.

One would thus minimize the loss of large quantities of timber, and aid the regenerative process.

## *Proposed Method of Operating and Regenerating Black Spruce in Dry Areas*

This type of Black Spruce occurs mixed with Jack-Pine or even alone on dry moss covered areas. Black Spruce grows both in swamp as well as in dry places due to its power of existing on water containing very little oxygen, which condition is found both in the swamp and in dry areas where the moss or raw humus absorbs practically all the oxygen out of the rain water. Jack-pine thrives also in the dry areas.

One finds a certain amount of Jack-pine growing with the Black Spruce, but this Jack-pine dies at a much younger age than the Black Spruce which is slow in developing and is still relatively healthy even fifty

years after the Jack-pine has ceased an active asset in the timber stand.

The dry area covered by the Black Spruce is comparatively small. For the time being I would propose a cut to remove mature and decaying trees, leaving a fair number of healthy trees per acre, mostly Jack-pine, which will be found growing among this Black Spruce, and which will be the following crop, and through which in its turn the Black Spruce will again propagate.

It has been noticed that after a fire this class of forest reproduces more rapidly and it may be found advisable at a later date to even go as far as applying light and controlled burning to these areas.

## *Regeneration of Old Burn. — (Mixed Woods)*

At a first glance at these stands one would think that they were made up of nothing but Poplar and Birch. Upon looking more closely into them, one finds masses of young Spruce and Balsam coming up under this hardwood.

In the course of approximately forty years the softwood will force its way up through the Poplar and Birch.

Poplar has been used as pulpwood for a number of years and there is no doubt that Birch will be used for this same purpose where it can be done at a profit.

## Restoring Our Lost Forest—The True Solution

By *W. B. Greeley, Chief of the U.S. Forest Service.*

Provision for a continuous and sufficient supply of timber in the United States is one of the real economic problems which must be worked out by the present generation. Three-fourths of our primeval forests are gone. Sufficient timber for the future can be assured only by the general reforestation of land which has been or is being logged.

The United States, like the nations of the old world before it, must pass from the mining of virgin forests to the harvesting of grown timber crops. We are a people of timber users, and in order to continue timber users, we must become a people of timber growers.

### Need of Timber Recognized

The need for timber growing in the United States has never been recognized so widely as at present. It has been brought home perhaps most acutely of all to the millions or more average citizens who want to build their homes but have been unable to afford it.

It has been brought home to the newspaper publishers of the country through the shortage and high cost of paper. It has been brought home to the industries which look ahead for a supply of raw material and who realize that virgin timber is not much longer to be had even at the expense of heavy freight charges for long-distance transportation. More and more people are asking whether supplies of second growth are available, or if not, whether they can be grown.

### Using Second Growth Now

As a matter of fact, we are already using large quantities of second-growth timber. There are considerable areas in the south Atlantic states and in the spruce forests of

the northeast which have been cut over as many as three times. The box industry in New England depends almost entirely on second-growth pine for its raw material. But the critical point in the whole situation is that notwithstanding such instances, the United States is taking timber from its forests three or four times as fast as timber is being grown.

That is the problem in a nutshell. As against a steady shrinkage in the stocks of virgin timber, there are enormous areas of idle logged-off land, including millions of acres in Wisconsin, Michigan and Minnesota, and these idle lands are increasing by the millions of acres every year.

We are getting a haphazard second growth or, especially where forest fires are allowed to burn the logged-off lands, no second growth at all. If the economic necessities of the country are to be supplied adequately, the nation must find a way to bring about plan-wise reforestation on all cut-over lands suited to timber growth.

We have an abundance of forest land, not suitable or not used for farms, and are face to face with a shortage of forests.

### Public Forestry Necessary

The growing of timber cannot be left to private initiative alone. It cannot be left wholly to the turn of profit or loss to the owner of the land under existing economic conditions. It is just the idea that the public should "leave it alone" that has led to the timber shortage now impending. The public interest must be protected through some form of equitable regulation of the use of forest lands to see to it that they are kept at work growing timber.

## Forest Protection—A School on Wheels

*(An Article from The Ottawa Citizen, May 4th)*

"A travelling school in forest protection" in the novel form of a railway coach elaborately equipped with forest exhibits and graphic educational arguments for forest conservation was at the Central Station last night for a few hours and was visited by many leading citizens. Motion pictures were

made of the car yesterday for the screen weeklies.

This makes the second railway car to be equipped at Ottawa by the Canadian Forestry Association and sent on the road for educational work. The car will be at Montreal two days, then will cover New Brunswick,

later working through Quebec and Ontario. Mr. Gerald Blyth, Assistant Secretary of the Canadian Forestry Association is in charge of the present tour. Two weeks ago the Tree Planting Car of the Forestry Association left for the prairie provinces in charge of two expert demonstrators.

Blazing with electric lights, generated by its own plant, the interior of the "travelling school" attracted no less by its beauty and variety than by the novel character of the exhibits. A model woodland, with tents almost hidden by tiny trees represented the recreational side of forestry and played up the phase of forest protection especially appealing to the sportsman and tourist. Next came a graphic model of a pulp and paper town, done to scale, with mill, waterfall, river, pulp piles, etc., etc., as real as life. Electric-lighted cases showing many of the odd products of Canadian wood manufacture such as artificial silk, grain sacks, organ pipes, etc., with a series of models illustrating the reliance of mines, fisheries, fruit growing, etc., on forest materials were equally attractive. A large and accurate model of two maple sugar bushes showed the old and new way of making those luscious products which now bring the farmers of Quebec eight million dollars a year.

Further along came a set of model forests, illustrating the correct and incorrect methods of operating a timberland. Fire pumps, wireless telegraph sets, lookout towers, and an electrical illusion showing the transformation of a beautiful woodland into a barren waste drew the attention of visitors. An exhibit of forest insects and another of distilled products of wood are very effective. At each of the hundreds of communities visited by the Canadian Forestry Association, motion pictures lectures are given in the evening.

### **Why Four Thousand ?**

Within the loyal family of the Canadian Forestry Association are 4000 citizens of the prairie provinces.

### *Value of Quebec's Private Forests*

According to an official tabulation of the Quebec Government, the privately-owned forest areas of Quebec, obtained originally from the Crown as grants for colonization purposes to seignories as well as lands granted to settlers and to railways, represent a value estimated at \$30,000,000 and comprise roughly 11,400 square miles. From incom-

Why are they members?

Mainly because the Association is giving positive service to the Prairie Provinces by developing tree planting.

Secondly because every member values highly the Illustrated Canadian Forestry Magazine. It is printed on coated paper, with plenty of pictures, and is non-technical. It gives more information as to tree planting on the prairies than all other publications combined. It is good to look at and makes easy reading.

The Canadian Forestry Association however is not merely a magazine-publishing body. It earns no dividends. It has no capital. Each member is a "shareholder" in an educational task that has a mighty meaning for the future.

We want you as a member to strengthen the Western work. We want you as a regular reader of the Forestry Magazine and its tree planting articles.

We will gladly send you a copy of the book "Tree Planting on the Prairies", and will render you every aid in establishing a tree belt about your farm or home.

Here is a typical opinion of the Canadian Forestry Association. It comes from the United Grain Growers, Winnipeg.

"The Directors appreciate the splendid work which is being done by you and are individually doing what they can to assist it."

OUR WESTERN DIRECTORS:

*Alberta:*

NORMAN HARVEY, G. P. MARNOCH,

WM. PEARCE.

*Saskatchewan:*

HON. W. F. A. TURGEON, JOHN DIXON,

JOSEPH GLENN.

*Manitoba:*

G. W. ALLAN, M.P., EDWARD FITZGERALD,

J. W. DAFOE.

plete data, taking into consideration the maple groves, orcharding, the pulpwood and fire wood output, the annual value of the products is placed at \$7,000,000. The great bulk of the pulpwood, which is annually shipped to the United States for the maintenance of American paper factories, comes from these freehold forests.



# ANNOUNCEMENT!

## *Commencing June 1st, The Illustrated Canadian Forestry Magazine*

will issue in a new style, which the editors believe will gratify all readers and advertisers.

The size of the page at present is  $6\frac{3}{4}$  inches wide by  $10\frac{1}{4}$  inches deep. The new page will be 9 inches wide and 12 inches deep, a very substantial change as you will probably agree.

Each page will be three columns wide instead of two. The illustrations and type matter will be much improved and the cover pictures will show up to better advantage.

The magazine will open flat and all advertising will be grouped effectively in the back pages.

We want the Illustrated Canadian Forestry Magazine to please **you**, and we hope you will agree that the June issue takes a step in that direction.

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### *From a Canadian Who Puts His Patriotism To Work*

Annapolis, Royal, N. S., April 20th., 1921.

Mr. Robson Black, Secretary,  
Canadian Forestry Association,  
Ottawa, Ont.

Dear Mr. Black:—

I am duplicating my subscription of last year to the Canadian Forestry Association, and am enclosing my cheque herewith for \$1,000.00, payable at par at any branch of the Royal Bank of Canada, to cover amount of same.

