

ILLUSTRATED

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CANADIAN FORESTRY MAGAZINE

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OTTAWA, CANADA, AUGUST, 1922

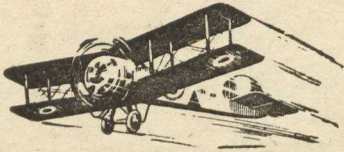
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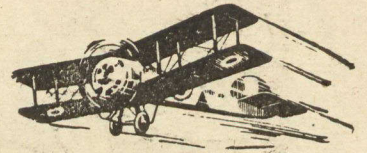
"LAUGHING WATERS"

Photo by James Lewis, Ottawa.

An early morning study of the Pasche River, Quebec Province



DISASTROUS FOREST FIRES



Have demonstrated the necessity of limit-owners and protective associations increasing their available supply of fire-fighting apparatus and introducing more efficient methods of operation.

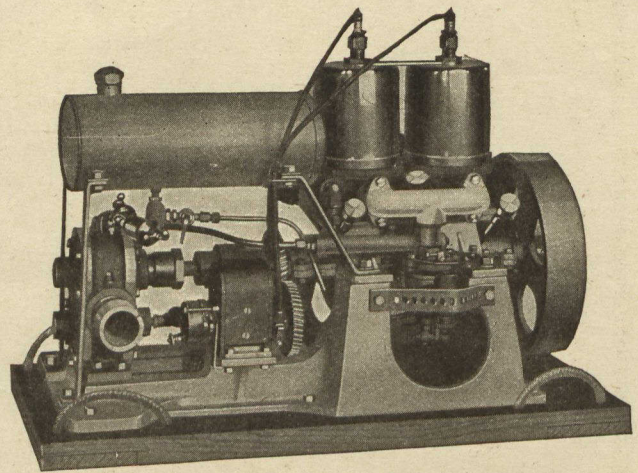
FAIRBANKS-MORSE FOREST FIRE PUMPS

have been used with good results by many Companies and Associations—their extreme portability in Aeroplane, Canoe, Boat, Car, or by two men over a trail, fitting them particularly for this class of work, where rapid movement from place to place is essential.

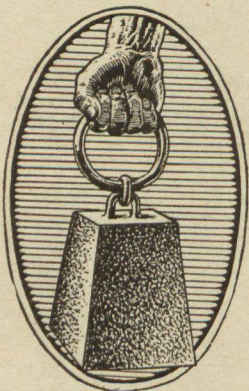
Aeroplanes with any reasonable carrying capacity can transport several FAIRBANKS-MORSE FOREST FIRE PUMPS together with crews to operate them, with the least possible loss of time.

Fore-sighted Forestry Executives are profiting by recent experiences to largely augment their emergency supply of Fire Pumps.

Fairbanks-Morse Forest Fire Pumps are effective anywhere within reach of a lake or stream, and provide a means whereby one or two men can put out the fires when they start.

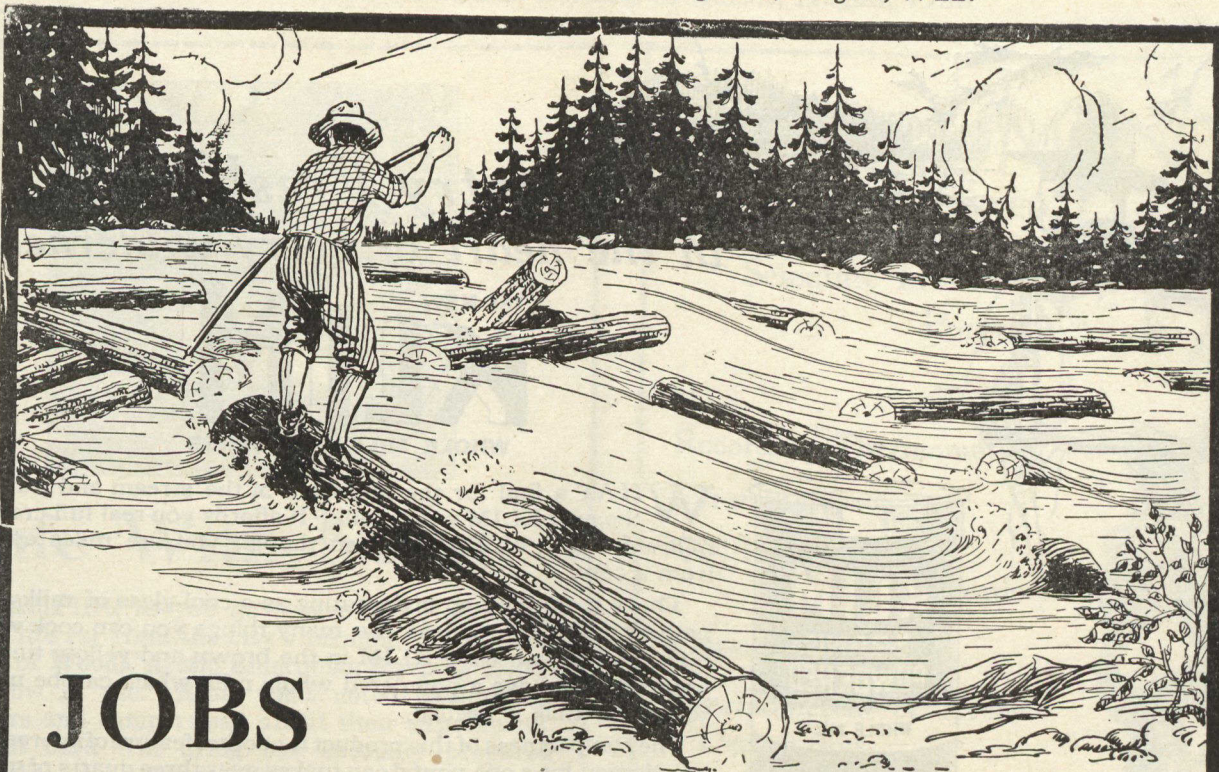


Fairbanks-Morse Forest Fire Pump.
A Rotary Pump with 4-5 H.P. Engine. Total weight 128lbs



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JOBS

Depend on the Safety of the Forests

DON'T

DON'T take any chances with fire in Ontario's forests.

DON'T throw away cigarette or cigar butts, pipe "heels" or burnt matches until you are dead sure they are out.

DON'T neglect to drown out your fire with lots of water.

DON'T build your camp fire against a rotten log or stump; nor on windy points; nor near moss patches; nor at the base of a tree.

Build it in a former fire place, or on a flat rock, or on a spot cleared down to the true soil below, or by the edge of the water.

DON'T forget that the upper layer of ground in the forest consists of partially rotted wood which will burn.

RIVER DRIVERS, shanty men, pulp-loggers, and all men who work in the lumber woods, on the river or at the mill—get this: Your job depends on keeping forest fires from burning up the bush.

Every time you leave a camp fire or a smudge burning you are taking chances on a forest fire that will do you out of a job. Every time you throw away a burning match or a cigarette, or drop the "heel" of your pipe on the ground, you are taking a chance. In summer time, moss, dead wood, dry leaves or the regular wood-fibre soil of the forest are all ready to burn. Millions of feet of timber and pulp are being burnt up that way every year.

Ontario's forests are not growing fast enough to keep up. Forest fires will do you out of a job if they keep on a few years more. Watch yourself.

Save Ontario's Forests They're Yours

Ontario Forestry Branch, Parliament Buildings, Toronto



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THE NEW
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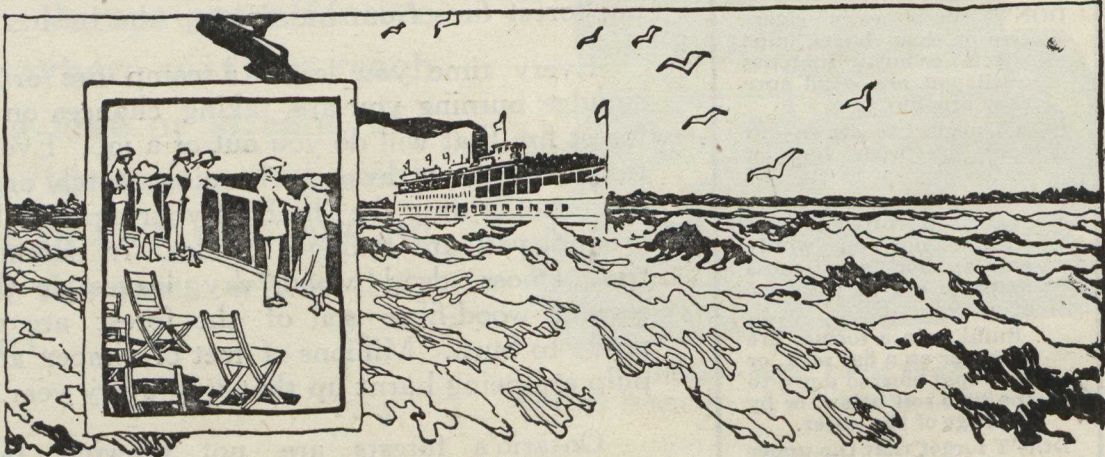
The compactness of this product is another feature of interest to woodsmen, for a one pound can makes over three quarts of milk.

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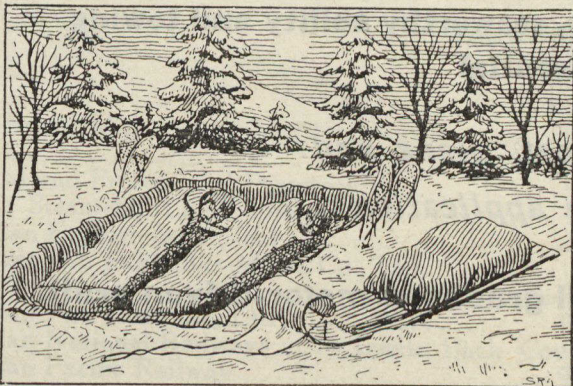
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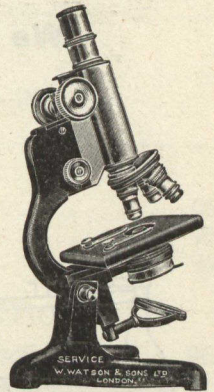
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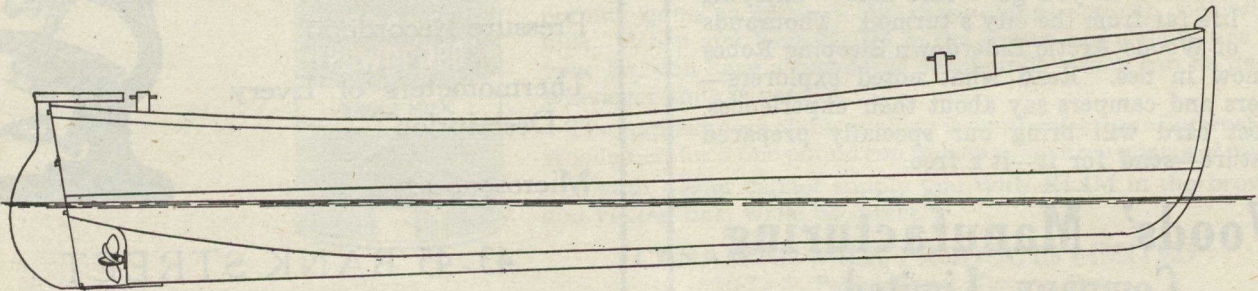
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THE ILLUSTRATED CANADIAN FORESTRY MAGAZINE



A Monthly Publication, National in Scope and Circulation, Devoted to the Conservation and Development of Canada's Forest Resources.

VOL. XVIII

OTTAWA, CANADA, AUGUST, 1922

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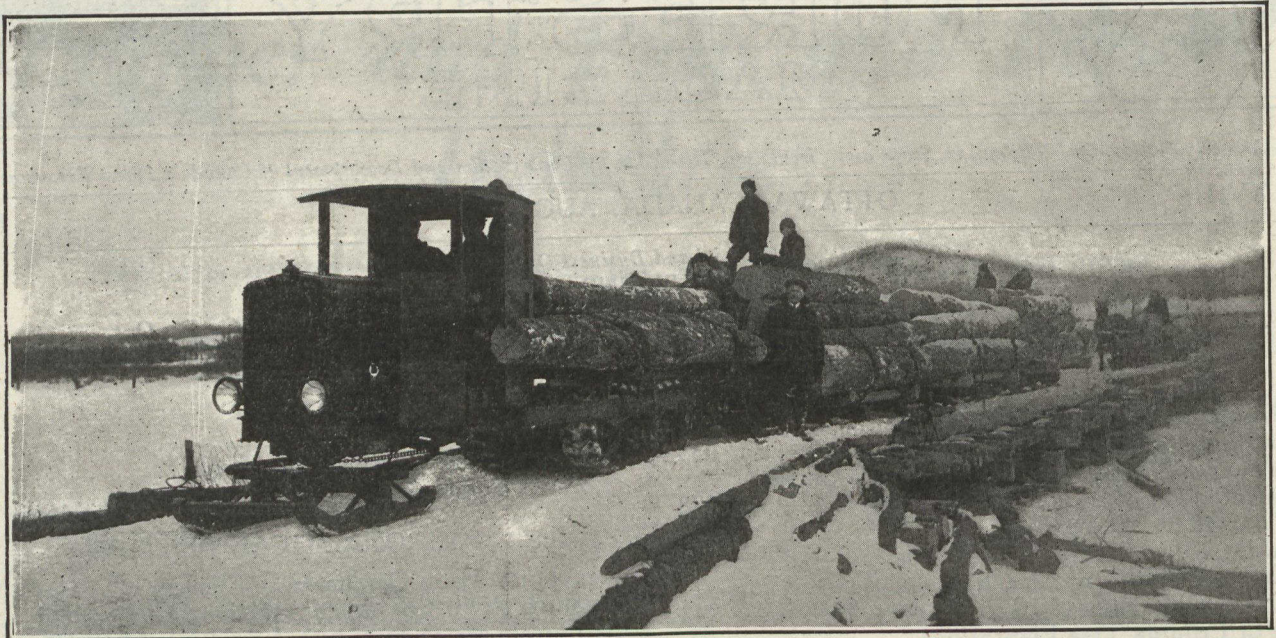
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THE LINN LOGGING TRACTOR



Hauling Approximately 9000 ft. of Hardwood—Doyle's Rule

The best Hardwood is each year becoming further distant from mill or railroad and is consequently greatly increasing in cost. In many cases very valuable wood cannot be touched, because horses cannot haul it the necessary distance.

The Linn Logging Tractor, pictured above, was designed exclusively for Winter Log Hauling in the North Country. It was developed and perfected in actual logging operations in the North Woods.

At best, and under very easy conditions, a good team cannot haul more than 1,000 ft. —and a good team will seldom walk faster than two miles an hour.

The Linn Logging Tractor solves this difficulty

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By its use the operator is enabled to place his logs at the Mill for very low cost.

—Logging Department—

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In a Sanctuary



Speckled Trout for Breakfast.



A Holiday in the wild.

of Wild Life

By FRANK MORRIS

TO HAVE tramped the English Lake District with its bare heaths and hills and open roads is no small pleasure in a man's life, but nothing to the thrill of entering for the first time a region of unbroken forest such as lies north of us in the Province of Ontario; and what if you found the two together, a network of a thousand lakes lying in the heart of the forest? That is Algonquin Park; take flight on the wings of fancy to such a place, and settle on a certain wooded island of one of its lakes; you will be with me in spirit and the better able to share what I wish to communicate, the impression of five or six weeks at a stretch spent under canvas there every summer for nearly a decade.

Almost the first thing we noticed about camping in Algonquin was how quickly our tent and its inmates, catching tone and colour of the woods, seemed to melt into the wild life about them. This is a feeling that can never come to the hotel guest, even in the midst of ideal surroundings.

"To her fair works did Nature link
The human soul that through us ran;"

Wild Creatures Admit Humans

We were a part of all we saw, and it thrilled us with delight, the dawning knowledge that even the wild creatures themselves had admitted us into the goodly fellowship of wood folk.

The loons that had their home on the narrow reach of water beyond our bay would come floating in to feed within a boat's length of the shore; the big mink that lived among the

driftwood took up his daily fishing post on the butt of the floating pine log. Even a pair of beaver, time and again at sundown, swam over from the little cove on the opposite shore to enjoy their evening repast among our lily pads. The very deer resumed their wonted paths, moving right by our tent; often in the night or at dawn we would hear their footfall as they passed down to drink their fill at the bay; occasionally one would snuff uneasily as he caught the tainted air. Even in broad daylight they would come browsing to the edge of the clearing, and once, on emerging from our tent, we saw beyond the moss-grown giant log of pine, two does and a fawn quietly cropping the leaves from a little clump of hazel.

Greeting Old Friends

It was a great delight to stand perfectly still and watch the deer; they would often look full at you in a prolonged stare and then turn to feed again, from time to time raising the head or turning it somewhat sharply to see that you weren't trying to take advantage of them. You might even speak to a companion, and if you used level tones and didn't raise the voice excitedly, they showed no alarm. It would almost seem as if the sense impressions of eye and ear allowed the creatures to think for themselves in independent judgment; but once they scent you, reason goes overboard, and they stamp and blow in blind panic; like Falstaff, they become cowards on instinct. Their sense of smell is an age-long heritage that has both preserved the race and made it what it is; years, even generations, of protection in a forest sanctuary will not appreciably modify this guiding principle of the animal's life.

Our second season revealed a fresh charm; it taught us the delight of greeting old friends, in flower and insect, bird and beast, about the camp, the island, and the lake. Paddle with what speed we might to open camp, our eager spirits would be round the corner ahead of us; and, once on the island, we could hardly wait to stretch the canvas and unpack, before making some favorite round, perhaps of ferns and flowers, perhaps down the western bay to watch the waxwings hawk after insects, or up the Madawaska to hear the Olive-sided Flycatchers and see the deer come down at dusk from the woods.

We were soon so used to sleeping under canvas that instead of sitting up tensely listening to every little rustling sound, we lay secure; it became even a luxury at the night to keep awake for the call of the owls under the August moon; sometimes the sonorous note of the Horned Owl; oftener, the twice repeated four-fold cry of the Barred Owl. Hardly ever did it fail of an answering call from afar; gradually the birds would draw closer together; when, as often, they met in the forest canopy over our heads, it was wonderful to hear the deep gurgling tones of soft endearment, like the cooing of doves or brooding rooks, but fuller, more guttural and far more melodious.

Mink vs. Muskrat

In our second season we built a cedar float for a wharf. This raft-like object in the little bay somewhat alarmed our guests the beaver—but not for long, and it was accepted by the bolder spirits the very day after its completion. I happened to be out

trolling for bass soon after daylight that morning, and presently saw a muskrat reconnoitring about the float. In a little while it dived, and uprooting some aquatic herbage, proceeded to drag a load of it under the wharf, having evidently decided to begin building on this highly desirable site.

It worked away vigorously for nearly a quarter of an hour, when it was spied by the big mink at the pine log. Your rodent is no match for a weasel, and it was soon forced to beat a retreat, while the mink returned to his log cabin. In about ten minutes, the muskrat swam cautiously back, found the coast apparently clear, and at once resumed operations. Again the mink returned to the charge, and this time dived under the float and fairly routed the intruder out from its position among the cedar stringers. He then mounted the float, and, standing erect, watched the rat round the bend to see that it really did double the point instead of trying to sneak back under water.

The Cautious Muskrat

It was delightful indeed to note this fearlessness among the wild animals. Jerry Muskrat was obviously far more afraid of Billy Mink than he was of me. This was mainly the golden harvest of sanctuary, for in settled parts the muskrat is cautious, if not timid. Last August as we paddled down through the rapids below White's Lake, in a very narrow reach of the Madawaska, we almost ran into a muskrat. At first we thought it had been taken by surprise and was trying to escape us by diving; but we soon found it was feeding quite unconcernedly. We stopped paddling to watch the little creature foraging right beside our canoe; the water was so shallow that when the rat reached its favorite patch of cauliflower, the little leaf-rosettes of pipewort growing in the bed of the stream, its tail was still

"wiggling" above the surface with all the animation of an undocked terrier pup's, and so close to us that once in a while it would flip against the side of our canoe. Presently under stress of breeze or current we drifted over it just as it rose to the surface; it dived this time and took shelter under a log, one of the strangest of sights! to watch an air-breathing animal submerge and glide, smooth as a fish, into its aquatic lair. Again it came to the surface, just below us, in deeper water where the channel widened out; and this time when we paddled up, it showed us a clear pair of heels and disappeared with a farewell smack of its tail.

The Bad, Bold Mink

The mink, of course, is proverbially bold. One day as we were paddling back to camp with our mail, we noticed a mink standing on a little rock, marooned (as it were) in mid-channel behind our island. Taking a quiet stroke in its direction, we allowed the canoe to drift up to the rock, expecting the mink to beat a hasty retreat and escape by diving. To our surprise, even consternation, the mink deliberately rose up, sniffed the breeze with enquiring nostril, and then, crawling down the stone, plunged into the water and swam straight for us; on reaching the canoe, it actually tried to clamber up the smooth side and get over the gunwale. This didn't seem to us to be playing the game according to Hoyle, and it was some time before the true solution occurred to me. I had been fishing the day before, and the smell of bass was evidently still perceptible to this sharp-nosed fisherman of our native waters.

In fact, though it serves a different end in the two creatures, the sense of smell is no less imperious in the mink than in the deer, and leads to just as unreasonable action. Not long ago, a camper on a tiny island was clean-

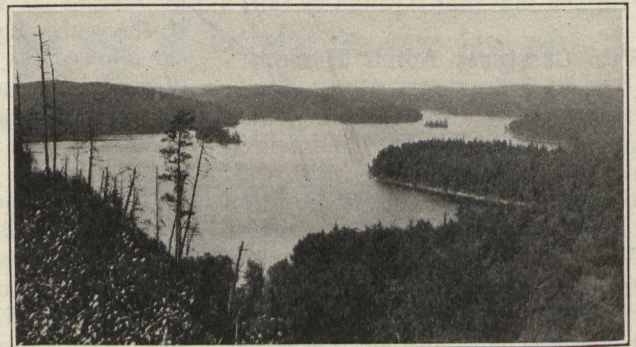
ing fish with a jack knife, when up popped a mink at his elbow; he threw it a grey trout's head, and it made off with its booty; in a few minutes, like *Oliver Twist*, it was back for more; and when he quite properly refused to pander to the glutton, it actually caught hold of the fish he had in his hand, and he was forced to tap this slim gentleman of the road two or three times quite smartly over the nose with the flat of the knife blade before he could persuade it to leave go.

Some Notable Visitors

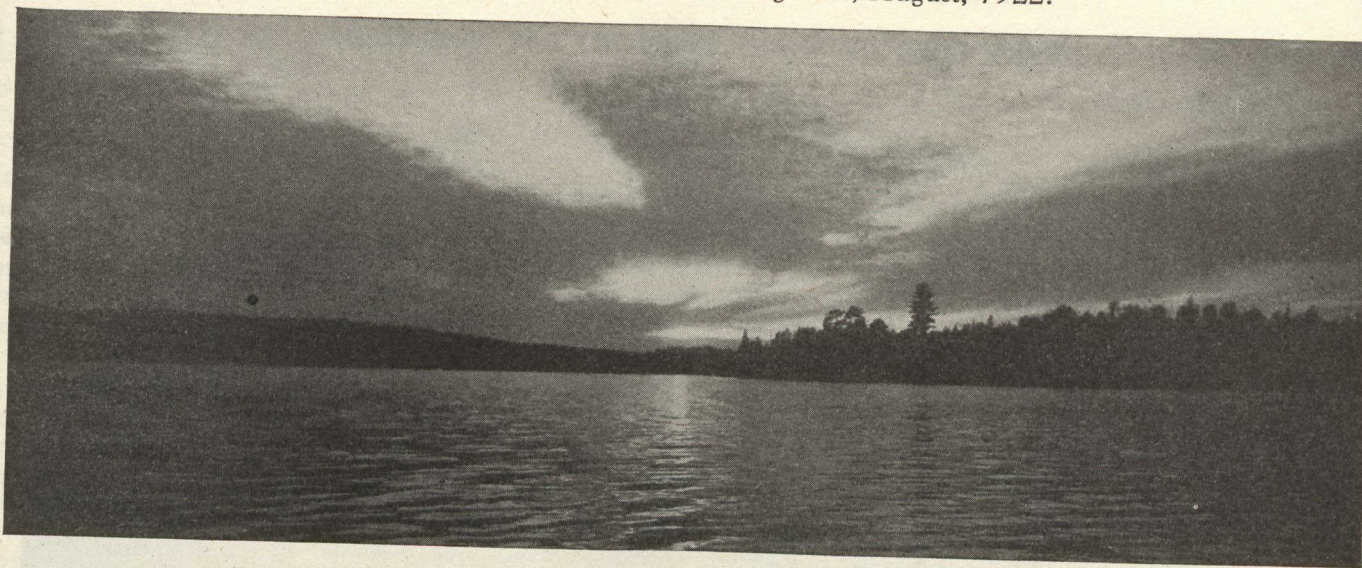
In our third season of camping we began to keep a sort of Visitors' Book of the most striking personages that entered our camp. Almost the first were a flock of American Mergauzers; these birds are often to be seen about Cache Lake, usually hugging the shore and coasting along by point and bay; they seldom take to the wing, but escape by a sort of "scuttering" flight along the surface, wings and feet in full play like the hoppers of a water wheel. They often band together, 2 or 3 broods of them, into a flock of 30 or 40. One day as we were sitting at our camp table, a few yards in from shore and partly screened by a fringe of balsams a regular "raft" of over 30 of these birds, frightened by a passing canoe, came splashing across our bay and settled down behind the big floating log. Back of this barrier they formed into a long line of clucking protest. When the coast was clear, they clambered (still in line) up on the log, heads all turned outwards in the direction of the moving canoe; they looked for all the world like an awkward squad of raw recruits dressing by the left; the log was partly under water and very slippery, so that every now and then, one would fall backwards out of line to flounder in the water. Evidently there was no danger from the landward quarter; they never so much as glanced in our direction.



Luncheon on the Portage.



Beautiful Cache Lake.



The Tree Fringed Lakes of Algonquin Park.

Tamed Baby Beaver

Three seasons ago a baby beaver, apparently deserted, was brought into our camp, and for a fortnight we tried to rear it. It had obviously never been weaned, and several days went by before we could get it to eat at all. Unfortunately it had been badly injured and did not long survive. But it was an affectionate pet with quaint little ways of its own, and the daintiest slip of a paddle tail that it trailed along behind it. It was scrupulously clean and after dining would always wash its face and smooth its fur with tongue and paws. It was curious to see the beaver traits coming out in it; it would crawl about the floor of the boathouse and when it came to anything resembling a stump (my foot, for instance) it would raise itself up on its hind legs and balancing with paddle tail below and forepaws above, stand there resting like a pigmy kangaroo.

Last season we had almost daily visits from a hen partridge and four of her chicks. We first heard these visitors soon after dawn, when our newly awakened senses became aware of a gentle clucking outside the tent. They usually paid a morning visit, occasionally early afternoon, wandering slowly across our lot, foraging among the brackens and brush; the mother would always mount on a perch—a stump or a log—and begin clucking softly, a kind of crooning lullaby of “all’s well” to her chicks; keeping within hail of this call from the outlook in the crow’s nest, the chicks would feed about at the boathouse steps or under the dining table with all the assurance of barnyard fowl; once as I was shaving at my

boudoir stand of a clump of birch, the mother mounted a log just behind me and purred away in so soft and soothing a key that sometimes, like Homer, she nodded drowsily in her song and almost fell from the perch, while her chicks fed in and out between my feet.

Cocks o’ the Woods

Twice in the middle of last August we had a visit from a pair of Pileated Woodpeckers (the black Cock o’ the woods). On their second visit the birds discovered an old pine stump just west of our clearing and spent the better part of an hour digging into the heart of it. They allowed one of us — camouflaged in khaki — to get within a few feet of them and sit on a log watching their operations. They uttered cries like those of a Flicker, and it was worth a great deal to watch them at work. The smaller of the two birds seemed the more aggressive and drove the other away from its special preserves in the punky heart of the stump.

A Fearless Fawn

On another occasion, while stepping along a little deer trail, I raised my eyes toward a barrier of fallen trees, and there at the foot of a tiny balsam, partly screened by the leafy branch of a honey suckle, lay a little fawn, fast asleep in a bed of leaves. For some moments I stood frozen, a few paces off, and watched it; presently its eyes opened and it looked straight at me in a calm and steady stare, no trace of either fear or surprise; then it lowered its head, closed its eyes, and snuggled down to sleep again.

Backing cautiously away, I stepped out of the charmed circle, and after

a single glance back at the miracle within the magic ring, hurried down to the tent and brought my wife to share the vision. At first so well screened and inconspicuous lay the fawn that I thought it had gone, but presently the dappled back and side revealed themselves among the leaves. We both watched it for some minutes, and twice it opened its eyes drowsily and looked at us, but evidently convinced we had called it too soon, it returned to the Land of Nod.

Half an hour later, I was at Headquarters telling Mr. Bartlett of our latest adventure. Hearing we had left the creature undisturbed, the superintendent caught up his camera, and we paddled full speed to the foot of a steep cliff not far from the sleeping fawn. There it was, just as we had left it. Mr. Bartlett took several snaps of it, and finally, at his suggestion, I stepped round to the back of the fallen tree under which the fawn lay, and thrusting my arm cautiously through the brushwood lowered it till I could touch the creature with outstretched hand. I stroked it, twice, very gently, with the tips of my fingers; but this was too much for even cervine endurance; it twitched its skin violently, as a calf might to dislodge a fly, and then starting up, bounded off a few paces on its long legs. Even then, reluctant (as it were) to go, it faced about for a last look at us before passing leisurely out of sight through the woods.

It never returned to this lair, but chose a new one; and a week later, when I nearly stepped on it lying beneath the broken end of a dead birch in the heart of the woods, it had already learned its first lesson of fear.

EVERY USER OF WOOD HELPS TO PAY FOR THIS!

Forest fires must be paid for. Let no one assume that they are charged up to "unscratched resources," for there can be no such thing as cheaper lumber or cheaper pulp while forest fires rob Canada ten times as fast as the axe.

Picture the above scene magnified 600,000 times in area and you have a fair conception of what human-set forest fires did in Quebec Province between April 1st and July 1st this year.

The Forests of Canada are being destroyed by those persons who need them most — the camper, the fisherman, the trapper and forest workmen.

Timber Riches or Idle Wastes?--Canada's Choice

Dominion's great forests being rapidly degenerated into croplless deserts—Deadly effect on Canadian business

By Dr. C. D. Howe,

Dean of the Faculty of Forestry, University of Toronto

MY study window overlooks, besides my own, the vegetable gardens of three neighbors, then a long meadow interval with the prospect broken by graceful elm trees and finally a range of low hills once covered with a luxuriant pine forest. The wealth producing pine forest, however, has been supplanted

by a scrubby growth of white birch, poplar and soft maple, the result of repeated burning after the logging operations. Two of my neighbors are working in their gardens and they are both engaged in brushing peas, using long birch shoots from the adjacent hills. The brush is stuck into the ground beside the rows close

enough so that the branches of the shoots interlace. These interlacing branches form a trellis for the pea vines to grow upon. Although we vote liberal, we are conservative in our point of view and in our methods down east. This may not be as strange as it sounds, for, judging from recent newspaper reports, to be liberal even

in politics doesn't mean the same thing in all parts of the country. New fangled methods do not attract us. We don't even grow the dwarf variety of garden peas that requires no support. We still prefer the old-fashioned tall climber, and we don't use chicken wire or twine to support the vines. We still use birch brush as our fathers and grandfathers did before us.

The very fact that in our vicinity we have thousands of acres of pea-brush where once was pine forest is the result of our inability to change our ideas to conform to changed economic conditions. We have known for thirty years or more, that the supply of pine in the province was decreasing too rapidly for safety, owing to the enormous destruction by forest fires. We have known for about the same length of time that a white pine forest could not re-establish itself if the land was burned over periodically, because each fire kills the old seed-trees, the seedlings and other young trees already started, until finally none is left. We have known these things for a generation, yet we have been too conservative to apply our knowledge. This is quite apparent from the fact that the greater portion of the forest land in our valley has been burned three times in the past thirty years.

Pine Trees vs. Pea Brush

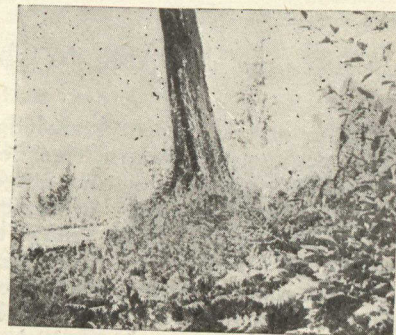
As in some other cases that might be mentioned, our conservatism is unprofitable in the long run. How much better off we would be if our hillsides were clad with pine trees instead of pea-brush. Then we would not have had so many abandoned sawmills, of which a dozen could be enumerated in our little valley. If these sawmills could have stayed with us, each with its little community of working people, the farmers would have had a local market for their produce. Then we might not have had so many abandoned and semi-abandoned farms, of which one can count a score in a day's walk in almost any township in our valley. Just now there is one bright spot in their extreme desolation — the briar roses in bloom around the crumbling foundations of the houses. They were placed there by the tired hands of over-worked farm women and it may be they have persisted all these years in the hope that the households would be re-established; perhaps, as an expression of faith in the coming of a

A Fallen Tree That Rose Again

IT IS SELDOM that the editor of the "*Forestry Magazine*" comes across such an odd circumstance as surrounds the tree shown in the above snapshot. Mr. Frederick W. Godsall, of Victoria, B.C., who kindly sent the picture, gives the following details:

"You have requested photos of trees with some 'unique feature'. I think the one I send you 'takes the cake'. If you came along one day and saw an old tree trunk that you had seen lying in the forest for many years (and had probably been lying there before you were born), standing straight up again, you would rub your eyes. In fact the occurrence runs contrary altogether to the bible saying in Ecclesiasties. "In the place where the tree falleth there it shall lie."

"My brother often passed this tree near Bellingham, Washington, and I saw it once, lying on the ground. Coming by one day he saw it erect as in the photo. In fact it had slightly passed the per-



pendicular and was leaning in the opposite direction.

"What had happened?"

"A big tree had grown out of the root. One day it was blown down in a gale and, in falling, it raised the old dead log and held it there. Thus do impossible things happen."

The Canadian Forestry Magazine heartily invites its readers to send in pictures of odd natural occurrences associated with tree life.

day when farm, forest and freight rates shall be managed on the basis of the permanent upbuilding of the community.

If our sawmills and our farms could have stayed with us, our young men would have found profitable employment at home. Then, doubtless, so many of them would not have flocked to the cities or emigrated to the States. When pine forests are converted into brush lands by repeated forest fires a long series of economic events is initiated and most of them eventually work out disastrously to the community.

Millions of Acres Laid Bare

My little valley is not peculiar or exceptional in its policy of exchanging pine trees for pea-brush. There are close to a million acres in the Maritime Provinces on which the possibility of natural regeneration of the original pine forests has been destroyed by repeated burning. The areas are now covered with an inferior growth of birch, poplar and soft maple. Quebec is reported to have about two-thirds million acres

of brush lands, where once pine and other valuable trees grew. Ontario has a million acres or more of brush land once covered with luxuriant pine forest; once yielding many billion feet of pine lumber of superior quality; once supporting many thriving communities now completely deserted or merely existing in that state of industrial stagnation popularly designated as "dead" because successive fires have destroyed both the merchantable timber and the young growing stock on which future supplies depend.

Through repeated burnings the conversion of wealth-producing forest into worthless brushland goes on every summer at a rate we simply cannot endure if we would maintain our sawmills and our pulp and paper mills and the prosperous communities which they create. The great majority of forest fires result from human carelessness and are therefore preventable. It is the duty of every citizen, whether he goes into the forest or not, to aid in the work of prevention in order to stop the vicious exchange of money, earning forest for idle brushland.

Tree-Planting on the Prairies

Some Results of Observations as to the Permanency of Shelter Belts in the West.

By CHARLES A. EDWARDS

Asst. to Chief of Tree-Planting Division, Indian Head, Sask.

AS far as our present knowledge is concerned a prairie tree belt has at least three distinct stages in development toward usefulness and permanency. These may be classified in periods of five, ten, fifteen or more years. Data now available is limited to between the fifteen twenty year period, which is probably the present age of hardy trees planted in shelter belt form to any great extent throughout the prairie provinces. Beyond this, we can only surmise what the future results will be and continue to carefully record the progress of many experimental belts of all varieties which have thus far supplied definite data in the primary stages of shelter belt development.

Many Difficulties

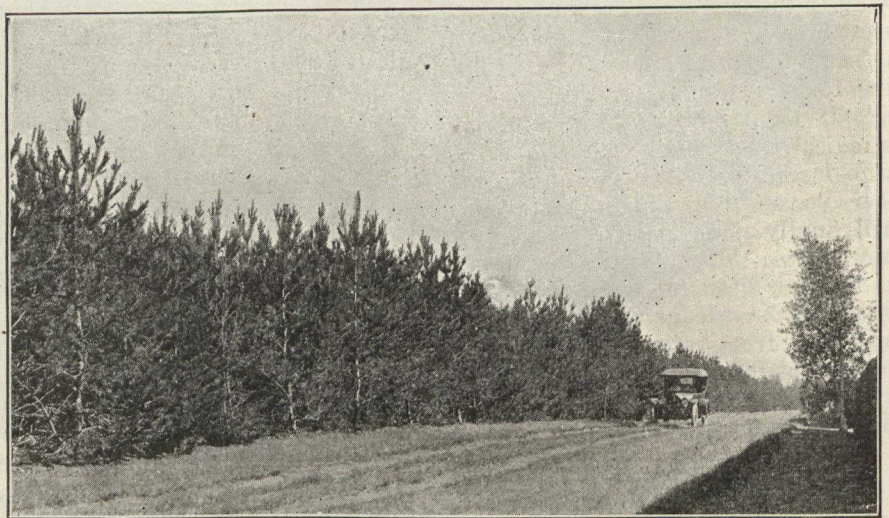
In the very varying conditions of soil, precipitation and altitude throughout the West, the problems of establishing permanent belts of trees present many difficulties, but in the general progress of the work we can hope in the near future to have data which will help in the classification of districts and the principles to be followed to ensure the best results.

The general characteristics and growth of various species in pure stand and mixture under average prairie conditions are known up to the fifteen twenty year period. It is obvious that certain rapid growing varieties planted pure become in a few years ineffective as a shelter belt. This is particularly the case with varieties developing an open crown. The protective influence of such belts is reduced to a minimum and usually the ground cover reverts back to sod conditions. Insects and fungus disease also make it unsafe to plant varieties of broad leaved trees alone if an effective and permanent tree belt is desired. Birch and Tamarack have done well in pure stand but even these belts would benefit by an understory for ground cover and the re-enforcement of the belt against wind and storm. Present knowledge favors a mixed stand combining the faster and slower growing varieties developed under a proper method of treatment to give the best results in the long run.

First Period Important

The first or five year period in the life of a prairie tree belt may be said to be the most important, and care in cultivation practised at this stage will decide in no small degree the future of the trees. Early growth is usually very rapid and the aim must be to develop well rooted, sturdy trees capable of resisting the ever

merits of each are not apparent. The most desirable width of a prairie belt is yet open to question, but to a great extent the width depends upon the purpose to be served and the amount of time and labor available for effective maintenance. Known results are in favor of a medium width for windbreak protection of not more than ten rows and of any length. A will be infinitely more valuable in the



Belt of Scotch Pine transplants set out in 1906. Photo in 1920. Average height over 19 feet.

present menaces of grass, insects, hail and drought, with which the belt will have to combat in its general progress toward permanency. Trees will respond or fail in proportion to the amount of time and labor devoted to their care. Varying types of soil, the amount of precipitation and differences in altitude are not conducive to the unassisted development of trees on the prairie. Constant cultivation during the first five years following planting is absolutely essential for the future welfare of the belt. In districts where the precipitation is light, mulching with straw to prevent evaporation has been found beneficial. There is not however, at present, sufficient experimental evidence to justify the practice of mulching under average conditions. The size of the plantation, spacing between the rows of trees, and the composition of the belt, whether in pure stand or mixture, are important factors to be observed, although at this stage the respective

belt of this proportion well cared for future than a much wider tree area neglected for the want of time and labor cost. Smaller fields properly worked mean a greater yield and the same applies to the prairie tree belt. Up to five years of age then, the chief concern is the encouragement of a strong healthy growth, provide a quick ground cover for the exclusion of grass and weed growth and to conserve all the moisture possible. Then we will have created a living shelter for protection against the elements of wind and storm and added a little more comfort to the prairie home surroundings. Failures will naturally occur amongst the trees first planted, the fittest will survive, and efforts must be made immediately to replace dead trees as they occur to keep the belt compact and prevent open spaces here and there which would quickly open the way for patches of grass, the worst enemy with which trees on the prairie have to contend. On dry situations particularly,

if the first planting leaves blank spaces, the replacements must be made during the first two and not later than the third year. If this is not attended to, the now well developed roots and branching stems of the living trees will make the operation a waste of time and money.

Some Important Principles

The foundation of the future wood-

gives way to the problem of management, and strict caution must be observed in handling the structure. Much of the foundation work can be destroyed in short time through operations hastily performed without a knowledge of the effects on the future of the belt. Nature will not be hurried and in her own way will direct the operations in due seasons. One of the greatest temptations at

probably be opened and the belt gradually become infested with grass. A stem canker characteristic more particularly with Poplar and Cottonwood will show signs of development depending upon the character of the soil and the amount of moisture content. Experiments are being conducted at the present time in the matter of handling such belts so that a growth of suitable varieties can be encouraged beneath belts of this nature to eventually take the place of the original belt, now ineffective from a shelter standpoint. Reproduction immediately under older trees under prairie conditions of soil and moisture as a rule develops poorly unless the ground space is sufficient and the stand of older trees open enough for the young underplanting to get sustenance. Under our conditions the competition of the roots of the older trees dries out the soil to such an extent that the young under planting cannot develop satisfactorily on account of deficient moisture.

To Assure Permanency

It would appear to be more practicable in the long run to plant mixed varieties of broad leaf trees, discourage the planting of fast growing varieties in pure stand, and set out supplementary breaks of the more permanent and effective evergreen spruce and pine adjacent to them. In this way the future permanency of the prairie tree belt is assured and the ultimate results will be in proportion to the amount of individual effort devoted to the work.

The fifteen twenty year period will reward the planter with a real young woodlot. The lower branches of the trees will either be dead entirely or in the last stage. The ground cover has gradually opened to the light as the trees have attained height growth and tree form. The falling leaves of passing years have formed a wholly or semi-decayed blanket, covering the soil, under which ample moisture is retained. Grass and weed seeds cannot readily penetrate to the soil beneath and as a consequence are no longer a menace. We have a healthy stand of trees, putting on a steady annual height and diameter growth. Even at twenty years under this system of management, records prove conclusively that 4-feet x 4-feet spacing is not in the least too close and there is yet no necessity for thinning the belt.

It is safe to predict that the first fifteen to twenty years is the hardest period in establishing a tree belt. If by careful management we can encourage the trees in a strong healthy growth to this stage then their future success and usefulness is assured.



Belt of Tamarack, Scotch Pine and White Spruce set out in 1905, photographed in Fall of 1920. Average height 19 feet 9 inches, average diameter, 3 inches.

lot is thus established by a few important principles:—

A thorough preparation of the ground before planting;

Careful selection of the varieties in mixture;

Careful planting with proper and timely cultivation at intervals during the growing season;

And last, but not the least, the replacement of dead trees not any later than the third season.

Strict observance of these points under average conditions cannot fail to reward the planter with a strong, healthy plantation fitted to enter the second stage of development with excellent chances of success in its favor.

The second or the five to ten year period will offer many temptations to the enthusiastic planter. The initial work of preparation, cultivation and so on will not demand further effort to any great extent. The belt has been started right and the future looks promising. It is advisable for all time to maintain in permanent cultivation a strip of ground from ten to fifteen feet wide all round the outside edge of the trees in order to isolate the belt from grass encroachment.