The small amount of snowfall of the past winter will probably mean low water and consequent dry conditions in the woods the coming spring and summer. This, with the enormous amount of dead dry trees which were killed by the spruce bud worm will increase the fire hazard to an extent greater than ever known in the history of timber lands in the Province of Quebec and New Brunswick, and I would urge upon all railroads, Forest Fire Protective Associations and the public in general for increased vigilance in the prevention and protection of our forests from destruction by fire. This is something that every man, woman and child in Canada has a personal interest in, as every mature forest tree that is killed means a matter of one hundred years to replace.

The Canadian Forestry Association is doing such good work that I feel it should have the hearty support of every citizen of Canada, and there never was a time in the history of Canada when the protection of our forests was of greater importance.

FRANK J. D. BARNJUM.

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### **"CANNOT BE MEASURED IN DOLLARS AND CENTS"**

"The Canadian Forestry Association has proved itself in the foremost rank, as an agency for impressing on the public the importance of Canada's forest resources and the absolute necessity of providing adequate protection. The association through its magazine, by lectures, the exhibition of moving pictures and by the use of demonstration cars, and through the medium of the public press as well as by direct appeal by bulletin to its members and by posters to campers and fishermen, has done the Canadian people a service which cannot be measured in dollars and cents."

Can. Pulp and Paper Magazine

## Fruit Growing Follows Prairie Tree Planting

(A letter in the *Farmers' Advocate*)

Coming to Alberta from a wooded country, I naturally missed the trees very much in the beginning, and in the springtime, when it was time for trees to leaf out, I used to travel ten miles on Sundays to the banks of the Bow river, the only place where trees grow, and I no longer need to travel a long way to see trees.

My trees were planted from 1911 to 1913, and, in fact, I have planted some every year since, and the Government tree inspector tells me that I have the best grove in Alberta. This, however, may not be saying much, as there are few good ones.

In my own district there are about a dozen groves doing more or less well, and I might state, that every grove that is reasonably taken care of is doing well.

My own experience has proven that Manitoba maple, green ash, caraganas and Russian poplar are the most dependable trees for this district. In my first plantation I planted some willows and cottonwoods that made a quick growth for the first few years and then died. The only kind of willow I find that will keep on growing is the red willow. I also have a couple of hundred evergreens growing, all doing well, but my experience with evergreens is that they are very hard to pull through the first couple of years. I think about 50 per cent. of them died. Inside the shelter belt I have a number of lilacs planted, doing well, and last year several of these flowered. But my greatest pride is a miniature orchard enclosed by a shelter belt. In this orchard I have several kinds of plum, cherry and apple trees growing. The plums are Manitoba wild plums, the Cheney plum, and the Opata, a sort of hybrid. Nearly all of these plum trees were loaded with fruit last year, and while most of the plums are a little tart, they make fine plum preserves. Last year I also had bushels of sand and compass cherries, and a few crabapples. From my own experience I am prepared to say that every farmer in this district, at least, can raise his own small fruit and a good deal of the bigger fruit. For the past five or six years I have grown all the strawberries, currants, gooseberries and red raspberries the family could use during the growing season, and also enough for preserves to last through most of the winter.

Alta. JOHN GLAMBECK.

### Good Work, Calgary !

A carload of trees has been ordered by the special Arbor day committee of the various public organizations of the city and will be placed on sale at Ninth avenue and Second street west, immediately behind the Canada Life building, as soon as they arrive. They will consist of balm of Gilead, spruce and poplar, are from good, healthy stock and are from six to eight feet high and well rooted.

Every purchaser will be supplied with a printed list of instructions, and amateur gardeners need have no hesitation in the matter of purchasing, for they will be given every assistance by W. R. Reader, the parks superintendent. The trees will cost about 75 cents each, the prices, of course, depending upon size and grade. For those who cannot take them away with them a delivery system at small cost will be arranged.

—From Calgary Herald.

### Goats as Money Makers.

Vancouver, British Columbia.—British Columbia now has 5,000 goats within her boundaries, with an estimated value of \$200,000. The production of milk for 1920 is estimated at 75,000 gallons, which at 15c. a quart is valued at \$45,000. If to this sum is added the value of the 1920 crop of kids, which is about \$25,000 more, the value of the goat industry in this province during the year 1920 is placed at \$70,000. Three years ago the estimated number of goats in the province was one thousand.

### Worthy Directors Called by Death.

The Forestry Magazine chronicles with regret the death of Honourable Sydney Fisher, who was President of the Canadian Forestry Association for 1917 and of Mr. George Y. Chown of Kingston, Ontario, President of the Association for 1911. Although both were closely occupied with a heavy programme of affairs, public and private, their duties as Directors of the Canadian Forestry Association were fulfilled with great fidelity and enthusiasm. The Association gained greatly by their wise advice and encouragement during the many years when public recognition of the claims of forest conservation was to be won only by patient and persistent educational effort.

## Ontario and Quebec Strive to Solve Forestry Problems

By Edward Beck.

The disposition to regard the forests as mines to be exploited to the limit and despoiled without restraint, or as a reservoir of wood to be emptied of its contents as quickly as possible, is no longer tolerated anywhere. The tendency now is to look upon them as a crop, capable of being made to yield a continual harvest. The exact means by which this is to be accomplished is a matter for trained foresters. It is, furthermore, a matter in which co-operation between the Government and the private interests is essential and one in which the people, as represented by the Government, have a vital interest, and must be prepared to give it adequate financial support.

The first obligation is, without question, to improve and extend our present methods of fire protection or prevention. When one considers the enormous losses that occur every year from preventable forest fires, it seems almost foolish to talk about cultivating new forests. It is encouraging to know that great improvements have been brought about in recent years. Education is doing its part. Larger appropriations by the provincial governments have resulted in the employment of a more numerous army of fire rangers. Radio communication and the aeroplane are making it easier to detect and stamp out incipient fires. Eventually, fire losses should be reduced to a minimum, if not entirely eliminated.

Tied up with proper fire protection is, of course, the question of slash disposal upon which practical foresters are still not all in agreement. Insect pests and parasitic fungi also constitute a forest menace calling for extermination.

These problems, however, are all but part of the all-embracing one of how best to harvest our standing timber, with a view to meeting present necessities and providing for future requirements. This is the problem that should engage everyone concerned with forest administration.

Ontario has recently undertaken a reforestation programme of its own. Its outcome will be watched with keen interest by the other provinces, especially as in some of its aspects it marks an entirely new departure.

In Quebec, the Government is taking active steps to get the large companies to place their holdings under the management of trained foresters, and to work more closely with the authorities in operating them on the basis of obtaining a sustained yield. The proposal there is to take an exact inventory of the provincial forest resources, upon which the Government engineers and those of the limit-holders will co-operate in the preparation of a forestry programme to embrace a term of years. The system proposed aims at preserving the forests, and, by the use of selective cutting, to leave them with an increased value, doing away entirely with indiscriminate cutting, which impairs, when it does not destroy, the forest capital. In other words, an effort will be made to adjust the annual cut to the estimated annual growth. Quebec is also getting ready to establish a school of rangers in connection with its forest nurseries.

### From a noted Toronto architect:

To Canadian Forestry Assoc.

"I send you with much pleasure my subscription of two dollars — all too little — to the Canadian Forestry Association, with warmest congratulations on the fine work you are doing. You can count on me for 1921, 1922 and all the succeeding years as long as I am neither dead nor "bust".

"It is difficult to find words to express adequately the value of your efforts towards preventing the terrible annual loss of our forests by fire, and in educating the Community to the necessity of reforestation.

"It is always uphill work opening the eyes of the public to evils to which they have become accustomed, but it really does look as though they had been awakened at last, largely through your work.

"I wish also to congratulate you on the argument put forward at the end of your leaflet on the necessity of keeping the Association free from Government or commercial control. This is essential, for the moment the Government or any commercial interest gets hold of your Association, that moment its value comes to an end and you can count me out."

## The Methods of Sweden

H. M. Meloney

*Fellow of the American-Scandinavian Foundation.*

As in many other older countries, the people in all walks of life as well as the government have fully awakened to the great value of the natural resources. Crown forests have been set aside to be carefully watched over by trained foresters of the State Service, and a policy for the development and use of wood resources has been formulated and put into practice, the keynote of which is that the mean annual cut shall not exceed the mean annual increment. About 40 per cent of the forest area is included under public ownership.

The Swedish Institute of Forestry has been erected upon the outskirts of Stockholm, and with its efficient corps of instructors and modern equipment is turning out each year an excellent type of trained forester. Adjoining the school is the Swedish Station of Experimental Rereach. These institutions are greatly augmented by the provincial forest schools, and the Swedish Forestry Association, which carries on a nation-wide forestry propaganda.

The country's three greatest assets, namely, timber, waterways and iron, are so closely interrelated that it is impossible to write of one without giving mention to the other two. The drainage system slopes toward the southeast from the Norwegian border to the Baltic Sea. The ice on the rivers melts in the spring from mouth to source, and thus excellent floating ways are formed, affording quick and cheap transportation to the large export sawmills located near the mouths of these streams. The hydroelectric possibilities are already developed to the point where nearly all sawmills and pulp and paper mills are electrically driven, and with very complete plants for the electrification of the national railways, another cheap and efficient means of transportation shall be provided. Much of the latter has been accomplished, and it is of interest to know that lighting and telephone systems have been installed which reach the most remote dwellings. A great step in a land where part enjoys but five hours of daylight in the winter, and the rest must endure the long Arctic night. Is it any wonder that the people take an individual interest in seeing that the vast watersheds are kept under forest cover, in order to protect and re-

gulate the streamflow for the generation of power?