The Problem of Management

The hard work of maintenance now

this stage is the desire to prune the trees to a single stem. Much permanent damage will result from injurious and injudicious pruning and no other operation will more quickly destroy the effectiveness and permanency of a prairie belt than this practice. Known results at this stage strongly advise to leave well alone. In shelter belt form, as the trees get older, the lower branches will die off naturally and can be cleared away later on, without injury to the trees, leaving a good, clean stem developing in diameter. Think of the belt now as a valuable asset to the farm, capable of yielding good interest on the time and money invested, if handled intelligently. The merits of width, spacing and mixture will begin to show up from now on and present knowledge applied in a practical way to the farm tree belt tends toward medium belts of not more than ten rows wide, a spacing of four feet between the trees and rows and a combination of varieties. At the end of the ten year period a mixed stand can be still left to its own development with careful watching for the control of grass and insect menace. The pure stand of fast growing, open crown varieties may begin to show disadvantages. Ground cover will

Combatting Budworm Attack

Question of Vital Importance to Governments and Individuals Requires Prompt Action

By DR. F. C. CRAIGHEAD, Entomologist, Dominion Department of Agriculture

CONTROL operations against bark-beetles have been successfully conducted in the United States for many years and more recently in Western Canada. This is the first control operation that has ever been attempted against balsam bark-beetles. Due to the three insects involved, the balsam root rot, the effects of the recent budworm outbreak, and the effects of logging operations, it presents a complicated situation. The results will be of great interest and value in formulating future methods of forest protection in Eastern Canada. There is every reason to believe the results will be satisfactory and justify the expense.

The actual result of this work cannot be definitely ascertained until next Summer. A cruise will then be made and the number of new beetle-killed trees counted. One of the three beetles killing the trees—the balsam weevil—requires two years to complete its development and during the second Winter it hibernates in the soil. Consequently cutting these trees will not kill the entire brood of this insect and some additional attack must be expected during the coming Summer. Whether this will be sufficient to justify further control work next Fall will be determined later.

If successful in checking further dying of these trees it will give us a practical method of combatting the after effects of the budworm in many localities. It is, of course, obviously impossible to carry out such procedure on areas where a large percentage of the timber has been killed. On such areas the procedure is restricted to that of salvaging as rapidly as possible. While logging in areas of greatest damage beetle control operations should be conducted in those regions where conditions are better. If this is not done continued deadenings from beetle attack will accumulate so that when the time comes to log in these areas they may be in a condition similar to those just salvaged.

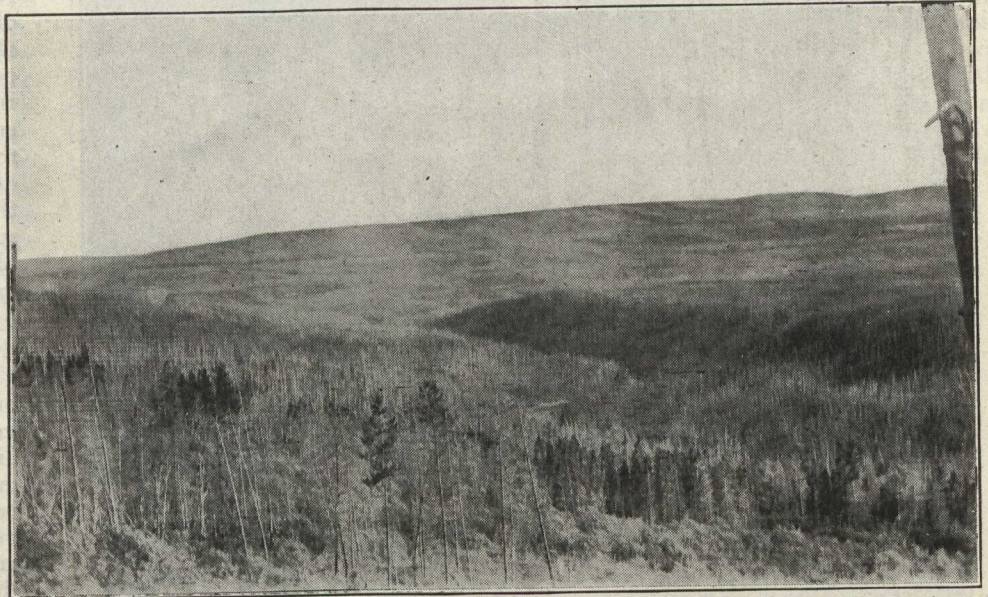
A Vital Question

This question of fighting these beetles is just as vital to the Governments as the lessees of the lands.

It is obvious that if a company stops the dying of these trees the governments will benefit in stumpage returns later. Therefore some method of sharing costs of operations should

topped trees are in evidence. A report on conditions a year or two after the budworm passed means nothing at present.

In greener areas, especially if not



A recent burn on Porcupine River, Alberta.

be devised. Unless some such adjustment is made it is not probable that many companies will undertake such work. In the past two years the Province of British Columbia and the Dominion Forestry Branch have spent over \$25,000 in fighting bark-beetles in western yellow pine. The United States Congress has recently voted \$150,000 for this same purpose in California and Oregon during the coming year. Private operators have agreed to spend similar amounts.

General Recommendations

In conclusion these general recommendations are suggested for bettering conditions in the budworm invaded territory.

All limits should be explored and logging operation concentrated on these areas where the greatest amount of dead timber or red-foilage trees are found. (Provided conditions are not already past the salvage stage.) The percentage of red-topped trees indicates the rate of dying.

Yearly examinations should be made through limits as long as red-

virgin forest, beetle control operations should be conducted to remove and place in the water, or utilize before Spring all red foliage trees, so that the stands can be held for future supplies.

In conducting logging operation in budworm injured areas the cutting should be clean, i. e., it is not sufficient to cut only the trees that give most economical returns, but it is essential to remove the inferior trees that will later die, both large defective and smaller suppressed trees.

The tops should be utilized to as small a diameter as possible.

The operations should be continuous from year to year into the adjacent green timber.

The Division of Forest Insects of the Dominion Entomological Branch is greatly interested in doing all within its power to help better the present situation and will gladly extend any assistance possible in looking over infested regions suggesting recommendations.

Beware of Pruning Tree Plantations

Nature will do the pruning most wisely—Dense shade retains moisture and kills the grass

By ARCHIBALD MITCHELL,

Western Lecturer of the Canadian Forestry Association

PRUNING in a prairie tree plantation is a matter on which information is always sought.

"The trees are too close." "There are too many branches on them." "I want to be able to walk under my trees." "I can't get in among them to cultivate."

These are the remarks that usually accompany the question "When is the best time to prune my plantation?"

The usual answer is "Don't prune the plantation at all"; although it can be modified sometimes.

It all depends upon our conception of what a plantation is for. If it is only intended as a narrow belt of three or four rows of trees with its

at least is not fulfilling its proper function as a shelter. The wind passes through quite freely and as far as that part is concerned, it is no longer a shelter.

Thick Shelters Mean Moisture

Then there is another aspect of the case. Growth on the prairie is mostly a matter of rainfall, and as the sun and the wind are our great moisture robbers, the trees are planted close together to keep them out and so sufficient moisture is preserved for use of the plantation.

This is a principle well known in all forest operations and one of the first anxieties of the Forester all over

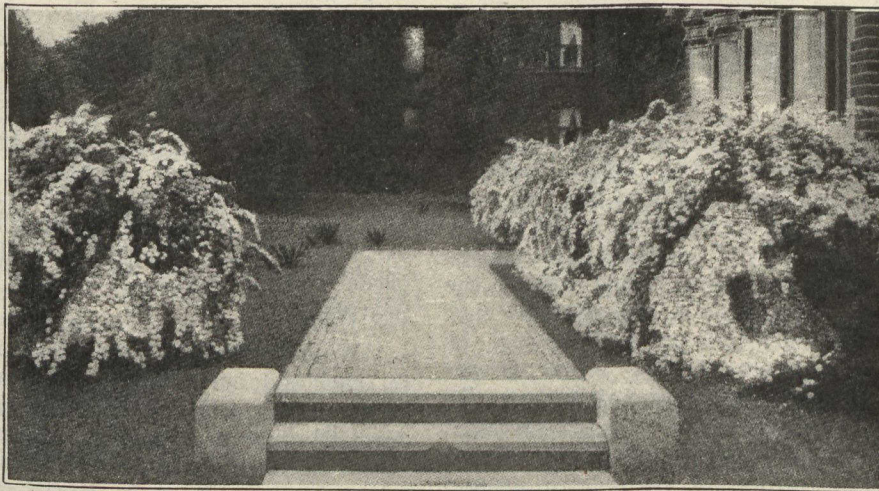
the world is to get the ground shaded and sheltered as quickly as possible by the leaves and branches of the trees. When this is understood and a little attention paid to the relative rainfalls of most countries as compared with Saskatchewan or Alberta, it will be seen how important the business of our Prairie plantations is in growing our shelter belts. If it is necessary in countries where the rainfall is from 30 to 100 inches, how much more is it necessary here where we are lucky if we get 13 to 20, and in a country, too, where bright sunshine and high winds are among the outstanding features of the climate.

The branches are necessary to keep the plantation healthy and should not be pruned. Any pruning necessary will be done by Nature herself as time goes on. The canopy of foliage shuts out the light and as this process continues the lower branches die and drop off. Better leave the plantation pruning to Nature. She never makes mistakes.

Modifications of this principle may sometimes be made where some of the trees, for one reason or another, develop three or four stems. Here the extra stems should not be cut off except two or three feet at the top of all of them but the best one may be removed. This gives the leader a chance to get ahead and become the tree proper.

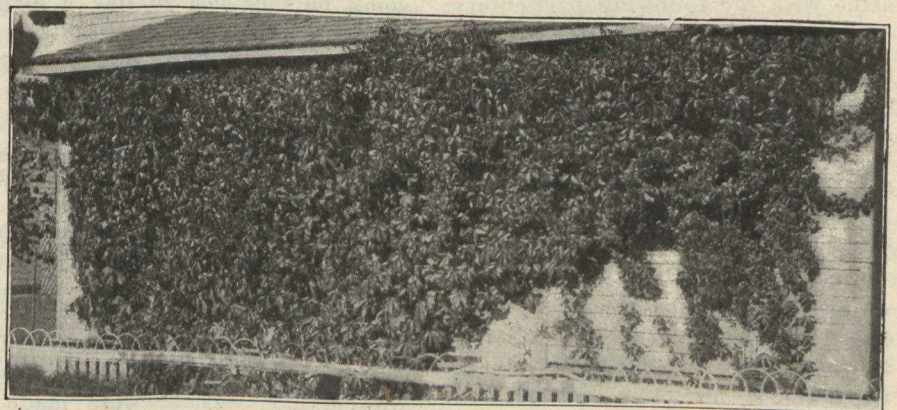
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SHRUBS AND VINES FOR THE CANADIAN HOME.



shelter value of no importance, and plenty of time and money to keep it cultivated always available, then it may be pruned. The trees then become little more than a number of individual trees and can be treated accordingly.

But, if the plantation is intended for a shelter it is a different story. A shelter belt is usually from 16 to 18 rows wide and its chief business is to grow up as rapidly as possible to provide the shelter it is intended to do. The wind blows along near the ground just as much as it does in the tree tops, often more so, and when the lower branches of the trees are all pruned off, it is at once evident that that part of the plantation



Two widely used beautifiers of prairie homes, growing readily in most sections of the West: Top picture, Spirea (Van Houtii); Bottom picture, Virginia Creeper.

(Pictures by courtesy of Prairie Nurseries Limited.)

(Concluded from preceding page)

Beware of Drastic Pruning.

As the leaf canopy gets higher up and these dominated stems die they may be cut off close to the main stem if thought advisable and the wounds painted.

The pruning of a plantation is a delicate operation that is usually best left to Nature. She is the great teacher and when we interfere unduly with any of her methods she always comes back with a counter punch we may regret. Better leave the shelter belt alone, till it is about 30 feet high when the dominated trees can be removed leaving the vigorous ones to be the permanent plantation.

The soil is the most important consideration in a shelter plantation and the only way to keep it in good condition is to maintain as much as possible, the close canopy of the leaves.

Tree Planting is Booming on the Prairies

EXCELLENT proof that the prairie province resident has not lost his head through temporary business depression is self evident from the keen popular interest in tree planting throughout the prairie provinces this year. The success attending the Tree Planting Car of the Canadian Forestry Association in this year's journey across the three prairie provinces outstrips the record of the two previous years. Although the Lecture Car will hold only about 100 persons at a time, it has already accommodated since April 1st, and mostly in very small communities, over 40,000 people. It has travelled in the same period (up to July 9th) 4,624 miles with 334 lectures to the credit of Mr. Archibald Mitchell, the chief officer in charge, and his assistant Mr. Angus Cooch. For some time the Tree Planting Car was attached to the Better Farming Train of the Saskatchewan Government

which touched at two communities daily, Mr. Mitchell giving as many as 51 tree planting talks in a single week as well as practical demonstrations at advantageous points showing how to plant trees, how to prune and how to combat destructive insect and fungus diseases. The Canadian Forestry Association's unique enterprise, which aims to give practical help to scores of thousands of prairie residents each year, and to stimulate popular interest in the planting of shelter belts about farms and the improvement of farm conditions, has no connection with any government or commercial interest but is a citizens' undertaking entirely. The financial support comes from small government grants and from the occasional subscriptions of business firms and private individuals, who realize the meaning of tree planting to the future life and prosperity of the prairie provinces.

Memorial Trees for Soldiers

HOW ANY well-organized society, such as a woman's club, branches of the Daughters of the Empire, or a Rotary or Kiwanis Club or other group of men or women concerned in community improvement can develop a Road of Remembrance with fine avenues of memorial trees is indicated by the success attending the Montreal Women's Club. Mrs. H. B. Pope, Convenor of the Conservation Committee of the Club has been so good as to furnish the Canadian Forestry Magazine with the following particulars:

"The idea of a 'Road of Remembrance' for Montreal was suggested at a meeting of the club early in the year and I made many enquiries both in England and the States of their experience in planting Roads of Remembrance in these countries and also in Victoria, B.C.

"In each locality, the conditions were different and the mode of handling the scheme varied. In Victoria the trees were all donated from the Government nurseries, the planting was all given free, and there was no expense attached for the relatives of the soldiers who were killed.

"In Montreal it was found advis-

able to make a nominal charge of \$3.50 for each tree, which included the tree, guard around the tree, and a tablet giving the name of the soldier and the date of his death. This charge did not cover the actual cost of the tree, etc., but it was thought that these memorial trees would not be within reach of the poorer people were the price made any higher. To help defray the cost, the Club secured generous donations of lumber, paint, nails, screws for the guards around the trees and were able to have a small balance left to pay a man to look after the trees carefully for this year. This will give the trees a good chance to get well rooted. It is the intention of the Club to give the trees such care for at least three years, by which time they will have had a good start.

"One of our manufacturers here, made for us the tablets, which are of cast aluminium, painted in black enamel, and rubbed so that the letters show through like silver. They look very neat and are practically indestructible. These were made for us at one dollar each, which was at a loss, which the manufacturer, from a patriotic reason, was willing to stand.

"We put a guard of four posts 2x3x6 with a band of 1x4 around the top to which is attached the plate, until the tree grows large enough to carry it. These are painted dark green and present quite a nice appearance.

"We have planted nearly 800 trees on each side of Sherbrooke Street West, in Notre Dame de Grace ward, from Claremont Avenue to Montreal West. As Sherbrooke Street is destined to become the main motor thoroughfare from one end of the city to the other, and eventually from one end of the Island to the other, it was chosen as the most suitable street by the committee of the Club. It is expected that further plantings will take place each year until there will be a Road of Remembrance from one end of the Island to the other.

"I would like very much to see every city and town in the country have a 'Road' as it seems to be one of the most fitting and appealing sort of memorial that has been yet devised. The idea of the living tree seems to appeal so strongly to every one who has lost their loved one, rather than the cold stone or marble monument."

A Defense of the "Predatory Lumberman"

Could forest wrecking have been avoided? Was America compensated by a century of cheap construction?

By J. E. RHODES, Secretary-Manager, Southern Pine Association

FORESTRY which does not contemplate the use of the forest is not practical forestry, and will not appeal to sensible and practical men. There was a time when forestry was based largely on the theory that the man who cut a tree was an enemy of society; and no satisfactory solution of how the forest could be used and perpetuated at the same time was offered.

Scientific Methods

The evolution of economic conditions, surrounding the lumber industry in this country, is just beginning to make it possible to consider the application of so-called "scientific forestry methods" to lumbering operations with some prospect of success. These conditions have been brought about by the cutting of a considerable part of the nation's virgin forests, which former generations thought were inexhaustible. The time appears to be reached, in our national history, when further increases in the amount of lumber procured from our virgin timber cannot be expected. Lumbermen are, therefore, realizing that their business can be prolonged only by the growth of another crop of trees. They know that lumber is absolutely indispensable, and that it cannot continue to be manufactured and consumed in its present volume indefinitely.

Lumbermen also know that scientific forestry methods cannot be applied to practical logging operations until the value of the standing timber has reached a point which will make it financially and economically possible.

With further decrease of supply, lumbermen believe that the price of standing timber will advance to a point which will make possible the adoption of scientific forestry methods without loss.

The adoption of forestry in the manufacture of lumber involves an increase in costs which obviously must be borne in the end by the consumer. The public should, therefore, understand that forestry means increased

costs of products manufactured from the forests.

Lumbermen believe that the remarkable development of our country has been due in large measure to the sacrifice of much of our forests. Our forefathers found great areas of lands covered with magnificent growths of hardwood, which they were obliged to cut down in order that they might cultivate the soil. The Northern forests proved to be the nearest sources of lumber supply to the great agricultural states of the Mississippi Valley. They furnished the cheapest building material that the world has ever known. While these forests and portions of the Southern forests have been largely depleted, the lumbermen believe the results have justified the sacrifice.

As the peoples of Europe flocked to our shores by the millions, and made for themselves new homes in this land of the free, it became necessary to build our towns and cities in a comparatively few years, considering the life of a nation. Without lumber, this could not have been done; neither could the great agricultural areas have been made to produce the food upon which the world now depends for its very life. The agricultural sections of the country could not have been brought into cultivation had it not been for the production of the immense quantity of lumber utilized on the farms; indeed, the romance of business contains no more interesting chapter than that concerning the lumber industry. Lumber and its products are as indispensable to the livelihood and well-being of men as are any other products of the soil. The lumber business in all its phases, from first to last, has played a most important part in the up-building of America.

In the very nature of the occupation, the man who has gone into the trackless forests and converted them into lumber for the use of the people, has been a power in many sections of the country. He has been the advance agent of civilization, for there has followed in his wake farms, towns and railroads, and all sorts of devel-

opment incident to the growth of a sturdy people and a prosperous country.

Forests have been sacrificed, yes. How else could the great prairies have been won? With the cutting of the forests immense areas of land have been made available for the plow. Hundreds of thousands of acres, from which the lumbermen removed the trees, are now being successfully cultivated, adding to the agricultural wealth of America.

Public Shares Responsibility

The public must share with the lumbermen the full responsibility for the cutting of the forests. Citizens engaged in the making of lumber, to supply the demand which existed for it. The greater part of the forests which have been used have represented little, if any, profit to the men who cut them. Even today, many millions of feet of timber are being cut and sold for returns which do not represent the costs of operation and present values of stumpage.

The lumbermen feel keenly the criticisms which have been directed against them, charging them with the ruthless destruction of timber at the expense of future generations. They resent the charge that they have wasted the nation's timber resources, or that they have made fortunes by methods which are without economic or moral excuse.

No fair-minded citizen will deny that there has been, in the past, abundant excuse for the cutting of the forests. The statement has been made by men high in the councils of the Government that we face a lumber shortage because of the destructive methods of lumbermen. This charge has undoubtedly caused many people to infer that the lumbermen have been ruthless vandals of the forests, destroying the God-given heritage of the people without any regard whatever to financial or economic considerations. The lumbermen reply in their own defense that every part of forest material from which a profit could have been realized has been used. They have left nothing in the

woods to rot and burn which could have been handled at a profit, or which could even be converted into revenue without profit.

It should be understood that private forestry must present some inducement as a business proposition, or it never will be undertaken. It is useless to expect men to look at it in any other light. American business men are too shrewd to waste raw material which can be converted into dollars.

The lumber business, like any other, is subject to the laws of supply and demand. The waste of raw material is avoided only when it can be handled without loss. Citizens should not be expected, and certainly cannot be compelled, to adopt those methods in connection with manufacturing operations which would drive them into bankruptcy. If forestry cannot be adopted with profitable results, it cannot be considered, as individuals cannot be expected to conduct a work of this kind at a loss to themselves, no matter how much they may be prompted by sentiment or regard for future generations. Every portion of the raw material for which a market could be found has been reclaimed, and lumbermen have developed improved methods of logging and sawing as rapidly as human ingenuity and invention could cope with new conditions. As the value of the manufactured product has increased it has been possible to reclaim and manufacture an increasing proportion of the raw material. Formerly only the best portion of a tree could be marketed. Many millions of trees of inferior species and of defective material have been burned up, simply because they would not produce the character of material which the public was willing to pay for and use.

Evolution of Lumber Industry

The evolution of the lumber business in America is repeating the history of the industry in older countries of the world. The experience of the latter shows that when the value of standing timber reaches a point which makes it financially possible to protect it and utilize it with some chance of financial gain, methods are adopted which result in the perpetuation of the forests as a source of revenue. Anticipating that they may live to see the time when these conditions will come about in America,



Photo Courtesy Dominion Parks Branch

lumbermen are beginning to investigate forestry as a business proposition. Many of them, particularly the younger men, realize that before many years changing conditions will make the adoption of forestry commercially possible. Cheap virgin forests are becoming hard to find, and there is less speculation in forest properties than at any time in the past. Owners of timber lands are beginning to seriously ask if the forests cannot be put upon a permanently paying basis, by utilizing their productive power.

Distinctions Made By Lumbermen

Here I desire to emphasize that lumbermen make a marked distinction between re-forestation, and scientific forestry methods of logging. By re-forestation they mean the growing of a new crop of trees from the seed, whereas by scientific logging methods they mean the cutting of the virgin crop so that it will reproduce itself. Lumbermen believe that denuded lands not suitable for agriculture, must be replanted from the seed, if at all, by the State and National Governments. It is a work which cannot be considered by the present generation of business-men as a private enterprise or investment,

simply because the returns to be expected are inadequate, and wholly problematical.

The length of time required to mature the ordinary crop of trees for saw logs is much too great to interest Americans. The state lives on while individuals perish. The individual must pay taxes in some form or other, while the state is exempt. The actual planting of trees, therefore, for the benefit of future generations must be done by the state, and upon state lands, if any great quantity of forests are to be grown for the future.

The lumberman is asking the professional forester to show him how he can cut his trees so that his forests may be perpetuated. This involves what is known as scientific forestry, and is the point where the lumberman and the forester are to meet upon common ground. It means the cutting of trees of certain diameter, permitting the smaller and younger growth to mature; the leaving of seed trees for propagation, and absolute protection from fire. It requires an exact knowledge of the relation of lumber production to the annual forest growth. These conditions vary in every locality, and in every kind of timber, and with the changing conditions of the lumber market.

County Authorities Must Fight Their Own Fires

New Brunswick's courageous action ties down responsibility within narrow limits

MANY changes were made in the New Brunswick Forest Fires Act at the last session of the Provincial Legislature, the outstanding ones being:

Enactment of the Westmoreland County Fire Act, combining the protection of Crown Lands and private lands under a county organization.

Placing the responsibility for extinguishing forest fires on private lands to the owner of the land.

Prevention of forest fires on private land through the appointment of all County Councillors as fire wardens.

Provision for the laying aside of any section of forest land in hazardous weather upon which a person may not enter without a "travel permit."

The Westmoreland County Act is considered the most advanced forest fire legislation in Canada. Through the provisions of this Act all owners of forest land of fifty acres or more by a majority vote elect a chief warden and deputy wardens to carry on the work of forest fire protection and to carry out the provisions of this Act. Railway fire protection and matters in connection with the printing of fire signs, propaganda, etc., are still handled by the Department of Lands and Mines, which also acts in an advisory capacity. The provisions of this Act concerning fire permits, carelessness with fire, fines for violations, etc., are the same as those contained in the N. B. Forest Fires Act. The expenses for carrying out the provisions of the Act are pro-rated over all areas of forest land of 50 acres or more at the end of the season, and the tax collected with other county taxes. In this way every owner of forest land of any size has a direct interest in the prevention of forest fires because he pays a tax. In other words, the group pays the cost of fire protection instead of the individual upon whose land the fire occurs. More people are directly interested in the prevention of forest fires and this fact alone should mean fewer conflagrations, as everyone who pays a tax should be interested in keeping the rate as low as possible. The Act has been generally approved in all parts of Westmoreland County, according to reports received, and there is no reason why such a measure might

not work as well in other thickly settled countries. This Westmoreland County Act is so enacted that any county may adopt it through Order-in-Council upon application of a majority vote of the County Councillors, and it is expected that other counties will adopt this Act next season.

Councillors are Fire Wardens

In other counties private land fires are dealt with by the County Councillors, who are fire wardens with power to call out the necessary number of men without pay to extinguish fires occurring where the owner does not take the necessary action to prevent fire from spreading. In cases where fires have started this season on privately owned land the Councillors have in practically all cases promptly taken the necessary action to promptly extinguish fires. The Councillors have also been given permission to issue permits during the season in which brush burning is allowed. As there are over 300 Councillors, the number of wardens in the province has been greatly augmented and the facilities for the farmer to secure burning permits have thus been greatly improved.

Another advantage of this proposition pertaining especially to settled communities is the fact that where the Councillors feel that other duties do not allow them to give fire prevention the necessary attention they may appoint a deputy or the County may adopt the Westmoreland County Act, upon application of the County Council to the Government.

Another advanced bit of legislation which has won approval from many of the leading journals of the day and from many of the leading forest land owners is the action of the government in authorizing the Minister of Lands and Mines to declare that any section of forest land where the fire hazard becomes very serious in hot dry weather may not be entered by persons on business or pleasure, other than the owner or officers of the government, without first obtaining a "travel permit." In this way it is felt that the department will know definitely who is within the forest at any particular time and, as the law provides (Section 41) that the presence of a trespasser within an area where fire was

first noticed is considered prima facie proof against said trespasser for setting the fire, it may be seen that the present law is an advanced step in eliminating fires caused within the forest by careless individuals. So far this year, aided by an average rainfall, conditions in the woods have not become abnormal except for a few days at a time, and it has not been necessary to set aside any district of forest land, the department being content with registering fishermen and campers who enter the most important territories. The fact that the necessary machinery is at hand to go ahead with this upon the event of hazardous weather at any time gives the owner of private land and the people an added feeling of security.

Another section worthy of mention is the authorization of a Fire Prevention Week by proclamation of the Lieutenant-Governor. The week ending May 27th was proclaimed Fire Prevention Week this spring, and the matter of fire prevention given considerable publicity, by the schools, churches and press.

The Co-operation That Brings Results

Forest Fire Prevention is a matter of co-operation by all agencies interested, but little is ever accomplished without proper legislation which alone makes possible efficient organization and the kind of co-operation that brings results. Since 1918 when the old Fire Act was repealed and a new modern Act placed on the Statute Books, the Legislature has been giving the matter of forest fire prevention considerable attention, and hardly a year has passed since then when important amendments making the working of the Act more practical have not been passed. Moreover, the realization by the public of the danger of fire in seasons such as was experienced last year, has brought a general endorsement of the present legislation now in force, nor is it maintained that the present Act is perfect, but it is felt that the success met with during the past four years is a true indication that the public will continue to support any improvements in the law which will more efficiently eliminate forest fires in an economical and practical way.

Briefs About People and Events

CHANGES POSITION

Mr. D. C. A. Galarneau, who inaugurated the forestry department of the St. Maurice Paper Company, has resigned his position to become Assistant State Forester of Massachusetts, with headquarters at Springfield.

STANLEY PARK PINES INFECTED

White Pine Blister Rust, a disease which infects alternately white pine trees and currant bushes, has been discovered among the decorative white pine seedlings recently transplanted along the paths and roadways at Stanley Park, Vancouver and the trees will be destroyed at once.

FOREST RESERVE THROWN OPEN

Dauphin, Man.—Farm lands with an estimated area of 125,000 acres located in the Riding Mountain forest reserve to the west of here, were thrown open by the Dominion Government for free settlement by eligible returned soldiers. The land extends in patches throughout the entire reserve and is divided in 442 parcels. The allotment of the territory, which was in the form of a draw, took place in the Town Hall. More than four hundred names were entered.

BIG STUMPAGE TRANSACTION

THE largest single order for lumber ever negotiated with the U. S. government was recently placed by the Fruit Growers' Supply Company of Los Angeles. It was for 946,000,000 feet of timber in the Lassen national reserve. The present value of the stumpage is \$3,500,000.

This order indicates the vast extent of the California citrus industry, as the lumber will be used to make boxes for oranges and lemons shipped by the California Fruit Growers' Exchange.

The footage contracted for is sufficient to build frame bungalows on fifty-foot lots on both sides of a street 326 miles long. This order is 30% more than the annual imports of lumber at Los Angeles harbor,

which is credited with being the largest lumber import port in the world.

THE CHILDREN'S PROPERTY

"What adds to the pity is that most of the timber destroyed by our woodland fires is so young as to belong to generations not old enough to protect it."—
Boston Herald.

THE MEANING OF A SPIDER.

MARK TWAIN in his early days was editor of a Missouri newspaper. A superstitious subscriber wrote him, saying that he had found a spider in his paper, and asked whether that was a sign of good or bad luck. The humorist wrote this answer and printed it:

"Old Subscriber: Finding a spider in your paper was neither good nor bad luck for you. The spider was merely looking over our paper to see which merchant is not advertising, so that he can go to that store, spin his web across the door, and live a life of undisturbed peace ever afterwards."

B. C. PRECAUTIONS.

During the season May 1 to October 1 it is required that loggers keep on hand the following:

Equipment: Camps employing up to 12 men, 3 axes, 6 mattocks, 6 shovels, 6 10-quart buckets.

These tools must be in good repair, painted red, set aside and used for no other purpose than fire fighting.

Requirements: Each additional unit or portion of each additional unit of 12 men must be provided with an additional set of tools as outlined above.

FORESTRY DESPATCHERS!

OF THE 22 National Forests in Oregon and Washington, 18 are planning to install this year a central dispatching system as a vital part of their fire protective organization. Under this plan one competent man on each Forest will be chosen to act as dispatcher. He will be stationed at the most central point of the telephone system and required to remain within sound of the telephone every moment day and

night. From this point he will have telephonic connection with the quarters of practically every member of the protective organization and will be kept informed as to their contemplated movements throughout the day.

All reports in regard to the discovery or progress of fires will be phoned directly to him and it will then become his responsibility to notify the ranger concerned or, in his absence, to start action through any other members of the organization with whom he can get in touch.

BRITISH COLUMBIA FIRES

The season in British Columbia has been exceptionally hazardous. In Northern B. C. the number of fires is greater at present than for the whole of any previous season since 1914.

So far, two deaths have resulted from forest fires.

The season's fires number 750 as against 241 the same date last year, and fire-fighting costs have been heavy.

QUEBEC'S GOOD PUBLICITY

The Forest Service of Quebec has been doing some excellent work in constructive publicity. Thirty thousand copies of an attractive calendar and 100,000 educational post cards and leaflets have been distributed. The latter bore some very effective and interesting messages written by Mr. Napoleon Lemay.

IDENTIFICATION OF WOODS

THE Forest Products Laboratories of Canada at Montreal are frequently requested by manufacturers and others to identify samples of Canadian and foreign woods. Identification is made possible by an expert knowledge of the microscopic structure of woods and special methods of preparing the material for examination.

The Laboratories are equipped to examine any samples submitted and will do so without charge. Such samples should be accompanied by a statement as to the country of origin. In the case of North American woods the district of origin should be stated if possible.

The Rewards of a White Pine Plantation

Courtesy "American Forestry"

A TWENTY-EIGHT-YEAR-OLD plantation of white pine is shown in the foreground of the picture, on the side. Mr. Faxon, the owner of this plantation, began planting white pine 36 years ago. He has the honor of having set out the oldest white pine plantation in New York State, although he is still a comparatively young man. For the portion of the plantation which is now 36 years old, Mr. Faxon has been offered \$500 per acre for the timber "on the stump." As the trees are making their most vigorous and profitable growth at this age, Mr. Faxon has refused to sell. In the background is shown a white pine stand which occupies land that was cultivated when Mr. Faxon was a boy. The pit where potatoes were stored 50

years ago is still plainly in evidence. A dense stand of natural growth white pine is just as profitable as planted pine. This fact is illustrated by a statement contained in a bulletin of the United States Department of Agriculture as follows. "Two acres of white pine, near

Keene, New Hampshire, were sold three or four years ago, before the war prices, for \$2,000, on the stump. The total stand was 254 cords, which equals 170,000 board feet, or an average of 85,000 feet per acre. The trees were from 80 to 85 years old; so the growth on each acre was about 1,000



The Faxon Pine Plantation at Chestertown, New York

feet per annum and the gross returns about \$12.20 per acre per annum."

The Trail of the Forest Fire Fiend

(Special despatches to The Illustrated Canadian Forestry Magazine)

TELEGRAMS to the Canadian Forestry Magazine from the various provincial authorities give the following concise information regarding forest fires up to July 24th:

British Columbia has had 1,286 fires this season. The main sources of origin were logging operations, the burning of debris by settlers, and the carelessness of campers, fishermen and other woods travellers. The cost of fire fighting has been approximately \$200,000.

Ontario has come off rather better in the first half of the season than either British Columbia or Quebec. Weather conditions have somewhat favored northern Ontario where a total of 531 forest fires were recorded, burning over 132,800 acres.

The Provincial Forester states that "very little of this has been timber." The percentage of fires due to settlers, railways, travellers, etc., has been about the same as in previous years.

The fire experience of Quebec has been more severe. About 600,000 acres have been swept and while much of this has been "old burns" and cut over lands, a newspaper statement emanating from the Provincial Government claims that the loss amounts to \$10,000,000.

New Brunswick reports 75 fires, burning eight square miles, five of which was old burn. Mr. Prince, the Chief Forester, states that the chief sources of trouble this summer were smokers, neglected camp fires, brush burning, the railways, and incendiaries.

In Nova Scotia, Mr. J. A. Knight, Commissioner of Forests and Game, telegraphs that the total number of fires reported to June 13th was 74, caused by clearing land, fishermen, industrial operations, railways, incendiaries and several of unknown origin. Mr. Knight estimates the total damage at twelve thousand dollars.

Statistical evidence is not on hand for forest fires in the northern prairie provinces or in the Dominion-controlled railway belt of British Columbia. The experience in the main forested areas of Manitoba, Saskatchewan and Alberta has been very favorable, but many serious fires have been encountered in the railway belt of British Columbia.

ASSOCIATION ACTIVITIES

A Record of C.F.A. Enterprises in Various Parts of the Dominion

IS THE PRAIRIE WEST DOWNHEARTED?

From the diary of the Canadian Forestry Association's Tree-Planting Car, now in Southern Alberta, moving Eastward to Saskatchewan and Manitoba:

"There is no end of public interest shown. The car is filled every night to capacity, besides having the school children in the forenoon and sometimes in the afternoon as well."

"We had a fine meeting on Monday. The Normal students numbered 200."

"On every hand we find plain indications that the tree planting movement is becoming general throughout the West. One can hardly pick up a paper without reading something about it. Most of the bigger places have had their Arbour Day this year and with fine success."

"Duchess, Alberta, April, 1922: "We spoke to 45 children in the afternoon. Good audience at night. Discussion lasted until midnight."

"Jenner, Alberta: "Had 72 children and teachers this morning. All of them greatly interested. Many had never seen movies before."

"Empress, Alberta: "During morning many visited the car looking for advice. In afternoon 67 school-children came aboard. Evening lecture attended by 109 people including a delegation of 27 business men."

"Bassano, Alberta: "Had 136 people in car, chiefly adults, looking for information and taking in every word of the lecture. A good, sound discussion followed. Meeting lasted until midnight."

"Prelate, Sask.: Roads well nigh impassable. However, we had an audience of 125 school children and teachers in afternoon, in evening 150 (grown-ups mostly) came from surrounding districts."

"Sceptre, Sask.: "Fine audience of children in afternoon and the evening lecture was again packed. A most interested crowd with plenty of discussion."

"Portreeve, Sask.: "Evening lecture attended by 107. A remarkable audience considering the state of the roads and the bad weather. A good discussion followed until after midnight."

So runs day after day the record of Public Service

of the Tree Planting Car and its lecturers in the treeless areas of the Prairie Provinces.

This is Education simplified, Education for a definite and vital object.

This is Education giving maximum and permanent results at trifling relative cost.

Between April and November last year, the Canadian Forestry carried tree planting propaganda to over 50,000 prairie residents.

EXHIBITS CAR, A STRONG INFLUENCE.

MANY highly favorable comments on the notable success of the Canadian Forestry Association's Exhibit Car in its British Columbia run have been received by the Association officer. The following written by an experienced forester is particularly appreciated:

"The Canadian Forestry Association's exhibit car closed its tour of the Railway Belt and of British Columbia at Malakwa yesterday. I desire to take this opportunity of expressing my utmost appreciation of the value of this car in promoting interest, understanding, and co-operation by the public in matters pertaining to the forest and forestry."

"I will admit that, before the arrival of this car, I was somewhat skeptical of the results that could be obtained, but 'I have been shown' and henceforth your Association will have no more enthusiastic advocate of this form of publicity than the undersigned."

300,000 PERSONS REACHED DAILY.

ON a conservative estimation the forestry propaganda of the Canadian Forestry Association is now reaching 300,000 persons daily.

The Association is continually adding to its educational schemes. During the first part of June arrangements were made for the circulating of a series of striking forest fire photographs to all the chief newspapers of Canada, the Association supplying the pictures in the form of matrices and stereotypes, each accompanied by a brief article dealing with the prevention of forest conflagration.

The Prairie Campaign in a Nutshell

At July 9th, the following was the record of the Tree Planting Campaign carried on by the Canadian Forestry Association in Manitoba, Saskatchewan and Alberta this year:—

Miles travelled by the Tree Planting Car since April 1st, 1922.....	4,624
Attendance.....	41,337
Public meetings held.....	334

Readers who might reasonably think that two public meetings daily, with demonstrations, motion picture exhibitions, etc., would be a fair day's work for the Canadian Forestry Association's lecturers on the Tree Planting Car, (Messrs. Mitchell and Cooch) may be interested in learning that during the period when the Association's Car travelled with the Saskatchewan Government's Better Farming Train, as many as 51 lectures were delivered by our men in a single week, an average of more than eight a day.

The Secret of Success for Prairie Farmers

Retaining the water supplied by snow and rain fall through plantation of tree belts will aid materially in off-setting droughts

By ARCHIBALD MITCHELL, Western Lecturer of the Canadian Forestry Association

IT'S not the water we get in a dry country that is important, it's the water we keep," so said Principal Bracken of the Manitoba Agricultural College two years ago at the Swift Current Dry Farming Convention.

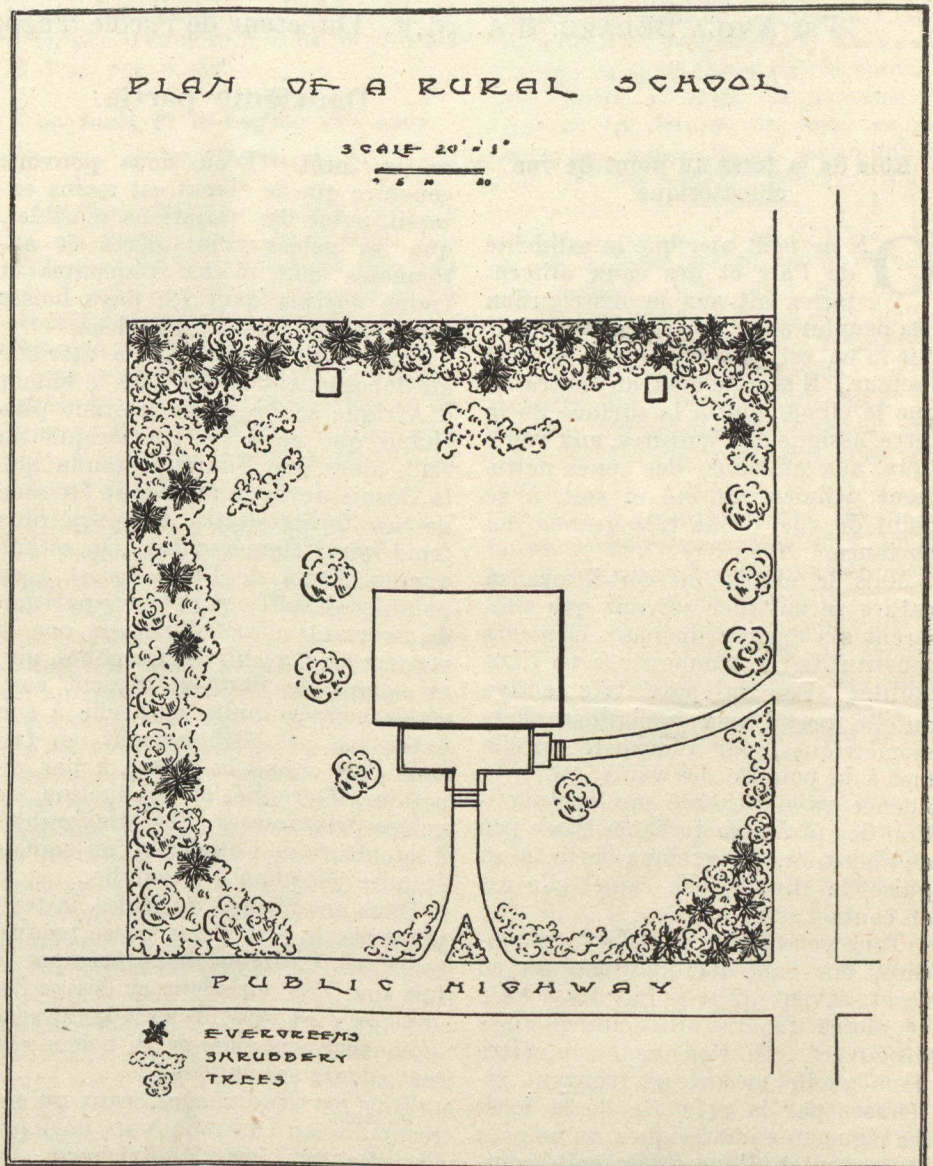
A most important pronouncement this, on a most important subject, for it crystallizes into one short, pithy sentence the secret of successful agriculture on the prairies. Given a sufficient rainfall there is no question about the crops. That is as well recognized as anything can be. And the converse is equally well known; decrease the water supply and the crops decrease in proportion, even to the vanishing point in some years.

But when we talk about keeping the water, these questions are naturally suggested, "How are we likely to lose it?" "What is likely to happen to it that we have to talk about keeping it?" and "Where is it likely to go to?" We know where it comes from; the rain and the snow is the answer to that, but what becomes of that rain and that snow? That is the point, and following up by implication, Principal Bracken's phrase, it is a most important one.

Take the snow first. We have heard of places where snow has been known to fall on the tops of fence posts and pile itself up to a depth of two feet, staying that way all winter waiting for wind to blow it off. That isn't the way it happens on the prairie. Usually the wind comes with it, and not only does it not stay on the tops of the fence posts but often it does not even stay on the ground where it falls. Where there is stubble, a lot of it is caught and we are delighted to see it and begin to talk of the fine prospects for a crop next year. But six inches of stubble does not hold much snow. In fact when it comes to actual quantity of water preserved the six inches of stubble only holds about half an inch of actual rainfall. The balance blows away to form drifts in the coulees and the crests of the hills where it melts in the Spring and finds its way to the creeks or the sloughs.

Trees Retain the Snow

There was abundance of snow last Winter, all over the prairie country,



SUGGESTIONS FOR BEAUTIFYING A RURAL SCHOOL.