### Private Ownership.

Sixty per cent of the forest area of Sweden belongs to private owners. It follows, therefore, that private forestry is of great importance. In the past many of these privately owned areas have not been managed in a way conducive to the conservation of the timber. In some parts of the country the rights of owners have been limited by special laws as a result of which the supply of standing timber has been preserved. This is especially true in the Lapland districts. At the present time approved forestry methods are practiced with success by nearly all the large timber owning companies. The government limits the annual cut to equal the annual increment. This assures not only a future timber supply to the country, but also a better stand than that existing at the present time, since a proper silvicultural system must be followed in cutting. Some clear cutting is practiced, but, in general, medium thinning over large areas is the most common method of removing the standing timber. All cutting operations, on private as well as public lands, are carefully supervised by a trained forester.

The trees marked for felling, unless of unusual dimensions, are felled in the winter by one man, instead of by two, as is the general custom in this country. The manner of cutting the stumps nearly on a level with the ground is followed to prevent waste, and the tops and limbs are cut and piled for fuel wood. In many cases the stumps are removed in the summer, when the ground is soft, and considerable revenue derived through their use for tar and charcoal burning. After trimming and bucking, the logs are yarded by horses and then transported by sleigh to the nearest stream, where they are piled to await the spring drive. In a very few cases, caterpillars, steam skidders and logging railways are in use, but only where clear cutting has provided a sufficient quantity of logs to warrant the expense. Operations are carried on in the usual slow European fashion, and many instances were noted where a little American ingenuity would have done away with much unnecessary labor and sped things up.

## A New Fuel from Waste-Wood

H. C. Diers, an American industrial engineer, has perfected a new commercial process for converting the waste wood from lumber mills and waste liquids from paper pulp mills into a new fuel, which he calls lignacite. Mr. Diers has been working on the process for several years.

With an improved system of retorts and rollers the raw waste wood from the lumber mills is hogged, then put through a process of carbonization, the residue treated with sulphide liquor under temperature, and by a system of compression made into layers, the same as a coal vein. When the prepared bed of fuel is cooled it is broken and is ready for use. The fuel resembles coal but is lighter in color. It is claimed that the cost of making this fuel is a great deal cheaper than the making of coal briquettes. An important feature is the fact that there are valuable by-products which largely pay for the process.

This new fuel is practically a pure carbon, having less than 2 per cent ash and no volatile matter, moisture or sulphur. It makes an intense heat, and it is claimed that it is adaptable for all metallurgical purposes, is absolutely smokeless and stands handling and weather conditions. A test of the fuel was made in one of the iron works on Coos Bay and as a heating agent proved to be equal to the best Eastern coke.

Speaking of his invention, Mr. Diers says: "The Pacific coast states at the present time produce less than 150,000 tons of low grade coke. All of this is made in the state of Washington and consumed in local smelters of that state. The states of the Pacific coast, for all metallurgical purposes, consume over 750,000 tons of coke annually and 80 per cent of this coke comes from the eastern states at a cost of millions of dollars annually. With the new process fuel the future supply of metallurgical fuel for the Pacific states is in the hands of the lumber mills and paper pulp mills, as they have the products to make the fuel and are now wasting those products."

The daily attendance at the Canadian Forestry Association's two railway cars, Eastern and Western, this year is breaking all records. Arrangements have been made to attach the Western car to the Better Farming Train sent out by the Saskatchewan Government.

### Hands across the Boundary !

From the Schroeder Mills and Timber Co., Milwaukee, Wis.

(Referring to the educational enterprises of the Canadian Forestry Association)

"We believe this is a very worthy cause and should have both our moral and financial support. I know personally of the great deal of good which has been done along these lines in the Pacific Northwest, and I can also say from experience that the Canadian people who travel the bush are not fully alive as yet of the deadly menace to their interests which is presented in the way of carelessness with fire while in the woods. I hope that some day conditions in Ontario will be as good as they are in Oregon, Washington and Idaho, where the actual timber loss by fire during the past 4 or 5 years has been very small, and what losses they have sustained have been caused by conditions well beyond the control of human beings."

### An Association Supporter

From: D. & J. Ritchie and Company, New Castle, N. B.

Enclosed please find our cheque for \$5.00 being amount of Contributing Membership to your association, as well as covering subscription to the Canadian Forestry Magazine. We might say that we are pleased to receive the Magazine from month to month and enjoy reading it from cover to cover, as there is always sure to be a vast amount of valuable information contained therein, and it is nicely written as well. We also realize what a vast amount of good the Association is doing in an educational way in promoting the conservation of the Forests, and we are glad to give what little assistance we can from time to time.

### A Patriotic Company

No company is rendering better or more independent service to the cause of forest protection than the Roberval-Saguenay Railway, Chicoutimi, Quebec, of which Mr. J. A. Vallerand is General Superintendent. The Company has issued a series of instructions to their employees which show the fullest appreciation of the importance of fire prevention and an exact knowledge of methods for their prevention.

## Results of the Prairie Tree Planting Campaign

The following letter has just been received from our Western organizer, Mr. Archibald Mitchell, who with Mr. Angus Cooch, is carrying forward our Tree Planting Campaign in Alberta, Saskatchewan and Manitoba, with the aid of our Tree Planting Car. "The Tree Planting Car" En Route—Cardston, Alta. May 2nd, 1921.

Well, we are off to a good start and already we are seeing results from our last summer's tour.

Calgary is in the middle of a great planting campaign where the Board of Trade, the Kiwanians and the Rotarians have joined forces and are putting over the biggest planting campaign over, this Spring. We were at the committee meeting and found a bunch of enthusiasts indeed. Several carloads of trees will be planted by the citizens of Calgary this year.

Then the small towns are not behind hand. Vulcan, enterprising as usual, is boulevarding her streets, as well as planning a new children's park.

Champion again is another tree planting town. A new park and the re-modelling of the school grounds being under way. At both places we supplied plans for the parks and other information which seemed to be appreciated.

Nor are the farmers behind hand.

Roy Walker of Vulcan, a member of the Association, is planting a mile and three quarters of shelter belt, ten rows wide this year and is planning for two miles more next year. No more soil drift for Mr. Walker if he can help it.

We went out to his place and they kept us busy; what to do with the currants, the raspberries, the Russian Poplars, the most effective places to plant shrubs, what to plant, and so on. Half of his plants this year will be cuttings so we had to visit the smith and show him how to make a cutting-planting iron. Three hours after, when the afternoon lecture was over, we called on the smith to see if the iron was up to specifications but found it was finished and already half way to the ranch.

At Lethbridge we found a busy campaign of tree planting on under the energetic leadership of our good (and big) friend, Peter Lund. "A tree for every citizen" is the slogan at Lethbridge this year, and all

hands are busy.

At Cardston we found the proportion even higher, for a town of 4000 is planting 6000 trees. Their streets are being boulevarded, a new park, the grounds of the tabernacle and of the temple are all being planted and tree planting is in the very air.

The park is to have a band stand and lots of open spaces with clumps of trees and shrubbery for shelter in stormy weather. Our island system for the small town park is being used and they will have a fine asset to the town in a very short time.

Our route takes us next over another section of the soil drift country and then south to the boundary, into a district where some of the school children have never seen a tree. Our pictures should introduce them to an entirely new world.

Yours very truly,

Sgd. ARCH. MITCHELL.

### **The Hickory Supply for Autos.**

(Editorial, American Lumberman)

In talking to an automobile salesman recently about the superior qualities of wooden wheels for automobiles as compared to wire wheels, he rather dolefully said that the public would have to get used to metal wheels soon, for it is now almost impossible to get the hardwood with which to make such wheels. I am wondering if this is correct or has some propaganda been circulated recently against the wood auto wheel?—Inquiry, No. 206.

[Hickory is one of the best woods for automobile wheels, and there is no immediate danger of the exhaustion of hickory. So far as can be judged from present conditions, it will be one of the last woods of this country to fail in supply. Much is used for handles and vehicles, but it grows rapidly. It is at least as much of a domestic tree in its habits as black walnut, and grows along fences and in old fields where it is at its best. It is peculiar among woods in that the faster it grows, the better it is. Second growth—that is, fast growing, hickory—is preferred for many purposes. The wide rings of spring wood which are found in open ground hickory trees, give a strength and toughness, exactly what is desired by makers of vehicle wheels. It will be a long lime in the future before automobile makers can not get wood for wheels if they want it.—Editor.

## What Comes of Tree Planting

By Arthur Herbert Richardson

When settlers first came to this continent, they found limitless tracts of forest, waiting to be subdued. Trees were man's common enemy. They only prevented him from reaping the fruit of the soil, and in the competition to subdue the forest, many thousands of acres of land were cleared which were meant only for tree growth. This has been demonstrated in an interesting way throughout many parts of New England. One finds there to-day more forested land than there was fifty years ago. The reason for this is that when the Western States were being settled the young people left the New England farms for more fertile plains and valleys. Fields once used for crops were seeded by trees, with the result that many fine stands of timber have grown up on land which was meant only for their kind.