A plan for planting a school yard located at crossroads and bounded on the south and east by public highways. The principal features of this plan are four shade trees on the south and west to protect the building from the heat of the summer sun; an open row of trees along the east side of the yard; a clump of trees in the southeast and southwest corners, skirted with shrubbery, and broken clumps of shrubbery along the border directly in front of the building. Along the west and north borders the trees are set more thickly, and heavy masses of shrubbery supplement the trees to screen the out-houses and protect the yard from sweeping winds.

but without actual measurement, by far the greater part of it appeared to be along the fringes of the coulees or behind the snow fences of the railways. Up in the bush country there was some two feet of snow on the land all Winter that did not blow away into any coulees. On the prairie fields it did, the very place that the snow and the water it melts into, is so sorely needed, and instead of

being available for the use of our crops most of our winter rainfall is now on its way to Hudson's Bay or filling up the hollows in the fields, lost entirely for the use that Nature intended it. And why the difference? Another very easy question. For in the north there are plenty of trees and the wind has no chance to blow the snow off the ground

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Le rôle des forêts dans l'économie d'un pays

Comment les forêts contribuent à l'enrichissement de la vie humaine ainsi qu'à la prospérité et au confort du peuple.

Par AVILA BÉDARD, B.A., M.F., Directeur de l'école d'arpentage et de génie forestier.

Deuxième partie.

Rôle de la forêt au point de vue climatérique

ON ne peut nier que la salubrité de l'air et des eaux alimentaires ait sur la distribution des peuples une action capitale; mais elle n'en est pas cependant le seul facteur. Il semble bien, au contraire, que le climat qui, à la surface de la terre, assigne aux cultures, aux végétaux, aux animaux, des zones nettement définies, ait été et soit, à ce point de vue, d'une très grande importance.

Mais le climat ne voit-il pas sa nature se modifier suivant que s'altèrent ses deux principaux éléments constitutifs, la température et l'humidité? Par la part très active qu'elle prend aux variations thermométriques, par l'obstacle qu'elle met à la poussée des vents, par l'influence qu'elle exerce sur la répartition des pluies, la forêt ne laisse pas de façonner, en quelque sorte, à sa guise, le climat avec lequel elle est en contact.

Tous ceux qui, en différentes saisons, ont fait quelques courses en forêt, savent qu'il y fait frais l'été et moins froid l'hiver qu'en pays découvert. Si l'on veut connaître dans quelle mesure se trouvent atténuées par la présence de la forêt les rigueurs climatériques, on ne peut se contenter d'une aussi facile constatation. Il faut donc recourir au témoignage de savants distingués et de météorologistes remarquables, comme les Mathieu, les Becquerel, les Boussingault, les Foutrat et les Ebermayer. Ceux-ci ont fait simultanément en forêt et en pays déboisé, toujours avec beaucoup de soin, des observations nombreuses, à différentes stations très espacées, en France, en Bavière et en Suisse.

De l'ensemble de ces observations, il ressort que la température moyenne mensuelle et annuelle est moins élevée en forêt qu'en pays découvert; que la différence entre la température des massifs forestiers et celle des régions agricoles est plus grande en été qu'en hiver et que les oscillations thermométriques sont moins amples à l'intérieur qu'à l'extérieur

de la forêt. D'où nous pouvons conclure que le climat est moins excessif, subit des variations sensibles, que les gelées printanières et automnales sont moins fréquentes et moins nocives dans les pays boisés que dans les régions dénudées.

Quoi qu'il en soit, on a attribué au déboisement le fait que le climat d'Afrique soit à même latitude plus chaud que celui de l'Amérique du Sud, alors que l'on a prétendu que la Bosnie devait à la grande étendue de ses forêts d'être un pays plus froid que l'Herzégovine. On estime que le climat de France s'est à ce point réchauffé, par la disparition d'importants massifs forestiers, que la vigne a pu franchir les Cévennes, qui, au temps de Strabon, étaient assignées comme limite naturelle à son extension. Ce déboisement, en faisant plus chaud le climat, a par réaction déterminé la production de gelées printanières très défavorables à la culture de l'olivier qu'on voulait étendre jusqu'en Normandie.

Dans nos régions agricoles, la température, le printemps, ne se trouve-t-elle pas sensiblement altérée par le fait que l'air circulant au-dessus des champs s'est refroidi en passant sous le couvert forestier où les neiges restent encore accumulées?

Tous les témoignages oraux qu'ont recueillis, au cours de leurs voyages, les Blanqui, les Montrichard, les Darwin, les Kalm et les Liancourt, sont unanimes sur ce point: que le recul de la forêt devant les progrès de la culture, devant ce que Brunhes appelle "l'inondation humaine", a eu pour effet d'intensifier les chaleurs d'été et les froids d'hiver, et de supprimer, pour ainsi dire, les saisons de transition.

La température d'un pays se trouvant influencée par les vents qui y soufflent, il importe de savoir quelle action exerce sur ceux-ci la forêt.

Elle refroidit les vents qui soufflent des régions chaudes, en diminue la vitesse, comme elle le fait pour ceux qui ont circulé au-dessus des pays de froidure et contribue ainsi à étendre le champ de son influence climatérique. Cette influence, éminemment bienfaisante aux moissons

et salubre aux moissonneurs, ne s'exerce, toutefois, de façon manifeste que dans les pays sans relief, dans les vastes prairies ou les steppes sans fin. Encore faut-il, pour qu'elle soit sensible, que les massifs forestiers qui servent de brise-vent, soient assez importants et orientés de telle sorte que les vents prédominants les battent pour ainsi dire en brèche.

Les blés et les arbres fruitiers dans les plaines de l'Ouest ou dans les vergers de l'Ontario ne seraient pas si beaux, ne se développeraie pas aussi bien, ne donneraient pas de fruits aussi nombreux, s'ils n'étaient protégés contre les vents rapides comme par des écrans de forêts. Ne va-t-on pas jusqu'à affirmer que dans quelques Etats de la République voisine, à la suite de défrichements intenses qui ont élargi le champ d'action des vents soufflant de tous les points de l'horizon, la culture de certains arbres fruitiers a dû être abandonnée? Vyssotsky ne rapporte-t-il pas qu'en Russie, là où existent des lisières de forêt, non seulement l'herbe ne se fane pas d'aussi bonne heure, mais encore qu'elle donne, à l'unité de surface, un rendement beaucoup plus élevé? En Algérie, le sirocco n'est plus un vent de destruction et de mort, depuis que l'on a fait surgir la forêt entre lui et les champs.

Le soleil n'est pas seul à faire, pour le cultivateur, les "moissons généreuses"; les pluies y ont une large part. Aussi bien, dire des forêts qu'elles exercent sur la production et la distribution des pluies une décisive action, c'est affirmer qu'elles font pour l'agriculture œuvre véritablement bienfaisante.

Il y a, paraît-il, au Pérou, un arbre qu'on a appelé "arbre de la pluie" et qui n'est rien moins que merveilleux. Il a, dit-on, la propriété de condenser, pendant les grandes sécheresses, la vapeur d'eau contenue dans l'atmosphère, pour la laisser, sous forme de gouttelettes, ruisseler de son feuillage, de ses rameaux et de son tronc. On a calculé qu'un arbre de la pluie pouvait, de cette façon, fournir par jour quelque neuf gallons d'eau. Un auteur, d'au-

tre part, rapporte que les Espagnols trouvèrent dans l'Isle de Fer un arbre à tout le moins aussi merveilleux. Les insulaires venaient chercher l'eau que cet arbre, vénéré à l'égal d'une divinité, laissait ruisseler dans un bassin de pierre au centre duquel il végétait.

Les forêts, partout où elles existent en massifs assez étendus, font une œuvre analogue à celle de l'arbre de la pluie du Pérou et de l'arbre si étonnant de l'Isle de Fer, une œuvre dont il est facile de s'expliquer le mécanisme. On sait que tout abaissement de température, favorisant la condensation de la vapeur atmosphérique, amène les pluies à se produire. Or la forêt, dans l'accomplissement de ses fonctions vitales, restituant par évaporation et transpiration près des deux tiers des eaux de pluie que le sol a reçues, et qu'elle a puisées par ses innombrables racines, se trouve à augmenter la teneur en humidité des couches d'air en contact avec elle, et à les refroidir du même coup. Cette action réfrigérante de la forêt que les aéronautes ont, à plusieurs reprises, observée alors qu'ils volaient au-dessus de massifs importants, détermine la vapeur d'eau de l'atmosphère à se résoudre en pluies. Des expériences, faites en divers pays, ont du reste établi que la hauteur des pluies est en forêt de 12% supérieure à ce qu'elle est hors de la forêt. Cela ne veut pas dire que dans les régions forestières les précipitations atmosphériques soient continues. Le phénomène des pluies est en effet assez complexe, et les conditions favorables à la condensation de la vapeur d'eau de l'atmosphère ne se réalisent pas toujours. Quoi qu'il en soit, il paraît bien acquis que les pays qui souffrent le plus de sécheresses prolongées, tels la Chine, la Palestine, la Grèce, la Dalmatie, la Sardaigne, la Provence, l'Espagne, la Colombie, le Mexique et quelques Etats de la République voisine, sont précisément ceux où les forêts ont été le plus inconsidérément ruinées, alors qu'à Porto-Rico, à la Jamaïque et en Egypte, on attribue le phénomène de la renaissance des pluies aux plantations qu'on y fit. C'est bien le cas de répéter avec Charles Mauras que "la vraie terre est fille de l'homme."

Notons, en passant, que les pluies non seulement fournissent aux plantes, soit directement, soit indirectement, une grande partie des éléments nutritifs dont elles ont besoin, mais qu'elles nourrissent les ruisseaux où les troupeaux viennent s'abreuver, et que par infiltration elles vont alimenter les puits.

Elles jouent donc dans la distribution des végétaux, des animaux et des peuples à la surface de la terre un rôle essentiel. Aussi, un géographe éminent, Brunhes, a-t-il pu écrire que "tout Etat et même toute installation est l'amalgame d'un peu d'humidité, d'un peu de sol et d'un peu d'eau".

La forêt et le régime des eaux courantes

Le rôle vital que nous venons de lui attribuer, l'eau ne l'exerce pas seulement à l'état de pluies saturant le sol pour nourrir les plantes et les arbres nécessaires à l'existence de l'homme et susceptibles de s'adapter à ses exigences multiples. Sous forme de ruisseaux, de rivières et de fleuves, elle a, en effet, une très large part à la prospérité industrielle et commerciale d'un pays.

C'est sur les bords des rivières, ces "chemins qui marchent", que l'homme a établi ses comptoirs, fondé ses villes, et jeté les semences produites par le sol de la mère patrie. L'eau qui marche, aujourd'hui plus qu'autrefois, facilite les échanges de commerce, et réunit plus étroitement les pays et les peuples qu'elle paraît séparer. L'eau, canalisée par l'industrie humaine, pour des fins d'irrigation, crée dans certaines régions la fertilité; soumise au joug de la turbine et de la dynamo, elle moud la farine, carde les laines, crée la lumière, fait subir à la matière première des métamorphoses aussi merveilleuses que celles dues aux baguettes des fées, arrache au sol, d'où elle jaillit, toutes les richesses minérales qui y sont enfouies et, telle une pierre philosophale, les transforme en métaux précieux.

La forêt, qui sollicite les pluies à se produire, assure la naissance et l'existence de nombreux ruisselets qui viennent nourrir les rivières et les fleuves. Comme dit André Theuriot,

Sans se lasser, elle produit
La petite source et le fleuve.

Tant que vivent les sources, les fleuves ne meurent pas. Elles vivent si les eaux de pluie ne sont pas, aussitôt après leur chute, subtilisées par l'évaporation ou totalement utilisées par les végétaux en croissance, si elles peuvent en assez grande quantité s'infiltrer dans le sol. Si la forêt est capable de diminuer l'évaporation, elle contribuera à augmenter la proportion des eaux d'infiltration. C'est ce qui a lieu; on affirme même que l'infiltration dans les sols boisés

est de 12.8% supérieure à ce qu'elle est dans les terrains dénudés.

Voici comment se produit ce phénomène. La forêt, par toutes ses cimes tamisant les rayons du soleil et en en diminuant l'ardeur, permet aux eaux de pluie de se soustraire partiellement à l'évaporation. Celles-ci, d'autre part, retenues par la couverture morte, le tapis de mousses et l'humus, constituent des réserves importantes, toujours en communication, par des canaux souterrains innombrables et capillaires, avec les ruisseaux, les lacs et les rivières. Le sol de la forêt, moins battu et conséquemment moins tassé que le sol nu par les pluies, se laisse plus facilement pénétrer par elles. L'infiltration se fait lentement, cause de la petitesse des espaces lacunaires et de l'espèce d'attraction qu'exercent sur les molécules d'eau les particules terreuses.

Aussi, les sources dans les pays boisés conserveront-elles plus longtemps que dans les régions dénudées leur activité, et les ruisseaux auront-ils un écoulement plus constant et plus régulier. La forêt se trouve donc à avoir sur le régime des eaux une action régularisatrice analogue à celle des marécages, des lacs et des glaciers.

Là où cette action se manifeste de plus évidente façon, c'est dans les pays où les précipitations atmosphériques se font, pendant toute une saison, sous forme de neiges. La forêt, surtout celle qui est composée de résineux, en protégeant ces neiges contre une insolation printanière intense, en ralentit la fonte. Elle permet au sol, tapissé de mousses et de feuilles mortes, d'absorber une forte proportion des eaux de fonte, et assure, pour l'été, aux sources une activité constante, dont profitent et les ruisseaux et les rivières.

Dans les pays de montagnes, la présence de la forêt pour le maintien des sources est non seulement utile, mais nécessaire. En effet, sur les pentes dénudées et dont le sol a été tassé, les eaux de pluie et de fonte ruissellent superficiellement sans profit durable pour les rivières.

Nous nous sommes efforcé de montrer que la présence des forêts, en empêchant les pluies de s'évaporer dans une trop grande proportion et les neiges accumulées de fondre trop rapidement, en permettant à une plus grande quantité d'eau de s'infiltrer lentement dans le sol, pour y constituer comme un réservoir d'alimentation, assurerait aux sources, et par celles-ci aux ruisseaux et aux rivières, leur pérennité.

Les constatations que nous fîmes, au cours d'un voyage de reconnaissance dans le bassin de la rivière Bostonnais, en juillet 1907, trouveraient peut-être ici leur place, n'étant pas, croyons-nous, sans quelqu'enseignement. Donc, au printemps de cette année, un violent incendie avait, sur un parcours de quelque six milles, dévasté la forêt qui couvrait les pentes de la vallée de la Bostonnais, ne laissant intacts que des peuplements de résineux peu étendus, qui s'étaient développés sur des sols très mouilleux. Autour de ces taches éparse de verdure, c'était comme une immense forêt de troncs calcinés, aux branches noircies, écourtées et sans souplesse, debout sur un sol où le roc granitique ici et là affleurait et que recouvrait une mince couche de cendres: paysage d'une aussi désespérante mélancolie que les côtes du Morbihan, où s'alignent, informes et rigides, des menhirs nombreux.

La plupart des ruisseaux qui, autrefois, bruissaient sans trêve sous la forêt verdoyante, s'étaient tus, et au fond de quelques lacs, dont un d'une superficie de cinq acres, les eaux stagnaient, incapables, à cause de leur abaissement de niveau, de s'écouler par la voie naturelle qu'elles s'étaient jadis creusée.

Dans une région voisine, où l'incendie ne s'était pas développé, les ruisseaux continuaient de couler sous la protection des cimes vertes, et les lacs les plus petits d'épandre leurs eaux par dessus leurs barrages naturels.

Si l'on veut bien noter que les deux régions auxquelles se sont limitées mes observations étaient absolument semblables sous le rapport de la topographie, comme de la nature minéralogique du sol et des conditions climatiques, et qu'elles ne différaient entre elles que par leur taux de boisement, on ne peut s'empêcher de voir que la présence de la forêt assure aux cours d'eau leur existence et leur activité.

Lorsqu'ils chassent, pour ainsi parler, la forêt des monts, le pâturage et l'agriculture, on l'a constaté souventes fois, finissent par avoir, au point de vue du régime des eaux courantes, une influence aussi désastreuse que celle de la destruction par l'incendie d'un massif boisé.

Cette vérité est mise en lumière par l'histoire, et les relations de voyages. En Grèce, les ruisseaux, qui prenaient leurs sources sous les bosquets sacrés, dans des monts aux appellations harmonieuses et aux lignes pures, n'ont plus d'autre vie

que celle qui, dans des vers immortels, leur a été communiquée par les poètes. De ce pays on pourrait dire qu'il n'a conservé que ce que l'homme se trouvait impuissant à lui faire perdre: l'azur de sa mer et ses gracieux contours projetés contre un ciel toujours lumineux.

Un géographe éminent, Elisée Reclus, raconte quelque part l'histoire assez plaisante de certain ruisseau d'Espagne qui autrefois vivait dans un coin de la province d'Aragon et dont la mort, à la suite d'un déboisement intense, oblige les paysans, établis sur ses bords, à remplacer dans la fabrication du mortier l'eau par le vin.

Dans la Colombie, rapporte Bequerel, près du village de Dubaté, deux lacs existaient dont les eaux se sont graduellement vaporisées à mesure que la forêt reculait, à tel point qu'on a pu étendre les cultures jusqu'en leur fond.

"On ne saurait, écrivait Blanqui, se faire une idée exacte des gorges provençales, où il n'existe plus un bocage assez grand pour abriter un oiseau, où le voyageur ne rencontre, au sein de l'été, que quelques rares touffes de lavande desséchées, où toutes les sources sont tarées, et où règne un silence que trouble à peine le bourdonnement des insectes." Vous conviendrez que, pour vivre dans un pays tel que celui dont Blanqui vient de nous faire la peinture, ce n'est pas trop d'avoir les doubles muscles et l'humeur joviale de Tartarin.

Si les sources, les ruisseaux et les lacs ne sont pas toujours tarés à la suite de la disparition d'importants massifs boisés, toujours du moins leur débit s'est trouvé diminué et leur niveau abaissé. Nous n'en voulons donner que quelques exemples, qui ne sont pas parmi les moins faits, croyons-nous, pour plaire et convaincre.

La forêt de Versailles, aux troncs séculaires, hauts et forts, peuplée de déesses et de dieux comme un antique bois sacré, est, certains dimanches ensoleillés d'été, merveilleusement belle de toutes les "grandes eaux" qui de ses multiples fontaines, si gracieuses et si variées de contours, jaillissent en gerbes frémissantes. Au temps où les rois vivaient à Versailles, entourés de la plus spirituelle comme de la plus belle cour d'Europe, ces fontaines étaient si abondamment et si régulièrement pourvues d'eau qu'elles pouvaient, pendant un jour entier, jouer sans trêve. Ce spectacle féerique que l'œil ne

peut se lasser de contempler, les fontaines de Versailles ne le donnent plus de nos jours que pendant une heure. Encore faut-il qu'on ait laissé, une journée entière, se remplir leurs vastes réservoirs d'alimentation. La Loire, la plus plaisante à voir des rivières de France, n'a pu, comme les vieux châteaux qui se dressent sur ses bords, résister à ce qu'on est convenu d'appeler le progrès de la civilisation. Navigable autrefois jusqu'à Orléans, elle ne l'est plus en amont de Saumur. C'est une rivière déchuée de sa splendeur, et sa déchéance semble avoir eu comme point de départ celle de la monarchie. Les seigneurs et les grandes dames, quand ils s'y promenaient en galiotes, dans ses eaux paisibles, claires et profondes se plaisaient à mirer leurs perruques poudrées. La Loire qui, sous Louis XIV, avait saisi au passage ces images toutes gracieuses et d'un contour infiniment délicat, devait, un siècle plus tard, dans ses ondes troublées par les bateaux à fond mobile et les corps des aristocrates qu'elle roulait, reproduire un instant le profil sans élégance d'un Carrier. C'était à cette époque où, comme disait Chateaubriand, "l'on en voulait même à la noblesse des chênes." On pense bien que la forêt qui, sur les vastes domaines de l'aristocratie, s'était développée en liberté, et dont l'existence rappelait aux républicains les plus "sincères", les chasses royales, ne pouvait être respectée, en ces jours où le respect n'était qu'un vain mot. Elle fut, s'il faut en croire certains auteurs, le théâtre de déprédations aussi nombreuses qu'inexcusables. Pour ainsi parler, on libéra la Loire, comme on le fit d'ailleurs pour plusieurs autres rivières, du joug des forêts qui pesait à ses sources. En la libérant, on fit moins qu'améliorer sa condition, puisqu'elle est maintenant une rivière où les terres et les débris minéralogiques de toutes sortes, amenés par ses grandes eaux, forment des masses extrêmement mobiles et qui rendent la navigation difficile, même en aval de Nantes.

Dans l'Europe centrale, cinq importantes rivières, le Rhin, l'Elbe, l'Oder, la Vistule et le Danube, ont vu, à la suite de la déforestation partielle des monts d'où elles sourdent, leur niveau s'abaisser et leur volume diminuer à tel point que des travaux de creusement et d'éclusage sont devenus nécessaires pour y rendre la navigation possible pendant toute l'année.

THE EDITOR'S MAIL BOX

Correspondents discuss various matters of interest to our Association and Members

ENCOURAGE TREES BY TAX REBATES

Winnipeg, Man.

Editor, Canadian Forestry
Magazine.

I enjoy reading your magazine very much and like all other readers appreciate the valuable work you are doing in stimulating tree planting in this country.

I wish to pass along an idea that seems feasible and might hurry along the good work, and that is for your Association to agitate for and secure legislation from our various Provincial Governments authorizing municipalities to rebate taxes where a farmer plants trees along the road allowance under regulations approved by the municipality and in accordance with expert advice from some recognized forestry authority.

These trees could be planted on the inside or outside the fence as may be desirable. If a farmer's land faces two different roads and he only planted on one side he would get rebate of one-half his taxes and if he covered both road allowances he would get a full rebate.

This work once started would spread very fast as the farmers in the neighborhood would be impressed by the example and practicability of such a step. On the other hand, it would mean little loss of revenue to the municipalities as the cost would be spread over a good many years.

Our Western Provinces are sadly in need of more trees, and public interest should be aroused to such an extent that local Forestry Associations would be formed of every town municipality in the southern part of the three prairie Provinces.

If this or similar legislation were secured the benefits would become so apparent that our public spirited men would be moved to supplement the expenditure by liberal donations to help along the good work.

CHARLES M. SIMPSON,
(Simpson, Mitchell & Ewing.)

A FRIENDLY WORD

Extract from letter of Dr. W. B. Moore, Kentville, N.S.: "I congratulate you upon the remarkable improvement in your Journal."

A FRIEND IN HAMIOTA

From Mr. R. F. Hodge, Manager
Union Bank of Canada, Hamiota,
Man.

"Your Magazine deserves *great* credit. We are well treed around here but I take great interest in your splendid work of conservation, protection, and instilling into the minds of the present generation the great benefits to be derived from our forests and other natural resources. Your subscribers should be numbered by the hundreds of thousands.

A SPORTSMEN'S ASSOCIATION

Big River, Sask.

Editor, Canadian Forestry Magazine:

In my last edition of Canadian Forestry I gave more than ordinary interest to the article entitled: "Is the Time Ripe for a Canadian Sportsmen's Association?" Personally, I certainly am in favor of project, and would like very much to have the verdict of some of the Older "Brothers." Trusting I am not "Out of Order" in suggesting that an appropriate little button, suitably inscribed, might meet with the approval of some of the "Clan."

Trusting to hear from some of the other members through the magazine on this subject.

EARLE G. APPLEBY.

TRAVEL AND TREE PLANTING

London, England.

Editor, Canadian Forestry
Magazine.

Sir,—

I have been reading with much pleasure in the Forestry Magazine,

the efforts being made to beautify highways by planting trees. May I add another detail which I do not think has yet been mentioned. There are *two* kinds of highways which serve different purposes. Those that are used for display, and those which exist simply for the purpose of going pleasantly and conveniently from one place to another. Of the first kind are grand processional roads, such as those leading up to the Arc de Triomphe in Paris; the roads leading up to the Capitol at Washington, the Avenue through the Great Park at Windsor, and the lately designed roads of the New Delhi, which converge to the Government Buildings at the centre, and at their farther ends, miles away, point to some great historic monument. On roads such as these, dignity and space are emphasized by planting trees in straight lines at even distances on both sides of the road.

In the second class of roads, namely those for ordinary business or travel, the planting should be of a different character. In these the traveller does not want to be reminded how long the road is, or how many hundred trees he will have to pass before he reaches the end of his journey; he wants interest and variety. As you pointed out in your September number, wherever there is natural bush it should be preserved, as is being done in Saskatchewan; and it is well also to preserve the natural outline of the clumps of bush, and not to cut it all to one straight line. No artificial planting can ever be so suited to the locality as the natural growth. Failing natural growth, the best thing is to get what variety is possible by planting in clumps at *uneven* distances and with different kinds of trees in different places, etc., as may seem advisable.

Perhaps such a scheme as this may seem fanciful, and I admit, it needs intelligent direction, and cannot be left to a chance labourer. But I maintain that if it makes travel more pleasant, it is eminently *practical*.

Yours faithfully,

FRANCIS CAULFEILD.

E D I T O R I A L

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"In this and like communities, public sentiment is everything. With public sentiment nothing can fail, without it nothing can succeed. Consequently he who moulds public sentiment goes deeper than he who enacts statutes or pronounces decisions."

ABRAHAM LINCOLN.

Next Comes Slash !

ONE by one the problems of forest fire prevention are being met and mastered.

The railways, once a major menace to the safety of the forests, have now fallen to a junior rank. This is the joint product of vigilant self-interest on the part of the railway managements, and firm and tactful supervision by the Board of Railway Commissioners. The menace of settlers' land-clearing fires has been cut down materially in all the provinces by the permit system, but notably in Quebec where educational propaganda had especially favorable channels. The menace of the woods traveller, the camper and fisherman, is now being combatted in Quebec and New Brunswick by a permit arrangement similar to that controlling settlers' fires, and with persistence and firmness this source of timber destruction can be largely eliminated.

But something remains.

The forest fire feeds on old slashings, the debris of logging operations. The woods are piled with man-made kindling, ready to multiply a million-fold the spark from a cigarette or camp fire.

Thousands of Canadian industries live on the Forest. Logs must be made or they close their doors. If logs are made, debris follows as a matter of course. **The vicious circle** If debris follows, then forest fires are just two steps behind. And if forest fires keep their present pace, the industries will find themselves minus their raw material. So runs the vicious circle.

Logging must go on, but a way must be found to destroy logging debris. Many great and successful companies on this continent burn their slash at the time they cut and their profits do not seem to be affected. Obviously as concerns Canada, it is all a question of finding the best method and then of applying it, if at all possible, over a great area such as the forested provinces from the Manitoba boundary eastward. It will not work by patches.

Experiments have been, and are being conducted by the governments in economical disposal of logging slash. The extreme seriousness of the forest fire problem demands that conclusions be reached as early as is physically possible. Slash, however, is next on the programme, and it will call for concession and broad understanding on the part of all woods operators.

The Qualifications of a Forester

(Dearborn Independent)

GOOD foresters are not born, they are made. Forestry is the right profession for the right man. To qualify as a forester, with intentions of making forestry a profession, a man must first "have it in him."

Next, the technical side, requiring a university education, must be acquired. A man surviving these first and fundamental ordeals has yet to add experience to his list before he is a qualified forester. The experience should last about three years, most of this time to be spent in the forests, referred to as the "field." You can readily see that adopting forestry as a profession is, therefore, quite a task. It would be useless for a man, lacking the inclination for this work, to attempt to become a forester.

In contemplating what we are to derive from this life, I am sure you agree with me that before the lure of money, comes health and happiness. Fortunes are not made and lost in a day in protecting our forests. As one man put it: "You may say that no forester ever died wealthy." That does not mean that it is a struggling existence, however. Good salaries are paid to competent foresters. It affords a comfortable living and above all other inducements, it offers outdoor recreation, health and happiness.

Second only to agriculture, our forests are our greatest natural resource. In adopting forestry as a profession, therefore, the work of protecting our forests carries with it as much of a civil obligation as a means of a livelihood. A person must, as has been said, "have it in him."

DEPARTMENT

Canadians Educating Smokers

From "Forest Leaves" Published by
The Pennsylvania Forestry Association

A MAN who had been travelling in Canada presented a friend with a package of Canadian cigarettes, a strange—and a rather inadequate gift to have come out of Canada. But the recipient, paraphrasing the proverb, put the gift cigarette in his mouth and politely puffed away. Besides the "fags" were rather unique affairs, for their tobacco was proclaimed to have been grown in Virginia and to have journeyed all the way to Montreal to be rolled.

Out of the package came a small red printed slip which preached this sermon amid the smoke of the cigarettes it accompanied:—

"Please do not throw away a lighted cigarette.

See that it is dead out.

"Lighted tobacco and matches are especially destructive in the forests.

"Living forests mean liberal employment. Dead forests employ nobody.

"Don't be responsible for a dead forest.

"This caution is printed as a contribution to the forest conservation movement."

The warning might well be included in packages of our American cigarettes, the man reflected. It might aid in conserving our own forests and our cities and towns as well.

EDITOR'S NOTE. The point of the above story, so far as we are concerned is that the "sermon" referred to, is but one of the many forms of fire protection propaganda distributed by the Canadian Forestry Association. Here is another.

BROTHER!

HORSES couldn't drag you to a hunting trip in a treeless wilderness; a fishing trip by a treeless stream; or camping out in a treeless valley.

Isn't it about true that the call of the Outdoors is the call of Trees? The hospitality of Nature means little to any man except when associated with living trees.

Last summer hundreds of parties of campers struck an unfair blow at the rights and privileges of fellow campers, fellow sportsmen and nature-lovers by starting at least 2500 damaging forest fires.

Camp fires that were not put out, matches and smokes thoughtlessly thrown on the inflammable "floor" of the woods—these personal acts killed the camping, fishing and hunting in many thousands of square miles of Canadian forest.

Don't be a kill-joy. The forest is made for the fellow who follows after you.

Enjoy the woods! There's nothing to fear except fire. And mighty few fires except what you start.

Remember: all big fires start as little ones. One Minute's Care may save a Century of Waiting.

The Canadian Forestry Association.

Ontario Parks and Sanctuaries

FOR THE information of our readers we have secured from the Ontario Department of Game and Fisheries the following facts concerning the Provincial Parks and Sanctuaries that are now established in Ontario:—

Algonquin Park, in the District of Nipissing, having an area of approximately 1,560 square miles, established as a Forest Reserve on April 1st, 1909.

Quetic Forest Reserve, in the District of Rainy River, having an area of approximately 2,741 square miles, was established in 1893.

Rondeau Provincial Park, in Kent County, having an area of approximately eight square miles, was established in May, 1894.

Peasemarth Farm Crown Game Preserve, in the County of Grey, having an area of approximately 300 acres, was established in 1917.

Miner Crown Game Preserve, at Kingsville, in the County of Essex, was established in August, 1917.

Point Pelee Reserve, under the control of the Dominion Parks Branch, Department of Interior, Ottawa.

Nopiming Game Sanctuary, consisting of those portions of the Township of McNab, in the County of Renfrew, and the Township of Fitzroy in the County of Carleton, bounded on the south by the right of way of the Grand Trunk Railway; on the east by the line between lots 22 and 23 in the 5th concession in the Township of Fitzroy; on the north by the southerly shore-line of the Mississippi and Ottawa Rivers; on the west by the easterly shore-line of Madawaska River, was established in December, 1920.

Eugenia Crown Game and Fish Preserve, in the County of Grey, was established in June, 1921.

Peel Game Preserve, in the County of Peel, was established in April, 1922.

N. S. LUMBERMEN.

THE Nova Scotia Lumbermen's Association was organized some months ago and already is rendering good service to the lumbermen of the province. Mr. R. E. Dickie of Stewiacke, N.S. is President and Mr. I. J. Soy of Amherst, N.S. is Vice-President. The Secretary pro tem is Mr. E. A. Saunders of Halifax. There are some 400 lumbermen in Nova Scotia and the new membership campaign inaugurated by the officers of the N. S. Lumbermen's Association should bring everyone into the fold. The Canadian Forestry Magazine wishes the new Association the best of fortune.

THE PERIL OF CIGARETTES.

A FOREST ranger in Northern Minnesota, desiring authentic information of the approximate number of fires that will kindle from cigarettes, walked one mile throwing lighted cigarettes along the trail. Twenty cigarettes were used in this manner and upon his return he found that 19 of them had started small fires. This experiment was tried in the dry peat country. When peat is dry it kindles very easily.



AS OTHERS SEE IT



THE VANDAL SPIRIT!

(An editorial in the Saturday Evening Post)

SUNDAY in the country, if one lives within walking or easy motoring distance of the city, is not a day of peace and rest. On the contrary, it is a day of brawl and battle.

On Sunday one dare not leave one's farm or country place unwatched and unprotected for a moment. The whole countryside is aswarm with Nature lovers from the near-by city. First come the makers of forbidden beverages, trooping across fields and lawns, picking the once despised dandelion and anything else that happens to be loose; then the happy motorists in long procession, embowering their cars in the spoil of orchards, woodlands and wayside shrubberies. If there are no flowers near the road these free and easy visitors will penetrate one's garden and break off the blooming branches of the rhododendrons or lilacs or whatever other bush happens to engage their fancy. With trowel and spade the woods are looted and sometimes, if it looks safe, an unwatched garden. Following come shy maidens, in twos and threes, daintily pulling up the woodland flowers by the roots—arbutus, azalea and a hundred little blossoms that wilt in the hand that picks them; and everywhere are bands of half-grown hoodlums helping in the spoiling of the countryside.

The bolder spirits are usually those who come in motors. They can destroy more, steal more and get away faster than the man on foot. They meet remonstrance with effrontery and resent the notion that a hick has any rights of property and privacy that they are bound to respect. The flowers, the shrubs, the orchards, and occasionally the unguarded gardens are their prey. They camp beside the woodland brook or the shaded spring, hack the trees, trample the flowers, and turn the spot into a garbage hole with their greasy papers, tin cans, bottles and refuse food. Then up and away to the snug flat in the big town, throwing out the wilted flowers as they go.

It takes a brave man to live in a countryside that is accessible to the city, and a hopeful one to beautify the roadside with shrubs and flowers. For these city vandals see beauty only to destroy it. Sometimes this is due to ignorance, sometimes to thoughtlessness, sometimes to wantonness. But none are so quick to resent an intrusion on their own rights of privacy and property as these same petty highwaymen and women.

Sunday night in the country—that is the time of rest; for then the Goths, the Visigoths, the Vandals and the Huns have gone back to town and a few days of comparative immunity from their raids are ahead. The highwaymen will be tied to the office until Saturday noon and the women will be busy making hooch from their dandelions. The countryman may plow and reap, trim up the broken shrubs, prune back the torn branches in the orchard and clear up the mess and litter in the woodland against the return of the Nature lovers at the next week-end.

The country would gladly share with the city, welcome the flat dweller to its woodlands, if so many of those who seek its roadsides did not defile and destroy their beauty. Until the manners and morals of this element improve, the countryman will view all trespassers, the just and the unjust alike, with suspicion, and delegate the pleasure of welcoming them to his bulldog.

THE FIGHT TO SAVE OUR FORESTS.

(Editorial in Pulp and Paper Magazine of Canada.)

WE sometimes wonder whether it is worth while to keep on reiterating warnings of fire in the woods but each time such a thought enters our mind we realize that Canadian industry is doomed if the forest disappears and so the fight goes on as long as there is a tree to protect.

The public must be made to see the danger in pipe ashes, cigarette butts, cigar stubs, matches, and camp fires, that are not completely and absolutely dead out. The fact that lightning and spontaneous combustion start an occasional fire is no excuse for the starting of any fire through human carelessness. If the ratio were ten to one or a hundred to one, that one fire set by man would be just as much a crime. Newspapers, magazines, organizations, and individuals with the good of Canada at heart are doing their best to reduce the sum total of human carelessness; may their efforts be blessed.

Last week the Pulp and Paper Magazine published a rousing editorial that appeared in the Canadian Forestry Magazine. It was none too strong. Canada has never faced a fire season with such an enormous hazard as the present summer. For the past two or three years and particularly the last year, the spruce bud worm has been traveling through our soft wood forests killing fir and spruce by the thousand. These dead trees are now largely pierced by wood-boring insects and grubs and winds have blown down many of them so as to make the forest floor a mass of debris which is not only the worst kind of fire trap but a most efficient obstacle to the progress of fire fighters.

So we say that when fire starts in such a place Hell is none too strong a term to describe it, none too strong an expression of condemnation and disgust for the carelessness of the individual who is responsible for it.

The remedy: Enforce the law, and keep the careless mental defectives out of the woods.

THE FOREST FIGHTS FOR THE PRAIRIE

by The State Forester of Kansas

“Since the prairie fires have been restricted and the fuel need of the settler supplied by the coal miner and freight car, the area of natural timber has increased at a most gratifying rate. Thirty years ago the Arkansas, west of Hutchinson, and its tributaries from the south, were practically devoid of trees. Today there are many acres that are under forest conditions and the forest area is increasing. Most of this growth is cottonwood and willow, species that produce large quantities of seed that is blown long distances and germinates very soon after ripening. Species that produce heavier seeds are not so readily distributed, and the time required for their distribution over a given area is very much greater. With Nature's slow methods centuries of the most favorable conditions would probably be required to extend the area of heavy-seeded species, but as the forest area increases the forest inhabitants—birds, squirrels and other animals—increase in numbers, and these agents of distribution help, very slowly but surely, in the introduction of other species. The increase of forest area in the past has been confined for the most part to the alluvial soils of the valleys; soils easily changed from prairie to forest because the soil is easily penetrated by roots and well adapted to nearly any form of plant life.”

TREES ON THE FARM

from "Farm News Letter" issued by
The Canadian Bank of Commerce

If your home is situated on the open prairie, have you ever thought how much more attractive your house and barns would look if they had shade trees growing near them, setting them off and giving them a more finished and distinctive appearance, just as a frame enhances the beauty of a picture? What a pleasant place it would be when the trees had grown tall and thick enough to form a windbreak and your farmstead no longer stood forlorn, a target for every wind that blows! How much would the value added by this desirable and easily acquired improvement mean to you in dollars and cents?

Doubtless many prairie farmers hesitate to plant trees, not because they do not desire them, but because they are not sure what varieties are best suited to their particular district nor what is the correct method of cultivation. It is true that failure to plant the right variety and to give the proper care has been a frequent source of discouragement, but the means of overcoming such difficulties are now placed easily and at little cost within reach of all, thanks to the efforts of the Forestry Branch of the Department of the Interior. That many have availed themselves of the privileges open to them is apparent from a recent announcement by the Department that within the last twenty years the Forest Nursery Station at Indian Head, Saskatchewan, has distributed over sixty million seedlings and cuttings to forty thousand farmers in the West. The project is now being taken up enthusiastically in school districts, 150 of these in Saskatchewan alone having announced their intention to plant trees this year! With so much being done by public and private enterprise to foster the planting of trees on the prairie the time should not be far distant when the traveller across its vast expanse will find the sturdy faith, which those who dwell there rightly have in their country, expressed more generally in cheerful home surroundings and not hidden in habitations which look bleak and uninviting because they are destitute of other vegetation than that grown for profit.

As a matter of fact, however, it is also profitable to grow trees. Recognized authorities tell us that shelter belts of trees are a substantial aid in preventing soil drifting which robs the fields in some districts of their fertile top soil, and that by presenting a barrier to the hot, drying, summer winds, they enable the soil to retain moisture which would otherwise be lost by evaporation. They assert that crops so sheltered more than compensate the farmer for the time and trouble spent in this protective work by appreciably increased yields. In the winter, also the shelter afforded by efficient windbreaks near the corral or cattle shed adds considerably to the well-being of the stock.

Apart from their profitableness, there is another very vital aspect of tree planting which it would be well not to overlook. By breaking the deadly sameness of the landscape and investing the farm with a more comfortable and homelike appearance, trees exert an influence of inestimable value on the mind and spirits of the owner, even though he may be unconscious of it. The depression arising from the life of comparative isolation, which our large farms impose and which many who have come West from more thickly populated centres find so trying, can be lessened in large measure by the presence of trees and flowers and the birds for which they provide nesting

places. There is a satisfying sense of companionship from having trees near the home; they help to mark the changes in the seasons and so break the year's monotony; they grow older and bigger with the children, whose happiest play hours are spent beneath them, and their leafy foliage ministers to our desire for cool, refreshing shade in the heat of summer. Even where the farm is merely serving as a temporary home, and the occupant may not himself reap the full benefit of the trees he plants, let him not withhold his labour.

"He that planteth a tree is a servant of God,
He provideth a kindness for many generations,
And faces that he hath not seen shall bless him."
When Henry Van Dyke wrote the above lines, he indicated one of the finest ways in which to express goodwill toward one's fellow men.

GIANT POPLAR IN NOVA SCOTIA



We are indebted to Mr. F. C. Whitman, Annapolis Royal, Nova Scotia, for the above picture of a giant poplar tree recently cut at Le-quille. It measured 5 ft. 6 in in diameter and was reputed to be 120 years old.

An Easy Road to Ready Money

Mrs. A. . . . took over the work as membership organizer for the Canadian Forestry Association in a British Columbia town and **AVERAGED EIGHT DOLLARS A DAY** for just four hours work. It was a dignified and pleasant occupation and her bank account has continued to grow surprisingly.

Mr. G. M. . . . in a small Quebec town organized a membership group within a few blocks of his home. He found it comparatively easy to get his fellow citizens interested. At the end of the second day **HIS PROFITS WERE THIRTEEN DOLLARS**.

If you are open to a business proposition that will pay good money for all or part of your time, write to the Membership Department, Canadian Forestry Association, Jackson Bldg., Ottawa.

Forest to Newspaper in One Week

ONE week a stately growing tree flourishing in the primal fastness of some Canadian forest; the next, a newspaper, quickly perused and carelessly thrown away by readers in United States cities. This is the brief inner history of a great industry and the record of Canadian enterprise and transportation.

The "Chicago Tribune" faced a sudden newsprint shortage which demanded immediate remedying if their readers were to receive their newspapers as usual. A serious situation for any newspaper. Canada was the source of its newsprint supply and an S. O. S. was sent to the Abitibi Company at Iroquois Falls, in Northern Ontario.

The paper company passed the S. O. S. on to the Canadian Pacific Railway at North Bay and, as soon as they could be collected, forty cars were despatched over the Temiskaming and Northern Ontario Railway through two hundred miles of forest and plain to the mill. Their arrival was eagerly awaited and in record time the forty cars were loaded with a thousand tons of newsprint, a goodly cargo but merely two days output of the giant plant. Away to the border thundered seventy thousand dollars worth of embryo newspapers. This was at five p.m. Friday, March 10th.

A fresh engine was awaiting the special train when it reached the Canadian Pacific lines at North Bay and it continued on its way taking precedence over all but passenger trains and making, in fact, fast passenger time. Latterly it changed to the lines of the Michigan Central and arrived in Chicago on Sunday afternoon March 12th, having accomplished the trip of 1,059 miles in fifty hours. On Monday afternoon newsboys were carrying a part of the shipment about Chicago streets in the shape of newspapers. Readers in the great city received their papers just as usual, little realizing how close they had been to having the publication interrupted, and without a thought they were thrown away.

The wood which was pulped and latterly became the paper to constitute this expeditious shipment, had come to the mill but a few days previous to the urgent demand so that a spruce or pine standing in stately dignity in a Canadian forest this week, may before the next elapses, be in the wastepaper baskets of a dozen cities of the United States.

It has become a great industry in Canada, the manufacture of newsprint, accounting for a production of about 2,500 tons every day, of which the forests of Northern Ontario supply half. Taking a strip a yard wide, about the size of an opened newspaper, Canadian newsprint mills each day encircle the globe with their product.

"Mother Goose Lends a Hand"

(Otto L. Anderson)

Old King Coal,
Was a merry old soul,
But enemies he had many,
For the people burned wood,
Whenever they could,
And saved themselves many a penny
Now Old King Coal,
Has them under control,
And he wears a large smile on his brow,
For the god that kills,
Has robbed our hills,
And the trees do not grow there now.

A Gigantic Cactus Plant on the Great Arizona Desert.