### Planting 100 years ago

With such a wealth of timber on this side of the ocean, it is scarcely to be wondered at that reforestation has not until recently met with any great sympathy. However, early in the last century there are evidences that men with a wide vision realized what would happen if the exploitation of timber areas was not supplemented by planting. The period between 1820 and 1880 was one of enthusiastic planting of pine in New England. People foresaw that the time would come when White Pine and other species would be gone and it would be necessary to plant if such timber was to be available. Large plantations were set out by private owners and a few corporations. In most cases the young trees were dug up in the woods and planted either at random or in rows 5 to 12 feet apart. In some cases seed beds were made and in others the seed was sown broadcast. At the end of this period it was estimated that there were in Massachusetts alone plantations of White Pine to the extent of 10,000 acres. After this period interest in planting began to decline, chiefly because of the immense supplies of lumber that were being brought from the region of the Great Lakes and also a lack of adequate fire protection in New England. These two factors tended to dampen the enthusiasm for forest planting. It was the pleasure of the writer to visit

some of these older plantations in Massachusetts during the past year and the results observed were very encouraging. I remember talking to the owner of one of these plantations, an old man in his seventies. As we chatted he told me how at one time the site had been occupied by a peach orchard. The peach trees kept dying and as the soil was not the best for crops, his father had set it out with trees. He remembered the date well because it was a half holiday in honor of the completion of the laying of the transatlantic cable and his uncle had come down from Boston to help with the planting. That was in 1858. To-day he has a beautiful stand of White Pine. People often argue — very selfishly — what is the use of planting trees, the one who plants them will never reap the benefit! The foregoing is an answer.

But our chief concern at the present time is our own province of Ontario, and when considering the problems with which we are faced, it is well to compare what other countries have done under similar circumstances. The most noteworthy examples of reforestation are to be found in France, and any country planning to undertake tree planting on a large scale can find in the work done in that country a parallel condition to its own. If it be reforesting on steep, rocky formations for watershed purposes, consider the work done in the Cevennes Mountains; if it be sand dune areas where tons of earth are moved according to the humour of the wind, study the sand dune fixation work on the shores of Gascony, or if it is desired to grow a crop of trees on otherwise unproductive soil, compare the tree planting carried out in the district known as the Landes. It will be interesting to outline briefly reforestation work which has been accomplished in these different areas and to compare the conditions and what might be accomplished on similar areas in Ontario.

The Cevennes Mountains are characterized by steep, rocky slopes that give rise to many torrential water courses. Originally these mountain sides were covered with timber and for many years the French government enforced regulations prohibiting the cutting of trees from such areas. After the French

Revolution, when things became more or less disorganized, these areas, which before had preserved the stream flow, were exploited, with the result that after ten years of such work the effects began to be felt in the valleys below. It is estimated that 8,000,000 acres of tillable land were made useless due to this ruthless cutting which meant that hundreds of people had to leave that section of the country. The French government then put a stop to this cutting and commenced reforesting these slopes. This was a difficult task, for in many cases water courses had to be built up with masonry and cribbing, before trees could be planted. But the work went on favorably until in 1900 there had been expended on this enterprise, \$13,000,000, and at the rate it was then progressing it was estimated that it would be completed in 1945.

#### **Ontario's Problem**

The only section of Ontario which can be called similar to this area, and yet it is very different because there are no mountains in Ontario, is the northern part of the province which is largely Laurentian formation, characterized by outcroppings of rock with here and there pockets of good agricultural soil. The problem in this section of the province at the present time, however, is chiefly one of protection.

The Gascony area is in the southwest part of the country where there were 250,000 acres of sand dunes which had endangered the adjoining pastures and fields. Here the

task was to stop moving sand, and in many cases special barriers had to be built in order to retard its progress. But with rare patience the work went forward until 200,000 acres of this area had been reclaimed, which in 1907 was valued at \$10,000,000. In Ontario there are three areas which are comparable to this one, namely, a part of Prince Edward County; sand dunes in Lambton County, and similar areas in Norfolk County, altogether they would aggregate possibly 8,000 acres of land and there is no reason why these sand dunes in Ontario cannot be reclaimed and held, as well as to be made produce a valuable forest.

The third area is known as the Landes and is a triangular piece of country in Gascony containing 2,000,000 acres of moving sand and poor stagnant soil, the only inhabitants before it was reclaimed, being a number of poor shepherds who went about on stilts attending their flocks. Of this area, 1,750,000 acres had been reclaimed before 1907 and where there was once a desolate plain in which it was hardly fit for a human being to live, there is now a forest of beauty, estimated at \$100,000,000 in value, and supplying work and substance to hundreds. The work carried on in this section of France and the natural conditions to be combatted there are most comparable to the work of reforestation that might be carried on in southern old Ontario. Areas of this kind in the province are plentiful enough and yet altogether the separate large areas do not total more than 200,000 acres.

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### *How Germany Will Pay for Forests*

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At a hearing recently before the Reparations Commission in Paris, on land and orchard damages, Germany contended that it was incumbent upon Germany to pay the proportional cost of replanting orchards, which should be determined by the difference between the stage of the tree when destroyed and the normal life of the tree according to an official announcement.

Germany recognized that compensation was due for the destruction of forests to the value of the wood destroyed or carried away and also for reforestation, provided the felled trees were of no commercial value.

#### **From a U. S. Forester**

To Canadian Forestry Assoc.

I am enclosing herewith check in the amount of \$4.

Kindly permit me to compliment you on the excellent work which it is apparent your Association is performing in the interests of forestry.

I do not think I am guilty of exaggeration in stating that your activities along this particular line are far ahead of any organization that we have in the States.

With best wishes for your continued success, I am,





As the New York Tribune sees it.

## ONTARIO'S PULP LOGS PUT 11 MILLIONS INTO PAY ENVELOPES

It has been stated (and without exaggeration) that every citizen of Canada owes his job to the Forest, that no man whether packing peaches, feeding a printing press, or teaching school can long continue his

existence denied the multitudinous services of the common log of wood.

In Ontario, the vast development attributable to the lumber industry is known and appreciated. What strides have been made

by the younger brothers of the wood-using industry, pulp and paper, are not so well understood.

Ontario possesses 16 paper mills, 9 pulp mills, and 13 combined pulp and paper mills, a total of 38 establishments out of 99 in the entire Dominion. They represent a capital investment of \$95,281,000 out of a total of \$264,581,000. They give employment to 8,571 persons, exclusive of woodmen. They distribute in wages and salaries \$11,666,000 a year, out of a total of \$32,323,789 for the whole of Canada.

Two of Canada's greatest paper producing mills are in Ontario: the Spanish River Pulp and Paper Mills with three plants at Sault Ste-Marie, Espanola and Sturgeon Falls, having an ultimate annual output, when new machines are completed, of 200,000 tons of newsprint paper, 10,000 tons of surplus groundwood pulp, and 13,000 tons of surplus sulphite pulp and 10,000 tons of box boards; the Abitibi

Power and Paper Co. of Iroquois Falls, one of the largest and most efficient paper mills in the world, with an annual capacity of 120,000 tons of newsprint, 18,000 tons of board and 18,000 tons of chemical pulp.

Too much emphasis cannot be given to the influence of Ontario's pulp and paper plants upon agricultural settlement. Each industrial unit creates a municipality of thousands of people paid at high wages and demanding for more farm produce than the settlers in their immediate neighborhoods have yet found it possible to supply. Markets near at hand and the first essential to land settlement in Ontario's northerland and such markets are being supplied by the pulp and paper towns and to a lesser degree by the mining camps. The Forests of Northern Ontario, therefore, must be regarded not only as a creator of prosperous municipalities in what was yesterday's wilderness, but equally as the builder of markets without which the pioneer farmer would find conditions hopeless.

## The House Jack-Pine Built

By T. K. D.

Who is Jack Pine? What is Jack Pine? Where is Jack Pine?

From the investor's standpoint; from the pulp and paper producers' standpoint and from the national standpoint, Jack Pine is quite a big fellow in his own particular way.

For generations of tree life, jack pine has been a sort of poor relation. It has been the reckling of the timber breed. But henceforth it will be quite an important member of the forestry family. Heretofore, jack pine has had a very indifferent place in the assets of the producing companies; it has had no place at all in the active operations. It has been used for the extraction of certain chemical properties, for railway ties, and for kraft wrapping paper — not a big market as timber markets go. And there are scores of millions of cords of jack pine. The woods are full of them, so to speak.

Jack Pine, alias Banksian, alias Cypress, in the past has been a stubborn and reluctant servant of the pulp and paper mill; so much so that the expert woodsmen and mill operators deliberately ignored it as a means towards the end of pulp and paper making. Operators occasionally, inadvertently or with aforethought, put jack pine into the stewing pot with the more respectable spruce

and balsam, and always there was trouble — mostly pitch trouble. Jack pine, being a self-confessed culprit, was relegated again and again to the tall timbers.

Jack pine, it will be observed, has had a very bad name, and as a consequence was not invited to the daily dance of the woodchips, or the jamboree in the mill digesters.