Photo from the Gilliams Service. New York City

Cactus plants often grow to considerable height in this region but old residents of the district say that this plant is the very tallest one they ever saw or heard of. It's certainly some plant, being as high as many good sized trees in other parts of the world and much above the ordinary desert ones. Just as a matter of comparison note the difference in height between the men at its base and its own towering self. It's located near Yuma.

FISHERMEN AND CAMPERS—Quick Relief from the many minor accidents and bruises you receive on your vacation is afforded by **Minard's Liniment**. Put a bottle in your outfit.

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

FOREST CONSERVATIONISTS

Canadians from Coast to Coast Endorse C.F.A.'s Educational Work.

MY VIEW OF FOREST CONSERVATION

By Hon. W. E. Foster, Premier of New Brunswick

TO MY MIND, forest conservation is one of the most important questions of the day. We are passing through a period of development, when the products of our forests are required in ever increasing quantities. In New Brunswick we are especially interested in the protection and management of our forests with which we are so richly endowed. The great work of the Canadian Forestry Association in setting forth the necessity of forest conservation before so many people is highly commendable. We trust the time is not far distant when man-caused forest fires, which have caused so much destruction in the past, will be largely eliminated.

A CALL TO ACTION

By Hon. T. D. Pattullo, Minister of Lands, British Columbia

OVER eighty per cent. of the productive area of the Province of British Columbia is suitable for forest crop only. It is of paramount importance that this vast domain shall remain permanently productive. A mere expression of a desirable end, however, is not sufficient. Definite action is necessary. Only by a co-operate and co-ordinate effort of the Government, the Timber industry, and the people as a whole will results be achieved and Forest Conservation assured.

National Advertisers Please Note

General Motors of Canada, Ltd.,
Oshawa, Ont.

Publication Manager,
Canadian Forestry Magazine,
Ottawa, Ont.

Dear Sir,—

Recent issues of your magazine show a wonderful improvement, so much so that we have decided to use your columns to advertise McLaughlin-Buick and will possibly use it for our other lines when our next schedules are announced.

If we can possibly have copy on our new models prepared by the time you go to press we want to be represented in your AUGUST issue.

Wishing you the success which your splendid medium deserves, we are,

Yours truly,

M. D. BERGEY,
Advertising Counsel.

The Only Tree in the World Containing Spring of Water.



Photo from The Gilliams Service, New York City

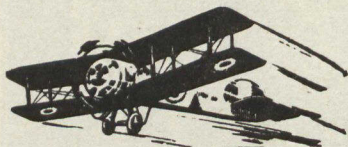
On a farm in the suburbs of Berne, Switzerland, there is a tree from which springs a constant flow of water. Curiously enough this spring did not develop until a year or two ago after the tree had attained considerable size and age. What caused the spring to find an outlet through the trunk of this tree is a mystery, but the water is said to be cool and delicious and fully supplies all the needs of the farm on which the tree is located.

STEADY PROGRESS.—The Ottawa Printing Co. Ltd.,

which prints this publication, has a complete equipment and is capable of producing high class commercial, catalogue and magazine work.

3 and 5 Mosgrove Street Telephone Rideau 295
OTTAWA, ONT.

AERONAUTICAL SECTION



A department devoted particularly to the application of aerial methods in forest conservation and generally to the promotion of sane civil aviation in Canada.

Seaplanes Again Demonstrate Their Practical Utility

By GEORGE A. MACKIE

UP to the 14th of July, the planes of the Laurentide Air Service Limited, under contract to pulp and paper and lumber corporations, limit holders, and the Ontario Government, had completed over 250 flying hours. No accident of any description occurred, nor has any serious delay in operation taken place.

Of this total, something like seventy-five hours had been spent on fire patrol, one hundred hours on forest reconnaissance, twenty-five hours on photography and the balance on the placing of machines at outlying stations and sundry other flying.

The "Viking" has been operating principally in the vicinity of Moose Factory and has been North past Prince Rupert House. The H. S. 2. L. G-CADU has been operating in the Pierre Lake District, East of Remi Lake to the Quebec border. The work there has been practically all for the Ontario Government, but also includes occasional flights for the Temiskaming & Northern Ontario Railway Commission and one or two lumber concerns whose enthusiasm for air service is now very great.

Rapid Delivery

The Lac La Tortue work in Quebec has been very largely fire patrol, some of the outstanding features of which you have already been given. Capt. Wilshire, Superintendent of Lac La Tortue Station left on July 24th for an extended trip to Gaspé and Clarke City, the work involved being very largely forestry survey from the air

on behalf of several interests. One particularly interesting operation took place on July 20th. Mr. Thomas Hall, President of Laurentide Air Service, was a member of the Board of Survey upon the tug "Spray," which was recently sunk in collision near Sorel. Mr. Hall proceeded to Berthierville and there found that there was no boat to transport him to Sorel for some hours. He thereupon telephoned the Station at Lac La Tortue, when a machine left immediately, transporting him to Sorel in twenty minutes. The machine waited for two hours while his work was completed and then took Capt. Hall, Capt. McMaster and Capt. Isles, three of the members of the Board of Survey, to Montreal, landing at Lachine at the plant of the Montreal Boat Builders, Ltd., in one hour and five minutes after the take-off from Sorel. The machine then returned to Lac La Tortue, covering the distance of 114 miles in one hour and thirty-five minutes.

Night Work Feasible

"I have been able during the past week to spend some time at Lac La Tortue," writes a correspondent of the Canadian Forestry Magazine, "and put in a little bit of flying which has been very interesting. Yesterday afternoon we took off at Lac La Tortue and proceeded to a lake some little distance North-West of here to land supplies. Just before our return a canoe came in with a camper and his guide and they explained that it had taken them some three days to proceed from Grand-Mère. Our trip took one hour. We

have been flying as late as 9.15 at night and as early as day-break so that you see the aeroplane is not after all a toy which can only be used during a few bright hours. If there was any call for it we could do a certain amount of this work by night, inasmuch as flying along the river the reflection of the water acts as an excellent guide, particularly if there is any moonlight."

GERMANY'S FOREST WEALTH

(Extract from Timber Trades Journal)

LORD Rothermere shows how Germany, by her untapped sources of wealth, can provide us with raw materials.

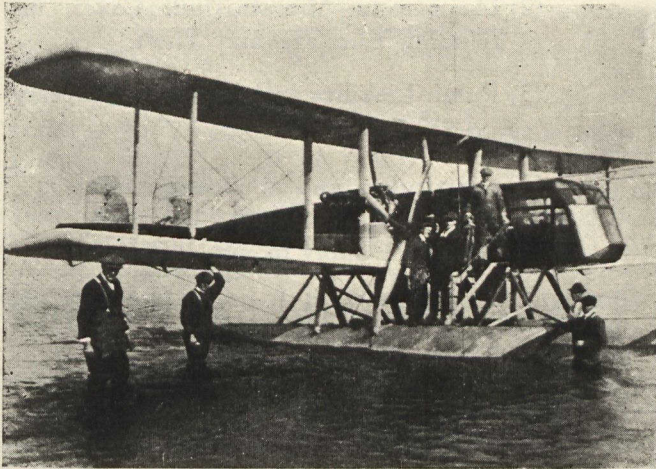
He states that to-day Germany could pay Great Britain in kind the equivalent of at least £35,000,000 annually without impairing her own economic welfare. In all the discussions upon German reparations it is never pointed out that Germany possesses an almost inexhaustible store of wealth in her forests. One-fourth of the old German Empire is under wood. No other country in Europe except Russia and Sweden possesses so high a proportion of forest lands.

Throughout the war Germany cut comparatively little timber in her own territories. She razed the woods of Belgium and of the invaded regions of France. She made great inroads into the forests of Poland and Russia, and eventually established enormous lumber camps, with railways and machinery complete, in the direction of Brest-Litovsk.

Spanish River Company Enters Aviation Field

Purchased New Dayton-Wright Seaplane for photographic and reconnaissance work.

THE Dayton Wright Company early appreciated the fact that one of the most practical and profitable uses of the aeroplane lay in its many advantages as a means of making accurate photographs and maps quickly and at a minimum amount of expense. It was at once re-



A new seaplane model purchased by the Spanish River Pulp & Paper Mills at Sault Ste. Marie, Ontario, from the Dayton Wright Company. It is known as "Dayton Wright FP-2 seaplane."

alized that the topographical features of the great forest districts of Canada were such as to make surveying and mapping by land, slow and expensive, and it was also realized that the many bodies of water scattered throughout the country made it ideal terrain over which to operate seaplanes. The Engineering Department of this Company thereupon set about the design of a plane specially for this purpose and which would be ideally adapted for aerial photographic work and timber spotting in the Canadian forest district. It was first necessary to study the actual conditions, and, with this end in view, a pilot from this Company spent an entire season carrying on work of this nature in Canada. With the practical results obtained from this experience at hand, the Engineering Department developed the Dayton Wright Model FP-2.

It was of course necessary to build a water ship, and the float type was selected as more desirable than the boat type, because of its greater ability to manoeuvre quickly in tight places. In order to minimize the danger of forced landing from motor trouble, the plane has been equipped with two Liberty engines, which give a sufficient normal excess of power, that level flight can be maintained with one engine, should the other, for any reason, become incapacitated. Two motors were also found desirable, inasmuch as a sufficient amount of power was necessary to enable the ship to get off in as short a space as possible. In its test flights, the FP-2 took off in the extraordinarily quick time of twenty-two seconds.

In order to successfully carry out observation work and photography, the occupants must have unrestricted vision to the front, to the sides, and below. This has been amply accomplished in the FP-2 by placing them well

First Hand Information

is always valuable and often essential. Until the introduction of the Aeroplane into Forestry operations executives were in most cases denied access to their limits by reason of the time required and the hardships involved in travel by ground routes.

Maps—no matter how accurate or complete—cannot convey the vivid impression of a personal inspection. Such a reconnaissance is now within the power of every forest executive no matter how distant his limits may be from rail or road. The aeroplane can cover ground in as many hours as ground methods require weeks.

The following extracts are from a letter written by a practical woods executive after his first flight:

"None of us had ever been up in the air before.... but with the careful piloting of the machine we soon felt at home.....we had an excellent view of the country that was covered...could very easily see what parts were covered with Black Spruce swamps, high ground with large spruce and poplar mixed, and Jack pine could also be easily separated from the others.... Burns, of course, were picked out miles away.

....The original cost of the trip may seem high, but when taken into consideration that it is seen with your own eyes, in practically no time, and comparing it with the cost and inaccuracy of cruisers' reports, it is money well spent.

....Should we at any time in the future have new country to look at, we will not fail to bid for your services....."

Laurentide Air Service, Limited, have many such satisfied clients. Two main operating stations are so situated as to serve effectively practically any part of Quebec and Ontario. Inquiries involve no obligation.

Head Office:

Lake of the Woods Building, Montreal.

Air Stations:

Lac à La Tortue,
P. Q.

Remi Lake,
Ont.

If Forests are to be Saved, Aeroplanes must Play Big Part

A business man's conclusions following a personal investigation of the value of flying.

By EDWARD BECK, Manager of the Canadian Pulp and Paper Association.

(EDITOR'S NOTE:—Mr. Beck recently made an aerial reconnoitre of portions of the St. Maurice Valley, Quebec, in a Curtis flying boat under the guidance of Forester-Photographer Townsend, of the Laurentide Company, Limited. The seaplane, driven by Pilot Wilshire, is owned by the Laurentide Air Services and employed during the summer in patrolling the St. Maurice Valley to detect fires and to make photographic surveys of the Laurentide Company's timber resources. The trip took in the entire region between Lac La Tortue and Lake Clear, the day being especially advantageous from a flying standpoint.)

COMPETENT authorities estimate that 5 to 10 per cent. of the forests in the St. Maurice Valley have been damaged by fire this season, which has been one of the most disastrous ever experienced in that region."

"While the statement as to the size of the fire-swept area does not mean that 5 to 10% of the standing timber in the valley has been destroyed, since there is usually a good deal of timber that can be salvaged after every fire, the actual loss is still very considerable, while the potential loss—the destruction of young forests first getting their stride—is still more serious."

"The fires, are not confined to the limits of any single company. Practically all those owning or operating limits in the St. Maurice Valley are among the sufferers, some to a greater extent than others. The greatest damage seems to have been done in the Chinne Lakes and Vermillon River districts, the newly-burnt areas in these districts covering thousands of acres in extent and presenting a bleak and gaunt appearance to the observer from the air. These are not the only places visited by fire this summer, however, as the Upper St. Maurice has been the scene of more than a score of disastrous burnings.

"An official statement given out at Quebec, places the monetary value of the timber destroyed by fire already this year at something like six millions of dollars, being the equivalent of the growth of 600,000 acres. Even these impressive figures fail to bring home the full extent of the disaster, which can only be appreciated by those in intimate touch with the situation or who are responsible for the carrying on of the industries whose existence depends upon a continuous and abundant supply of wood. The recent rainy season has

brought a temporary respite from the scourge of fire, but no one knows how soon this may give way to another period of drought and a new time of peril.

Protection Inadequate

"Opinions differ as to the origin of this year's fires, but everybody agrees that the present protective means are altogether inadequate. The railways and the settlers, according to those nearest the scene, have started fewer fires this year than formerly. Irresponsible hunters and fishermen are held to blame in many cases, while deliberate incendiarism is also charged in some.

"The newly promulgated regulations of the Department of Lands and Forests are expected to be of benefit in preventing fires if conscientiously enforced during the hazardous seasons, but practical foresters do not look upon them as at all sufficient.

"Experience has brought the conclusion that the only way to safeguard the Quebec forests from destruction by fire is an adequate system of aerial surveillance supported by a sufficient number of fire rangers' camps situated at proper intervals in the woods.

"The aerial observer has immense advantages over all others. He can detect a fire at a range of from fifty to sixty miles and can reach it in as many minutes as it would take hours, if not days, by any other mode of conveyance. He has the advantage of being able to circumnavigate the threatened area, discovering instantaneously the fire's direction and locating its most vulnerable approach. Fire rangers on foot or in canoes can see but a small section of a fire at one time. They experience great difficulty in learning its direction. Frequently their efforts, undirected, are rendered futile

on this account. Absence of trails hampers their ingress and egress and renders their progress slow and ineffectual, so that as a rule, the rangers' crew approaches its task half-heartedly, overwhelmed by the obstacles opposed to its work.

"In co-operation with fire-fighting camps established at distances of a hundred miles or so apart, manned with crews of from six to eight men, available at any time to respond to an alarm equipped with suitable fire-fighting apparatus, a sea-plane, such as those now in use, (although better machines for the purpose are available), could spot a fire, fly to the nearest camp, return with the men and put them at work before the blaze got well under way, it is claimed. Many fires which might otherwise prove destructive could thus be extinguished in their incipient stages, while others could be kept within relatively restricted areas.

Camps Self-Paying

"These camps would not be necessary except during the particularly hazardous seasons which occur in the months of May, June and September. Operated in connection with seaplanes they would, in the opinion of those best fitted to judge, reduce the fire hazards in the Quebec forests to a minimum and pay for their cost many times over every season. In the long run, it is claimed, they would be less expensive even than an adequate system of observation towers and telephones, which are impracticable so far as the St. Maurice Valley is concerned, and infinitely more effective. They offer, in fact, the only real solution of the forest problem as it exists in this province.

"The two 'planes in use in the district this summer have given a good account of themselves, having de-

tected and reported numerous fires in time to bring fire-fighters to the scene. They have also been employed in carrying in supplies to the men when other means were not available. Their usefulness would be increased immeasurably, however, by the maintenance of properly manned fire stations in the woods as already described.

"The limit holders in the district and members of the St. Maurice Fire Protective Association have already had the subject up with the Government and the question is being very carefully enquired into. There is some reluctance upon the part of some of the limit-holders to increase the outlay they are already being put to for fire protection. There is also a serious question involved over whether the Government or private interests should take the initiative and assume the responsibility for establishing and operating the system on an adequate and proper basis. No serious doubt seems to be entertained, however, as to its effectiveness. Nor is there much question that if things are allowed to go on as they have been in the past, Quebec, like other once equally well-favored wooded states, is eventually going to find itself practically de-

nuded of merchantable timber, and that the industries dependent upon a constant supply of wood, which now contribute so large a share to the prosperity of the province, will have to do what similar industries have had to do elsewhere—go out of business. If anyone is at all doubtful about this, an aerial observation of just what the eight weeks' dry season this spring has done to the St. Maurice Valley will prove absolutely convincing.

"In my opinion, further procrastination upon the part of the provincial authorities and the limit-holders over this problem and their failure to get together on a programme of practical fire protection will be most short-sighted and little short of criminal. Last year the Department of Lands and Forests took in over four millions of revenue from timber dues and hydraulic charges in this province. It could well afford to spend one-half that amount, although no such sum would be necessary, in providing adequate protection from what, up to date has proven the province's one great revenue producing natural asset. Such an expenditure would be justifiable even if looked upon merely as a fire insurance premium."



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A Canadian Cherub With Real Wings

Dainty Lorraine Ericson, in her less than four year's existence has flown far.

ALTHOUGH it is not generally known by Canadians, this country is the habitat of the world's youngest aviatrix. This statement is made with some degree of assurance although data from all parts of the civilized world are not yet available. If the statement is not correct, we will welcome correction by any recognized authority. Our candidate for the honor is Miss Lorraine Ericson, the dainty little daughter of Mr. Frithiof Ericson of Toronto, Canada's well-known pioneer in the aeronautical field. Little Miss Lorraine, whose picture in flying togs appears herewith, is at present something over three years and eight months old. At that age she has a record of actual flying time in the neighborhood of 4,000 miles. Her flying career, needless to say, started when she was very much younger than she is now, her first flight being made at the advanced age of nineteen months, when due to a sudden illness while playing with buttons, her mother believed she had swallowed one and rushed her by air route to the nearest doctor three miles away. No button was discovered in the little interior as the pain was of more ordinary character. but the passion for flying developed on this occasion has continued to thrive until at the present time Lorraine is very much of an aviatrix. Lorraine has just returned with her mother from California after spending the Winter there and since

her return has developed a sideline in exciting sports. She has taken to motor boating with the same enthusiasm as marked her flying fancy and her father has specially designed a baby motor boat which she handles herself with great dexterity.

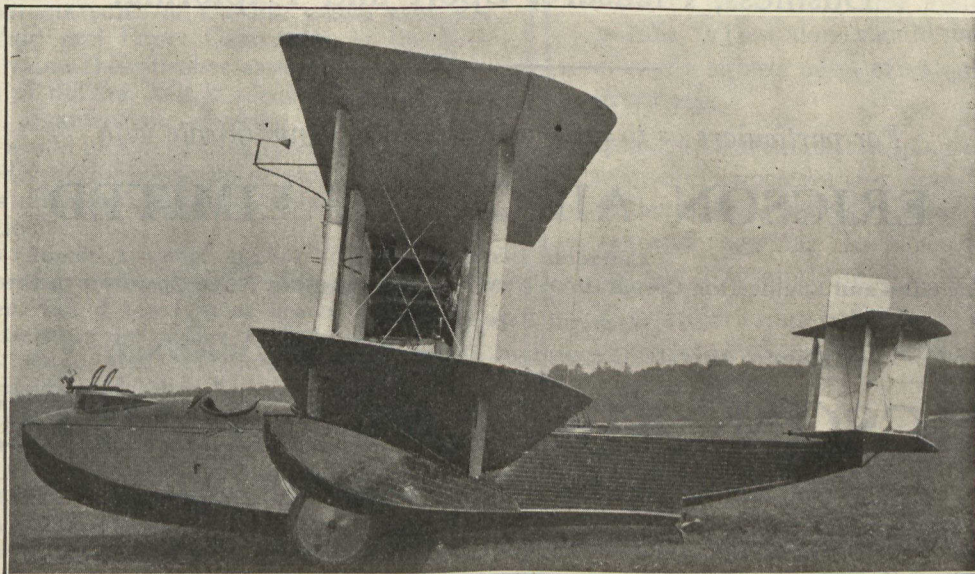


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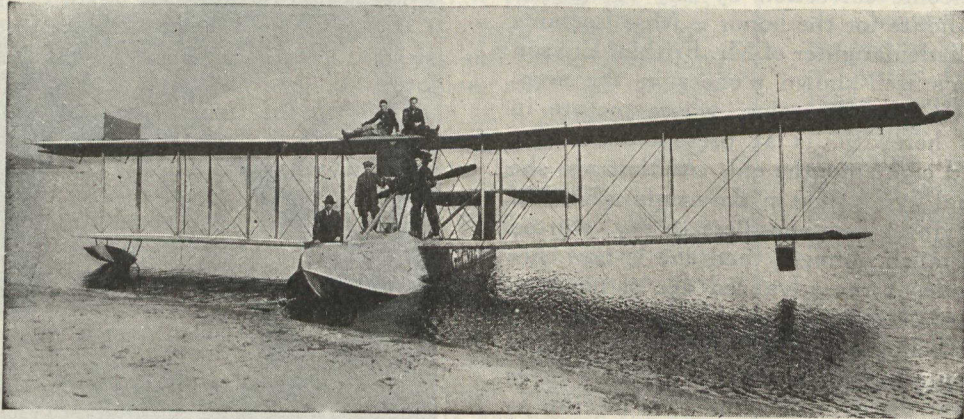
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Some New Methods Required for Fighting Forest Fires

By R. S. GRIFFITH, Canadian Representative
Vickers Ltd., London, England

I HAVE READ with deep interest the articles which have appeared from time to time in your valued publication with regard to forest fire fighting and protection. I understand that through the efforts of the Canadian Forestry Association the leading papers in Canada have been endeavouring in their editorials to draw the attention of the people of Canada to the deplorable losses which they have suffered during the last few weeks from forest fires.