### Jack's reputation improves

Now we find that Jack Pine is not at all the sort of chap we thought he was. He has been exclusive, that is all. He can go into the digester, unaccompanied, and come forth a one-hundred-per cent. specimen of sulphite pulp, equal to the best composition requisite for the making of good and sturdy newsprint.

And this is the point: Most of the companies in which investors are interested have supplies of jack pine to the extent of 15 to 35 per cent. of their standing timber areas. Most of these companies, in appraising the value of their physical assets, write the jack pine timber at, perhaps, less than one-half the value placed upon the timbers ordinarily used for the manufacture of pulp and paper.

My information is to the effect that in the Abitibi and the Mattagami companies'

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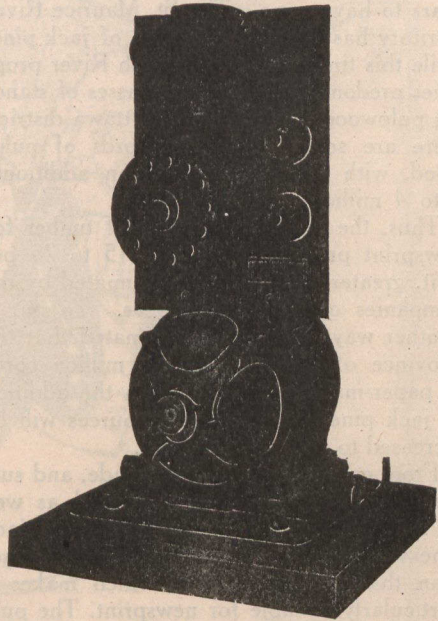
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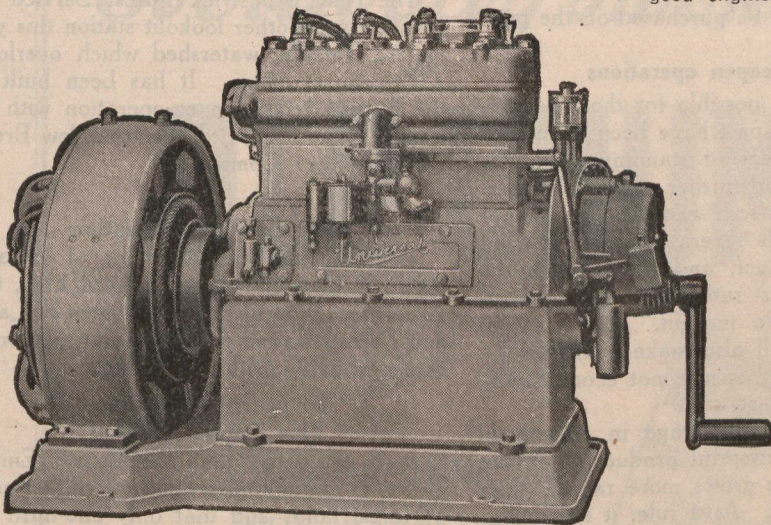
The belt connected unit illustrated can be driven from any power shaft. Twenty-four hour service is obtained by the use of 16 cells of TITAN storage battery.

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areas, for instance, jack pine represents over 15 per cent. of the standing timber. Rior-don, Price Bros., and North American Pulp run from 10 to 15 per cent. Brompton appears to have none. The St. Maurice River territory has 20 to 25 per cent. of jack pine, while this timber on the Spanish River properties predominates all other classes of standing pulpwood. In the Upper Ottawa district, there are some 20 million cords of pulpwood, with jack pine giving an additional 3 to 4 million cords.

Thus, the available supplies of timber for newsprint production is some 15 to 25 per cent. greater than has been estimated by the companies operating the areas. To put it another way, it has been estimated that the Province of Quebec has 155 million cords of paper-making timber. With the addition of jack pine the available resources will be increased to 185 million cords.

From experiments recently made, and successfully concluded, by commercial as well as laboratory practice, the fibre from jack pine was found to be about 25 mm. longer than that of spruce fibre, which makes it particularly suitable for newsprint. The pulp made from jack pine, when treated alone, proved to be as good as, if not better than, anything that can be purchased on the market.

#### **Will cheapen operations**

Therefore, it is possible for those companies which in the past have been compelled to leave large areas of standing jack pine and cut further and further afield from their mills, to begin afresh near the source of manufacture, with several seasons' run of the near-by product, and thus reduce the average of the cost ratio by a very substantial and profitable margin. The clearing of those areas will also make available the shut-in-balsam and spruce not economically workable in the past.

The additional advantage in respect to jack pine as a newsprint producer is in the fact that the tree grows more rapidly than any other conifer. As a rule, it is peculiar to dry and sandy soil. Its powers of natural reforestation, after fire, are greater than any other conifer. On the average, jack pine attains twelve inches diameter whilst a spruce grows six inches in the same period of growth. There are more cords per acre, on a given area of jack pine, than there would be even in black spruce, which probably has the speed record to date.

Incidentally, besides those companies already mentioned, Laurentide is high in jack pine holdings. The Provincial Mills and the Belgo Canadian also have a high percentage of jack pine.

The causes which have kept this valuable timber from a practical consideration are: a remarkable degree of ignorance; much prejudice; a modicum of laziness, and, no doubt, the fact that only too often is Invention still-born when Necessity has no need to function.

Clearly, the scientific and chemical resource which has brought jack pine within the scope of the paper-maker, has given to Canada's forests a renewed lease of life; while to investors has accrued an unexpected increment in the shape of increased physical assets, where a decrease might reasonably be expected through seasonable depletion of the reserves of what to date have been considered the only timbers suitable for paper production.

Jack-Pine, no doubt, is quite warranted in assuming the hyphen therein placed, which nowadays joins achievement to greatness.

#### **A New Lookout Station**

The New Brunswick Forest Service has constructed another lookout station this year on the Tobique watershed which overlooks 2,000 square miles. It has been built by the Forest Service in co-operation with the Fraser Companies, Ltd. and the New Brunswick Railway Company.

#### **Ontario's reorganization**

Hon. E. C. Drury, Premier of Ontario, stated in the Legislature on April 25th, that a reorganization of the Department of Lands and Forests was in contemplation and would come probably within a month.

#### **Our Empire's Timber**

It is estimated that the British Empire possesses about twelve hundred million acres of forest lands and that only one-third are economically productive.

To the Canadian Forestry Ass'n,  
Ottawa, Can.

"Judging from results already obtained your future activity will be marked with the continued success you so well deserve."

J. R. BOOTH, Ltd."



*Everybody Smokes*

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## Developing the Empire Forestry Association

In July, 1920, the Imperial Forestry Conference held a session in London, which was attended by delegates from various parts of the British Empire. The result of their deliberations was to confirm the view that, speaking generally, the Empire is dissipating the enormous natural resources which it possesses in its forests, without making provision for their renewal; while such vital matters as the yield and utilization of timbers, the management of forests, forest education and scientific research are being neglected. The members of the Conference were also convinced that the administration of all our forest departments must be strengthened if the desirable policy of conserving and regenerating the forests of the Empire is to be effectively pursued.

### State of Forestry in the Empire

A Special Committee of the Conference, appointed to outline a scheme for a British Forestry Bureau, drew pointed attention to the unsatisfactory position of forestry, and after explaining the scope and objects of such a Bureau, it concluded: — "We have not been able to ascertain precisely to what extent existing institutions in the United Kingdom and other parts of the Empire are attempting to deal with the problems of afforestation, but we do know definitely that these need to be tackled. The important matters with which the proposed Bureau would deal are at present in a chaotic state."

### Recommendations of Conference

Among the recommendations of the Imperial Forestry Conference are some which obviously fall within the province of government. Institutions for scientific research work, or for the training of forest officials, can only be undertaken by the State, and should not be left to private or non-official enterprise. But in other directions, indicated in the resolutions of the Conference, there is much to be done by voluntary agency, notably the work of publicity or propaganda.

Delegates to the Conference laid stress upon the need for a sustained effort to interest the community in forestry. This lies outside the purview of an official forestry department; and they pointed out the disadvantage of propaganda work being carried out by either the State or by a purely commercial association, interested, perhaps, financially in some particular forest industry.

In the former case the character or policy of Provincial or State Governments in the Dominions may debar Federal action, while, as regards the latter, information or exhortations emanating from an interested source would arouse suspicion.

### Value of Forestry Associations

On the other hand, there is direct evidence of the immense scope for voluntary forestry associations, which have no particular trade interests to foster, which are not officially subordinate to, or leagued with, any government, and are free to support or criticize, as the occasion may demand, the official forestry policy, or the lack of it, in the United Kingdom, Dominions or elsewhere. The great voluntary associations in Canada and Australia have greatly assisted in spreading correct knowledge as to the growth of trees, silvicultural methods, and the production of timber. While in the U. S. A. they have intervened with effect in controversies connected with "conservation" and forest reserves.

### Need for Central Association

The experts at the Conference were unanimously agreed that the time has come to establish a Central Forestry Association for the following purposes:

- (a) To serve as a link between the associations already existing in the United Kingdom, Australia, Canada and other parts of the Empire, and between individuals engaged in the work of forestry;
- (b) To foster public interest in forestry throughout the Empire;
- (c) To secure general recognition of the importance of forest management;
- (d) To collect and circulate information as to existing forest conditions, and as to the future timber requirements of the Empire;
- (e) To provide a clearing house for information and a centre for co-operation;
- (f) To organize meetings for the discussion of the problems connected with the growth of timber, and its utilization.

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Then you'll get good matches—real matches, safe, sure lights—guaranteed good by the name Eddy on the box.

There are 30 to 40 different brands of Eddy's nearly all of which are chemically self-extinguishing—they go out completely when blown out. **No dangerouh afterglow.**

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### An Empire Body

Steps have now been taken towards the establishment and incorporation by Royal Charter of the Empire Forestry Association; its affairs will be directed by a Governing Council and an Executive Committee, the latter deriving its powers, by delegation, from the former, and to be composed of representatives of the United Kingdom, Australia, Canada, Newfoundland, New Zealand, South Africa, India, and the Crown Colonies and Protectorates, and of the trade interests of those areas. The Chairman of the Governing Council and the Executive Committee is Viscount Novar, and the members of the Executive Committee include the Earl of Plymouth, Viscount Milner, Sir John Stirling Maxwell, and Lieut.-Colonel G. L. Court-hope, M.P., for the United Kingdom; Mr. H. R. Mackay, for Australia; the Duke of Devonshire and Mr. Robson Black, for Canada; Sir Mayson Beeton, for Newfoundland; Lord Islington, for New Zealand; Earl Buxton, for South Africa; and Sir Claude Hill, K.C.S.I., for India.

Amongst those who have consented to become Vice-Presidents are: H. R. H. Prince Arthur of Connaught, Lord Allenby,

Lord Plumer, Lord Ronaldshay, Lord Willingdon, Sir E. D. Maclagan, General Sir H. Smith-Dorrien, Sir S. Harcourt Butler, Sir Charles A. Harris, Mr. Geoffrey Archer, C. M.G., and Mr. Richard J. Wilkinson.

Terms and conditions of membership for individuals, firms and associations can be obtained from the Secretary, 17, Victoria Street, Westminster. The founders of the Empire Forestry Association have received many promises of support from overseas, and are making arrangements to publish a quarterly journal, which it is hoped will be welcomed by those in whose interests the Association has been founded. They appeal with confidence to all who grow or use timber to support this effort to place British forestry on a sounder basis, and to stimulate the production and preservation of timber in all parts of the Empire.

### QUEBEC AGENT-GENERAL'S OPINION

From report of meeting of Empire Forestry Association, London, England.)

Remarks of Hon. Mr. Pelletier: "The Canadian Forestry Association is doing excellent work in Canada. Twenty years ago very little was heard of the Canadian body but to-day everyone speaks highly of the work it is doing."

## Boys Given Task of Reforesting a State

Louisiana is undertaking an experiment in reforestation which, if it is successful, is likely to be widely imitated. She is making an appeal to the boys to plant forests, and to encourage them a large lumber company is offering prizes for the lads who show the most industry and skill. The appeal is directed especially to the farm boys between the ages of ten and eighteen for it is from the farms that a large part of Louisiana lumber of pine, cypress and hardwoods comes. Last year one farm out of four had a revenue from lumber and the total amounted to \$7,000,000. The farmers generally, however, despite the fact that they have found it profitable to sell timber, have not troubled to replant what is cut. The tendency is to cut the timber and then crop the cleared land. This practice does not work well and is wasteful, because land that has grown pine is not fit for cropping for some years after the timber has been cut because of the acids, pine needles and rotting stumps which destroy the fertility of the soil

until they have been cleared off or plowed under several times.

### Millions of Idle Acres

If, however, these lands were immediately planted again they would become an asset instead of a liability, and since there are

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

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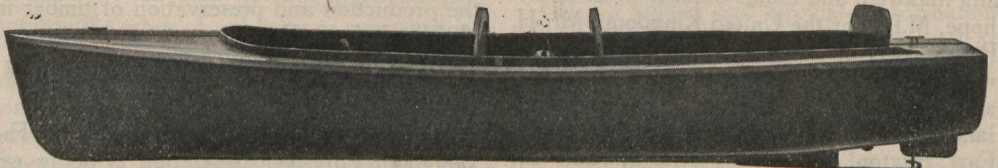
We carry a good stock in all standard SIZES.

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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.

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about 8,000,000 acres of cut-over pine lands in Louisiana it is plain that the state is losing an immense fortune because of the non-productiveness of these great tracts. There is another 4,000,000 acres of land that once bore cypress and hardwoods that is idle making a total in all of 12,000,000 idle acres. The immediate plan of the state is to replant 4,000,000 acres, and to endeavor to counter-balance the annual cut of 250,000 or 300,000, which is now going on. The appeal to the boys was made in December, and by the next month not fewer than 5,000 had enrolled themselves in the clubs. By the end of this year it is expected that there will be 25,000 of them at work.

### Five Acres for One Boy

How much will be planted by this force in a year is a matter of conjecture, but it has been estimated that a boy can plant and look after five acres of young forest in his spare hours and still have time for his usual work and recreation. If each boy plants three acres and looks after the young crop until it does not require further attention there will be a gain for the boys, the state and the lumber companies of 75,000 acres

a year. The boys will be instructed in the planting and care of seeds and seedlings and will be taught all about trees so that there will be the further advantage to the lumber companies of having not only a growing crop of lumber, but a growing crop of lumbermen, who when they take farms for themselves are likely to continue their attention to trees both as a source of profit and of interest.

### Instructing the Boys

An article on this subject in Popular Mechanic says: "The State has placed a forester who formerly was connected with the Public schools, and thus is familiar with the American boy, and methods of teaching him, in charge of the reforestation plan, and has issued 5,000 copies of a bulletin describing in simple language the trees best adapted to the land in various parts of the State; how to tell the ages of standing trees, and how to plant, care for and protect natural or artificial forests with the best financial results. Special attention is being paid to the value of standing timber, which has been sold by Louisiana farmers with reckless prodigality in the past at from one-tenth to one-half of its real value. Little difficulty will be experienced in obtaining the use of farm lands from the farmers since an arrangement is to be made with the State Government whereby certain reductions in taxation will be given those owners of agricultural lands who allow the boys to reforest parts of such areas."

### Needn't Wait a Lifetime

As part of this campaign farmers are being taught that timber suitable for such farm purposes as fence building, the construction of corn cribs and other farm premises can be produced at practically no cost to them. Those who can afford to wait until the newly planted trees are full grown will of course, reap a rich harvest, but others will find themselves in possession of most all the timber they are likely to use about the farm by culling their wood lots after ten years. They will also be provided with fuel at no other expense than the time taken to fell and cut up a tree. In the meantime the other trees continue to grow into money. The boys' reforestation club is a natural development of the cattle, pig, corn and other agricultural clubs for boys which are scattered all over the United States and Canada and which received a special impetus during the Great War.



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### A New Use for Willow

The willows, which in immense number either fringe or cover the islands and bottom lands along the Upper Mississippi, have been found at last to serve a real commercial purpose instead of just greening and festooning the landscape and supplying the Indian women with the material for basketry. The Government in its \$20,000,000 undertaking to make a 6-foot channel at lowest water stage on the Mississippi from St. Louis to St. Paul, has turned willow lumberman and is cutting thousands of these willows annually.

The channel deepening is largely accomplished by the building of "wing dams" out from shore. These throw the water into one main groove, increasing the rate of the current, which in turn scours out and deepens the channel. Besides the wing dams, in order to prevent the waters from spreading into secondary channels, occasionally a "closing dam" is built across the neck of a

slough or bayou, entirely cutting it off from the river.

To build these dams Uncle Sam has many crews at work chopping down willows on the islands. They pay the owners a small sum, and in most cases the parties owning the lands are glad to get rid of the willows, as it gives more chance for the trees to grow. The willows are loaded on big flat barges and towed to the place where the dam is to be built. They are tied into bundles and then dropped from the barges into the river at the point of dam building. After a mattress of them has been laid in the water it is loaded down with rock to sink it to the bottom of the river. Then a second willow mattress is built which in turn is sunk. So the building goes on until the dam is of desired height. The barges of willow and rock are moved up and down the length of the dam by electric power furnished from a floating power house, which with the barges forms the equipment of a dam building crew.

### Where Cork Comes From

Cork is the outer layer of the bark of an evergreen oak. Although the tree grows over a wide territory, the commercial production of cork is restricted to a comparatively small area bordering the western Mediterranean Sea, between the 34th and 45th degrees of latitude, North.

The Iberian peninsula is the great centre of cork production and produces nearly two-thirds the world's supply of cork. It also grows widely in southern France, Italy, Corsica, Sardinia, Morocco, Algiers, and Tunis, and, to a limited extent, in Greece, the Dalmatian Coast, Tripoli, and Asia Minor. Portugal probably produces more cork than any other country, but Spain is regarded as the centre of the cork industry because it imports large quantities from Portugal and re-exports it together with the Spanish product in the various manufactured forms. The Tagus River Valley in Portugal and the provinces of Catalonia, Andalusia and Estremadura in Spain are the great sources of the world's cork supply.

There are 400,000 acres of cork forest in France, 818,000 acres in Portugal, about

850,000 acres in Spain, 1,000,000 acres in Algeria, and 200,000 to 250,000 acres in Tunis. The total area of cork oak forests is estimated to be between 4,000,000 and 5,000,000 acres. The richest and most productive forests are in Portugal and Spain.

Cork has played an important part in civilization since the days of the ancient Greeks of the 4th century B. C. and the Roman Empire, for it is mentioned by Horace and Pliny as well as by Plutarch and an early Greek writer. Even in those early days cork was used both for bottle stoppers and for buoys for fishermen's nets. The introduction of glass bottles in the 15th century gave a great impetus to the industry and the importance of cork gradually increased until modern times.

In 1914 America imported over \$6,400,000 worth of cork in its various forms, and even in 1918 the value was over \$5,000,000 in spite of the lack of ocean tonnage. In 1916 Spain exported cork and cork products to the value of about \$6,900,000. The annual production of cork from all sources is estimated to be between 50,000 and 60,000 tons.

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SIZE UP EVERY TIMBER FIRE AS YOUR PERSONAL ENEMY  
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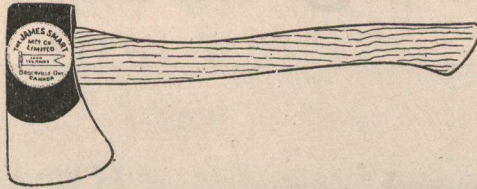
— Put Out Your Camp Fire —  
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There are hundreds of jobs in a live forest.  
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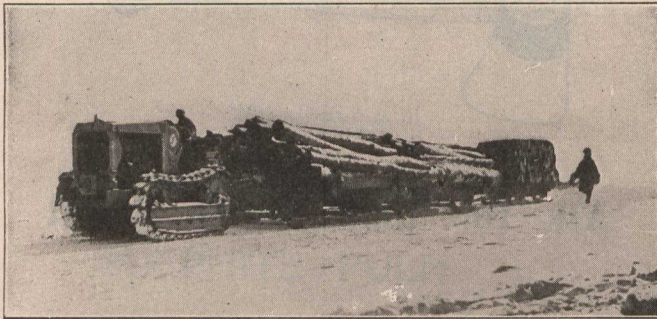
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**JT**

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.

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## King Spruce

It is not generally appreciated that the value of the annual production of spruce lumber and pulpwood in Canada exceeds that of nickel, silver, gold, copper and lead combined. In 1919, the value of the spruce lumber was approximately \$44,000,000 and of pulpwood \$28,000,000, or three times the value of either the Douglas fir or white pine production.

This is probably due, at least in part, to the fact that spruce is a dual-purpose wood, being valuable for both lumber and pulp. The light colour, long fibres and easy pulping qualities make it the most valuable wood for the manufacture of paper. Spruce was at one time considered the only wood suitable for the manufacture of newsprint. Though the increasing difficulty of securing sufficient spruce to meet the demand has led to the use of other woods, chiefly balsam and hemlock, in combination with spruce, spruce still comprises over 70 per cent of the wood used by the pulp and paper mills in Canada. As lumber, it is white, soft, light and easily workable, possessing a maximum of strength for its weight, so that it is in demand for light construction and interior finish. The absence of a very distinct grain precludes its general use in a natural finish, but it is largely used in place of pine where it is to be painted.

There are five species of spruce in Canada. Red spruce is confined to the Maritime Provinces and the eastern part of Quebec. White spruce and black spruce extend from the Atlantic coast to Alaska and as far north as the mouth of the Mackenzie river. In the southeastern part of its range, the black spruce is usually confined to wet or swampy sites, where it grows slowly and to a small size. In the northwest, it is found on better sites and is a better tree. White spruce is, however, the most important eastern species of spruce.

Sitka spruce is confined to the Pacific coastal region. It attains very large sizes, up to 8 to 12 feet in diameter and 160 to 180 feet in height. During the war, it was framework of air-craft, and 26,000,000 found that Sitka spruce-wood was the best in the world for the manufacture of the

board feet of the finest quality was supplied by British Columbia to the Imperial Government for this purpose.

Engelmann spruce is plentiful in the inland, mountainous region in the southern half of British Columbia. It is also a splendid tree, but does not attain the gigantic sizes of the coastal species.

All of the spruces reproduce well under proper conditions. They are all tolerant of shade, which enables them to reproduce and remain alive even under comparatively dense stands. They do not thrive under such conditions, however, and, unless relieved of the oppression in time, their recuperative powers will be weakened. If given a chance, all of the species, except possibly black spruce, will make a rapid growth, and will afford perhaps a better return in a forest managed for sustained yield than most other kinds of trees. This is especially true where small sizes can be utilized, as in the pulp industry.

Although reliable information is not available as to the amount of spruce in Canada, it is estimated that about one-third of the standing timber is spruce. There is, perhaps, between 100 and 150 billion board feet suitable for the manufacture of lumber, and, in addition, between 350 and 400 million cords of spruce pulpwood. A very considerable amount of this, possibly one-half, is not commercially accessible under the present conditions of market and transportation.

The annual cut of spruce is a little over two billion board feet. To this must be added the annual destruction by fire and by insects, which during the last two decades, has far exceeded the amount used. The depletion of the pulpwood resources of the eastern United States has already created, and will continue to cause, an ever-increasing demand on the spruce forests of Eastern Canada.

Unless measures are taken to reduce the waste in logging, to check forest fires, and to provide for the development of new crops, the available spruce forests of Eastern Canada, at least, will be within sight of exhaustion inside of fifty years.

(Commission of Conservation)



## A Leading Western Editor on the Canadian Forestry Association

*From the Medicine Hat News.*

The Canadian Forestry Association is now on its annual hunt for new and old members to sustain it in its work for the general benefit of Canada and Canadians. The Evening Times desires to lend its encouragement for two reasons: First, because the work of the association is of the greatest importance to our Dominion as a whole; and second, because it is of the utmost consequence to the prairie people.

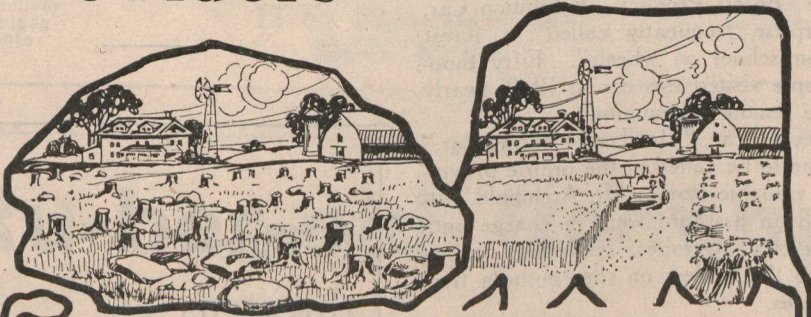
The type of citizen to which the Forestry Association makes its appeal is the type to whom most appeals come, — the fellow who pays his taxes, "and then some," the fellow who goes the second mile and parts with his

cloak also, in short, the citizen who responds to worthy appeals for serving the true and permanent interests of society. It costs \$2.00 for membership, which includes a yearly subscription to the Illustrated Forestry Magazine, worth more than the amount. But hundreds of citizens express their interest and citizenship in the form of \$5.00 annual subscriptions, which help along the educational enterprise.

Eighty per cent. of Canada is destined for the growing of forest crops and is valueless for farming. On two-thirds of this vast area we have sacrificed the forest assets through unrestricted fire. One million square miles of

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timber lands have been destroyed by flame as compared with 100,000 miles cleared (usefully) by the axe of the logger.

### Dividends to Canada

The only interest served by the Canadian Forestry Association is the public interest. For twenty years it has brought dividends to the Canadian people — none to itself. It is not owned or controlled by any government or commercial interest. The Board of 56 directors represents the whole of Canada. Because these and 12,000 other men stayed with the ship through the campaigns of 1920, the association was able to send out seven skilled field workers and four assistants to organize the educational side of forest protection in districts where the fire menace is most severe.

These men held nearly 400 public meetings during the summer season; each meeting complete with educational motion pictures and popular addresses on the method of preserving Canada's great forest heritage.

Then, to hundreds of communities there went the "Forest Products" Exhibition Car, an enterprise frequently called "a forest protection school on wheels". Fifty thousand people visited this car in 1920, nearly all in the remote communities.

The second car, "The Tree Planting Car," as it came to be called in the prairie provinces, did valuable work. Mr. Archibald Mitchell and an assistant were in charge until the middle of October, rendering sterling service to the settlers on the southern treeless prairies.

What we have mentioned were two or three out of a score of educational enterprises for which the association is responsible.

And then the Illustrated Forestry Magazine. It is wholly for service, not for profit. Subscribers say: "The magazine grows better every month." Nothing technical or local in its pages! And plenty of good pictures.

### Why ? and its Answer

Occasionally a member writes in: "Should not your work be performed by governments? Why trespass upon a government function?"

This is the answer: No government is in the unique position of the Canadian Forestry Association for creating a strong foundation of public conviction on forestry and kindred public problems. Our complete in-

dependence of governments and commercial bodies is our supreme asset. It renders our scope universal; it removes us from partisan limitations. It assures popular confidence and favor in all places under all circumstances.

No government now performs, nor desires to perform, the educational service of the Canadian Forestry Association. All governments, however, heartily endorse our aims and methods and several of them grant us financial aid.

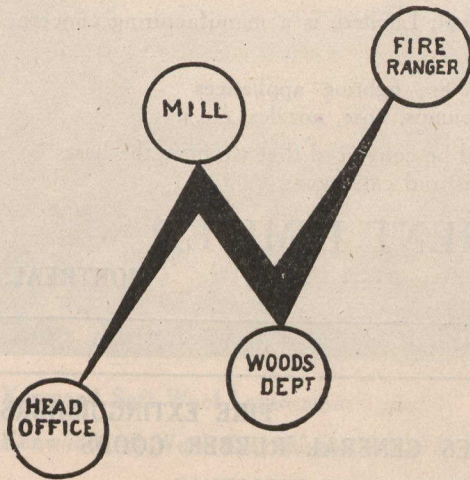
So with the lumber and pulp and paper and other private companies! Upon their annual grants we are able to base an educational programme of mighty benefit to the future of our Dominion.

There is meaning in this: Seventy-five per cent. of the members of the Canadian Forestry Association own not a stick of timber or a share in lumber or paper mill. They insist upon remaining members year after year because — their membership carries out their definition of good citizenship.

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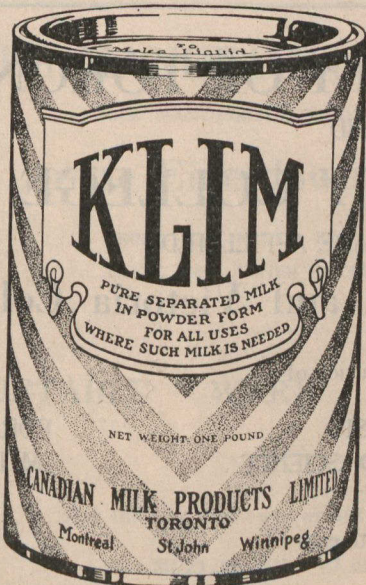
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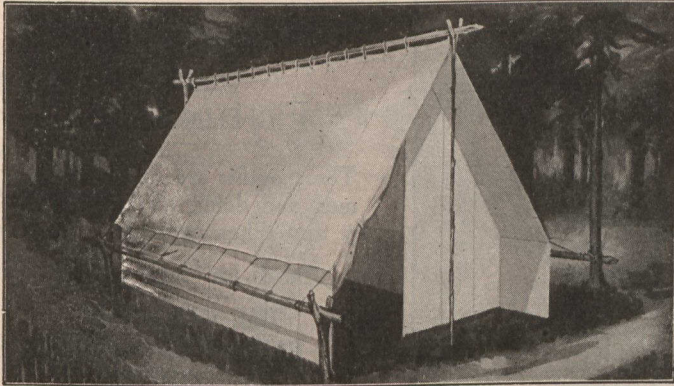
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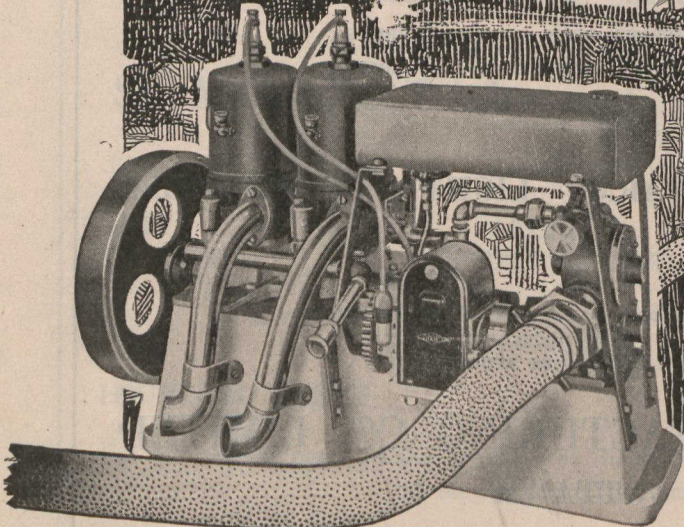
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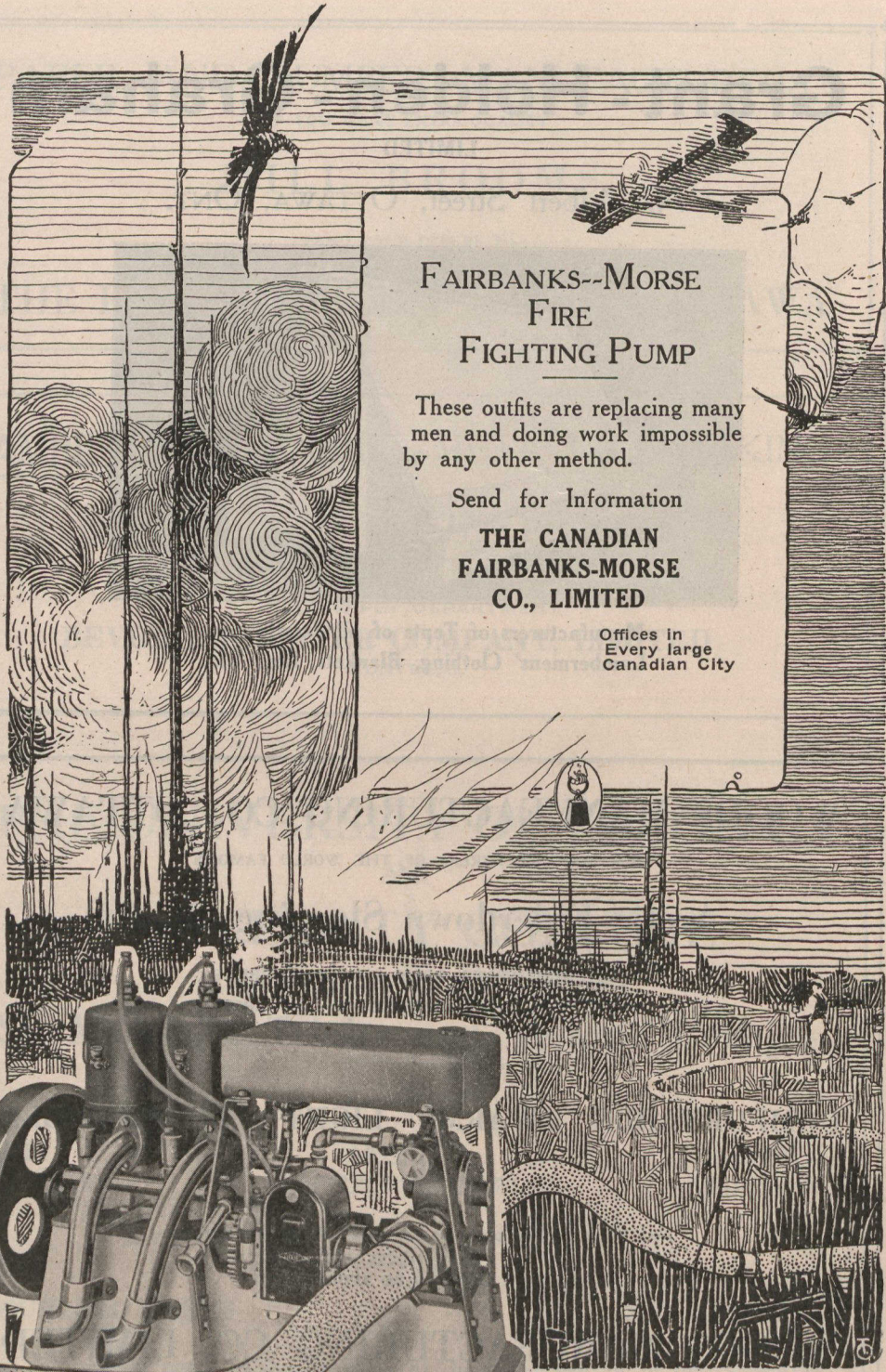
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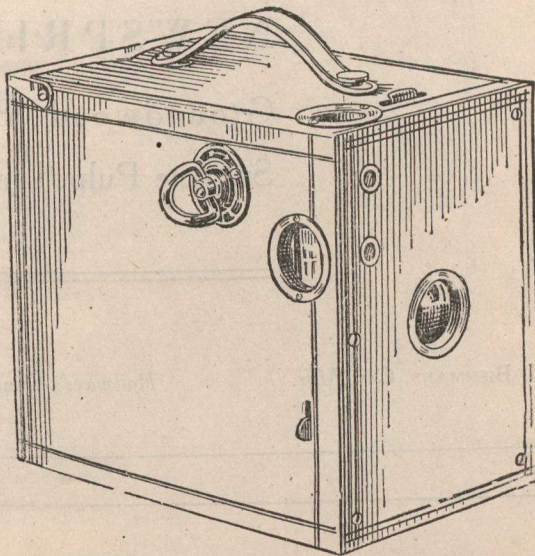


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## Firefighters Carried To Scene of Blaze and Prevent Spread of Flames.

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 fighting in the red track of the flames.

Before a strong wind the conflagration 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 wireless 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 236,000,000 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 development 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. . . . .

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