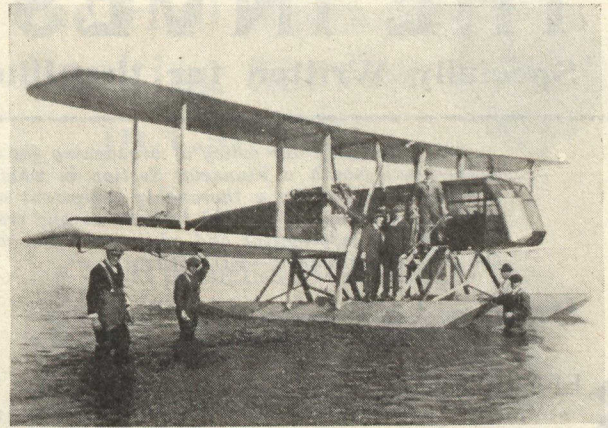
My information is, however, that if the number of rangers available today was quadrupled we should be no further ahead in our efforts to keep down or eliminate forest fires. I believe that by a co-ordination of aeroplanes, radio telephone and portable forest fire pumps, that within a few years, the large forest fires will be things of the past. We have been given the following instance in which rangers needed supplementing: In one of the recent fires in Quebec, fire fighters sent back reports to the main station that they had succeeded in controlling a large fire. This report was accepted. A few days afterwards an aeroplane was sent out to examine the situation and it was then found that the fire had spread over a range of hills and had developed over a tremendous area. This, of course, was not due to any fault of the fire fighters, but owing to the smoke haze they were unable to see what was happening at some distance from them. In this case the aeroplane was able to leave four men on the spot with their provisions and made several return trips loaded in a like manner, the return journey in each case taking forty minutes. The same trip covered in the ordinary way by canoe would take well over a day.

With the aeroplanes the rangers can be supplied with provisions and other necessaries, from time to time, and information can be given them regarding the general direction and characteristics of the fire which they are fighting. The Pulp and Paper Companies in the Province of Quebec value their timber assets at many hundreds of millions of dollars, and it seems to me that an efficient aircraft organization, working in conjunction with the rangers, would be a very cheap form of insurance. It is perhaps hardly necessary to point out that the way to success in this direction depends absolutely upon the ground organization.

In regard to radios; it would appear that a central receiving and sending station, with a range of approximately 250 miles, would meet most needs. The aeroplane would also be equipped with a sending and receiving apparatus which would also have a long range. The rangers on the ground could then be supplied with small portable receiving and sending sets having a range of, say, 45 miles. With this equipment I feel that the rangers would be able to attack a forest fire in a most aggressive manner, and they would have exact information, from time to time, as to the result of their efforts and the general movement of the fire.

The great advantage, however, that would accrue from the use of aeroplanes would be that fires would be located before they had reached any considerable magnitude and operations could be immediately carried out to locate and subdue the conflagration.

I put forward these proposals with a certain amount of diffidence and would like to have the opinion of your readers on the points raised herein.



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THAT is what is being done by the Spanish River Pulp & Paper Mills, Limited. They are using a Dayton Wright seaplane to map 1,000 square miles of their timber leaseholds. They know that the wings of the airplane and the eye of the camera can give them the facts a hundred times quicker than a whole army of timber cruisers could.

This new seaplane will also be used for a fire patrol. Thus fires can be detected and reported days in advance, when compared with the usual hit or miss system of human patrols. That alone should mean the saving of many square miles of valuable pulp wood every year.

Quick and accurate mapping of large areas; frequent inspection for forest fires; easily made timber surveys—these are the advantages accruing to the companies who use the Dayton Wright Forest Air Service.

Your inquiries are welcome and will be given immediate and careful attention.

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THE INVESTMENT FIELD

Specially Written for the Illustrated Canadian Forestry Magazine

In line with our policy of broadening the scope of The Illustrated Canadian Forestry Magazine, we publish each month a Financial Section in which various phases of the Investment field are reviewed. This Section is written by a thoroughly competent and entirely reliable financial authority who will each month prepare an article of special interest to our readers. Needless to say, the department will be conducted along purely informative and educative lines, without any attempt to influence our readers unduly in their financial undertakings.—EDITOR.

"Instalment" vs. "Marginal" Investing

REFERENCE was made in last issue to the "instalment" plan of investment in desirable securities, in preference to the more or less haphazard plan practiced by so many thousands in Canada of buying on "margin" on a hit-and-miss plan that often is no farther removed from gambling than following the tip of the race track "tout."

The "instalment" plan of purchasing securities differs from the plan of buying on "margin" in two main particulars: (1) it pre-supposes a final purchase outright of the security in place of a limited 10, 15 or 20 per cent. ownership; and (2) it removes from the investor the risk of being wiped out, or meeting with a heavy loss through a sudden depreciation in the current market price of the security.

Ninety per cent. of "Marginal" Men Losers

Any one who has followed the experiences of the "marginal" operators over a period of years, and over an area of hundreds or thousands of individuals, will agree, probably, that at least ninety per cent. lose out in the end. They lose out partly because they have bought without any intelligent opinion, of their own, or of any one else, as to the desirable nature of the "investment." They lose out probably even more, through a temporary or prolonged movement of the general market, or the security itself. The security may drop a few points, and they are afraid

of a further decline and sell out at a loss; or they are unable to make up the difference in the value of the stock when they bought it and the decreased value, and are "sold out" by their broker—at a loss.

Had they had confidence to "hold on", or been able financially to do so, in the majority of cases—except in a prolonged "slump" of the market—they probably would have won out.

Safety for Purchaser

This is where the "instalment" system of investment comes in: once an investment house purchases a security

on the partial payment plan—usually 20 per cent. cash on preferred or common stocks, and 10 per cent. on bonds—the security is preserved for the purchaser, no matter what the drop in the market price. This is one of the obligations assumed, and this is one of the outstanding advantages of the instalment plan: the buyer need not worry about any temporary market movements.

A Pause in Upward Movement

INVESTMENT as well as business circles must await the outlook for the harvest in terms of actual yield, before any definite forward movement appears possible. For the time being it would appear that the bond market had fairly well discounted the improved feeling in world, as well as domestic business conditions, and hence the upward movement in bonds and the higher grades of other securities seems to be arrested temporarily before it starts on another span. Industrially it is probable that the newsprint mills are showing the most rapid recovery from the set-back of 1920-21 and the earlier part of 1922. Indeed the outlook is remarkably bright for production in Canada; so far this year stands well over 30 per cent. in excess of the corresponding period for last year, and is, so far as is known, the only substantial industry that has recovered and is operating well above the peak of inter-war or post-war production. The textile industry is probably next in strength; the steel industry shows a considerable improvement, and in other

directions a definite forward movement is noted. The Western crop is our most important anticipation, and while no new record is possible, a better than average yield in forecast has strongly encouraged the West.

Bank of England Rate at 3%.

The two outstanding world events of the past month—and investment conditions in Canada are intimately associated with world conditions and will continue to be—were the insignificant reaction in financial circles to the threatened collapse of Germany's financial fabric, and the reduction—in the very face of this—of the Bank of England discount rate from 3½ to 3 per cent., as compared with 6 per cent. one year ago. The Federal Reserve Bank rate in the United States still holds at 4 per cent. a measure of caution, but the 3 per cent. rate is at once an evidence of confidence and one further step toward lower prevailing interest rates that will, in due time, produce higher prices in holdings of investment securities.

Cash Down, and Monthly Balances

For those who are not familiar with this system, which is being developed by a number of investment houses, it should be pointed out that on payment of about \$20 on a \$100 par value security, the investment house purchases the bond or stock, and enters it in your name on their

books. The balance is usually payable in 10 to 12 monthly instalments, interest being charged on the balance due each month, as for instance:—

Par value of security.....	\$100	Interest on \$65 for one month.....	6
Market price.....	85	Next payment, Oct. 1.....	6
First payment, Aug. 1.....	20		
Balance due.....	\$65	Balance now due.....	\$53
Next payment, Sept. 1.....	6	Int. on \$59 for one month.....	(and so on)
Balance due.....	\$59		

Offset Interest by Dividends

At the same time if a dividend is paid the amount is credited to the purchaser, and thus the interest charges may be offset to a great extent—entirely if the “yield” on the security exceeds about 6 per cent. Interest charges now run about 7½ per cent. as the banks charge the investment house 6½ per cent. on the amount they borrow to make up the difference between what the client pays in cash and the total cost of the securities purchased, while the firm charges 7½ per cent. interest, a “spread” of 1 per cent. As the client completes his payments of course the interest charges decline,—as in the case of a mortgage—and soon the dividend exceeds the interest.

The investment house agrees to dispose of the security at market value any time the client desires, and he is credited with the proceeds of the sale. There would be the usual “brokerage” charge of 25 cents a share.

If a client is unable to complete his periodic payments he does not lose what he has paid in to date: this is credited to him and all will be refunded provided the proceeds of the sale of the security are equal to its cost price. If it cost \$85 and sells for \$95 the “profit” of \$10 goes to the client.

Lower First Payment on Bonds

Where a bond is purchased the investment house is willing to accept about \$10 on a \$100 purchase as an initial payment, in place of about \$20, as the fluctuations in bonds are less than in preferred or common stocks.

“Marginal” operations are in the main speculative; while “instalment” buying is more in the nature of an “investment” transaction. “Marginal” offers far greater opportunities for profit, and equally so for losses; the “instalment” plan is the safer, for the average investor.

Restrictions in “Instalment” Buying

This is the case so far as the “method” is concerned, but there is another aspect even stronger for the investor in actual practice. Where an investment house co-operates in the “instalment” plan it usually restricts buying to securities that it feels are desirable as an investment, where, a “marginal” transaction in most cases is entered into for the likelihood of being able to make a “turn.” that is a quick profit, not on the interest or dividend payments, but on an anticipated advance in the principal, the capital; the market price of the security. Where the investment house undertakes to protect the purchaser on the instalment plan against a slump on the market, it usually chooses to offer him the more conservative, and less fluctuating types of securities. This is all to his advantage: good dividend payers: stable earners; well tested corporations. In such cases it matters little to the investor whether his C. P. R., or Ogilvie, or Textile, or Penmans, or “Power” declined 10, 20, 30, or even 100 points, as one did: his dividend held on securely, and he could rest content that—except in a business cataclysm—his security, in the upward swing, would gradually increase its “capital” value once more.

There is no purpose here of decrying “marginal” buying on the Canadian stock exchanges. It has its place as will be explained later on,—a very useful place—but fully ninety per cent. of it is not investment buying, and this Department can give little attention to what are speculative investments, and none at all to stock market gambling as such.

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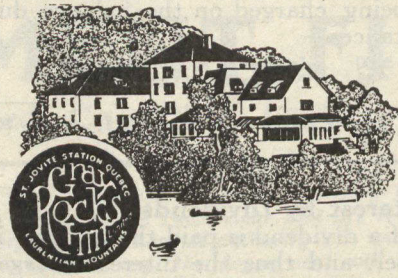
New Brunswick's Forests a Great Magnet to Tourists

By L. S. WEBB, Assistant Provincial Forester

OUR Maritime forests are becoming more and more the resort of tourists recruited both within and beyond our borders. The wonderful climate, the facilities for hunting, fishing and camping on our network of streams and secluded lakes, made accessible through the well appointed railway and steamship connections, the carefully distributed system of well kept roads making the interior accessible by automobile, all are necessary factors in making the forests of the Maritime Provinces the important recreation ground of the East. The guides' associations, the tourist and automobile associations, the various Boards of Trade and Clubs of the towns and cities, the governments, all join in welcoming the tourists and making their stay a pleasant one. "See Canada First," and "See the East First," is being combined into the slogan, "See the Maritime Provinces First" and adopted by the tourist, whether from New England, Upper Canada or Great Britain. To those living within and beyond our borders who have already "seen," "See the Maritime Provinces Again" is more appropriate.

Of course each province expects every fisherman and camper to extinguish his camp fires, his matches and burning tobacco. The fire warden may appear to doubt your ability as a woodsman, as he watches you extinguish your cigarette and asks you how far up you "Boiled." He may even be openly suspicious of you as he takes down your name and asks how long you expect to remain in the woods. Perhaps in his zeal to prevent all forest fire "leaks" and consequent devastation to the forest as a revenue producing and recreation resort, he appears a bit annoying. Perhaps he has in mind the \$250.00 Barnjum prize to be given to the best warden in each province at the end of the season. More likely, he is an old hand at the game of fire prevention and knows that at least fifty per cent. or more of the damage caused to the forests in the Maritime Provinces yearly comes through the carelessness of campers and fishermen. Then the press reported the other day that on May 24th on a certain favored trout stream, visited by over a score of fishermen, one pair allowed their camp fire to spread beyond control and then beat a hasty retreat, leaving the local warden and some of the other fishermen to extinguish the fire. Another press report about a week ago related how a fire which broke out about noon was finally brought under control by evening through the prompt action of the local warden aided by all the citizens round about, but not before a considerable area of forest was destroyed and the beautiful green of the landscape changed to a detestable black. Investigation proved that the fire was caused by a burning cigar thrown from a passing automobile. All of which goes to prove that there are yet enemies of our forests amongst our tourists and fishermen.

Perhaps this is the reason why the fire warden is suspicious of every bit of burning tobacco and every camp fire, large or small, within the forest. For he reasons thus:— If you go into a factory or warehouse do you wait until you see a big sign "No smoking allowed" or are told by a watchman to "put it away" before you extinguish what you are smoking? Does not your respect for those instrumental in building and maintaining that warehouse or factory and a realization of what a fire means make carefulness with fire in such places a habit? Then treat the forest in a like manner, a factory of inflammable material, a warehouse full of countless living things so essential to its value as a recreation resort, and let being-careful-of-fire become a habit in the woods.



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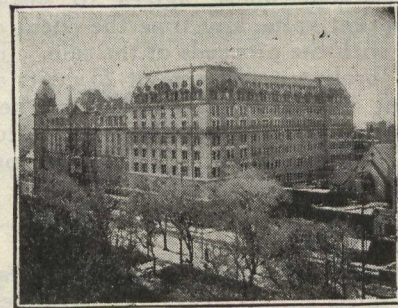
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When to Plant Trees--Spring or Fall?

By WILLIAM SOLOTAROFF

A QUESTION frequently raised in tree-planting is: When is the best time to plant, in the spring or in the fall. The problem will be better understood if some of the points in tree-growth are mentioned. During the summer — the period of growth — there is a constant demand on the roots to supply the top of the tree. Fatal injury would result to the tree if an attempt were made to transplant it at that time, as the leaves would immediately dry. From the time of the falling of the leaves in the autumn to the swelling of the buds in the spring is the period of rest, and it is during that time, in the dormant state, that trees may be safely moved.

Theoretically the best time to transplant trees would be after the leaves have fallen — about the end of October or the beginning of November. The trees would then be ready to resume growth the following spring. Practically, however, the best results are not always obtained in fall planting. Work in the fall is most successful when the following winter is mild and a heavy mulching of manure is placed on the ground at the base of the tree. One of the dangers of fall-planting is the upheaval of the tree by the freezing and the thawing of the ground.

It is seldom that trees planted in the fall make new roots before the ground freezes. In the meantime the evaporation of moisture from the trunk and branches goes on; the roots likewise suffer, so that the tree

is not in so good a state as if it had been allowed to remain in the nursery and transplanted in the latter part of March or early April. At that time it would be perfectly healthy; and, as growth would begin, new roots would start to form. Of course, there is danger in spring-planting of the unfolding leaves making too great a draft on the roots for sap and moisture that is not always supplied by



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rain. Artificial watering is then necessary to carry the tree over the critical period of transplanting.

Experience has shown that trees planted in the fall, if they come up in the spring at all, grow very slowly, unfolding their leaves later than trees of the same stock coming from the same nursery planted in the following spring. While a good deal depends on weather conditions, it may be said that the fall is not a bad season to plant, but the spring is a much better one, provided the trees are planted before the buds begin to swell. Certain trees, which have succulent roots, like the tulip-tree, sweet gum, and magnolias, cannot be transplanted successfully in autumn.

The difficulty in spring planting is that the season is very short. Everybody is rushed, and trees are sometimes not handled so carefully as the longer fall-planting season permits. From the natural consideration, however, of the tree's growth, better success is obtained by careful spring work.

Where One Dollar Saves Two Thousand

HENRY SORGIUS, Manager of the St. Maurice Forest Protective Association, patrolling over 15,000 square miles of Central Quebec, is excellently qualified to give an opinion on any problem of forest protection. Note Mr. Sorgius'

statement on the importance of educational propaganda:

Three Rivers, P. Q.,

July 17th, 1922.

"Every dollar spent in educating the public against forest fires is worth

over \$2,000.00 spent in detecting of fires. This is the only method to obtain real protection and I am saying this after my eleven years in this particular line of work.

"It is through experience that we are apt to know the best means. Look at the results that we have obtained with the settlers, log drivers and railways and this I may say is all due to the education of the public either by posters, lectures, etc. If we want to save our forests we will have to prevent fires and not wait to detect them, when it is too late."

The Canadian Forestry Association utilizes more than twenty channels of hard-hitting propaganda to reduce forest fire losses. "Educational Patrol" is the cheapest and most effective Timber Insurance yet discovered. It is not a cure-all, nor a substitute for a ranger system, by any means. But no ranger system can function effectively unless accompanied by sensible and persistent propaganda.

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DEVELOPMENT AT KOOTENAY

EAST Kootenay, B.C., is going to have a large pulp and paper mill. It is said the project is largely promoted by the Chicago Tribune and other papers. They will take the greater bulk of the newsprint. The company known as the Wigwam Pulp & Paper Co. Limited, will locate at Phillips Bridge, nine miles south of Elko. It will take two years to complete the plant which eventually will cost \$10,000,000 and employ about 1,500 hands. It is said that the industry will be on a larger scale than the Powell River or Ocean Falls projects.

C. D. McNab, of Waldo, B.C., president of the Baker Lumber Co., has secured the contract for supplying the company with pulpwood. He has incorporated a company for the carrying out of his part of the contract, which will be known as the McNab Logging Company, Limited. Chicago interests have thoroughly investigated the pulpwood of the Wigwam Valley and pronounced it of an excellent nature for the manufacture of newsprint, the fibre being longer than found elsewhere in British Columbia, permitting the manufacture of a high grade product. The timber is ideally situated and free from fire hazard. There is said to be sufficient timber available in the Wigwam Valley alone to last for thirty years.

Barnjum Prizes Awarded

"Prizes have been awarded in the \$1,000.00 Prize Essay contest on Practical Forestry offered by F. J. D. Barnjum as follows:

First Prize: \$500.00 to P. Swanson, Timmins, Ontario.

Second Prize: \$250.00 to M. Currie, Grand Mira South, Cape Breton.

Third Prize: \$150.00 to Donald C.

Oxley, Annidale, Queens Co., N.B.

Fourth Prize: \$100.00 to R. M. Brown, Pincher Creek, Alta.

"So many of these essays were of such high order that the judges had a very difficult task in awarding these prizes, but inasmuch as the names and locations were detached from all essays before being submitted to the

judges, the contestants have the assurance that no bias or favoritism entered into their decisions.

"All these prize essays will be published in the press from time to time so that the public may have the benefit of the suggestions and recommendations contained in these valuable contributions to the cause of Forestry.

"The unsuccessful contestants can feel happy in the thought that even if they did not win a prize this time they have contributed to the welfare of their country by the valuable suggestions contained in their essays, and as our forests are our most valuable asset (for without trees civilization could not exist), they are helping to solve Canada's greatest problem.

"The success of this prize offering has been so pronounced that it is my intention to repeat this series of prizes in the immediate future and from time to time, also increasing the amount or value of the same.

"It is important for our government to know that 90 per cent. of these 225 essays which have come from all over Canada, dating all the way from British Columbia to Cape Breton, call for an embargo or heavy export tax on all pulpwood shipped out of the country. Eighty per cent. call for the permit system for all persons entering the woods, such as recently inaugurated in the Province of Quebec, and the same percentage ask for the electrification of all railways, as a means of reducing the fire risk in our forests and also as a means of reducing our heavy railway deficit.

"My sincere thanks and high appreciation are extended to the able judges who have given unstintingly of their time, thought and brains for Canada's good, not only in acting as judges in this prize contest, but in the many other ways in which they have assisted in the important cause of Forestry. All honour to Dr. C. D. Howe, Dean of Faculty of Forestry, University of Toronto; G. C. Piche, Chief of Forest Service of the Province of Quebec; R. H. Campbell, Director of Dominion Forestry Branch, and G. H. Prince, Chief Forester of the Province of New Brunswick.

"The thanks of all Canadians are also due to the press of Canada for the splendid publicity they have given to the cause of Forestry and all good Canadians should support Canadian newspapers and Canadian magazines. A prosperous press means a prosperous country.

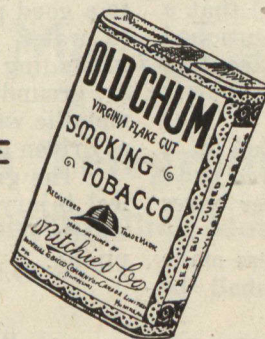
FRANK J. D. BARNJUM.

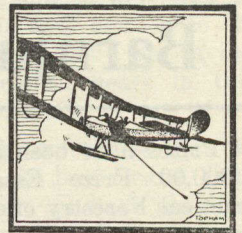
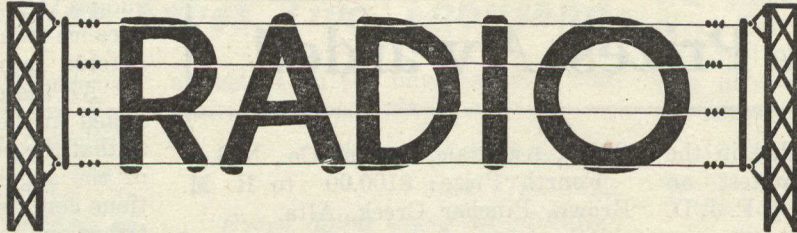


Everybody Smokes

OLD CHUM

CANADA'S FAVORITE
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Installing the Radio Set

By CARLISLE SHANNON

MANY people who would like to enjoy the pleasure of a Radio Receiving Set hesitate on the matter for several reasons. Foremost among them is the fear of lightning. The sooner everyone gets over the idea that lightning will be attracted by an aerial, the better it will be for all concerned. There is no more danger from a properly installed Radio Set than there is from the telephone or electric light wires. Furthermore, statistics show that the majority of lightning discharges occur between two clouds and not between clouds and the ground as is popularly imagined. However, certain precautions should be observed in the installation of a Radio outfit and in the following text will be found the proposed revisions to Rule 86 of the National Electric Code as suggested by the Standing Committee on Signal Systems, Wireless and Lighting at Chicago.

These revisions will doubtless become part of the National Electric Code in 1923 and those contemplating the installation of a Radio Set would do well to heed them.

CORRECTED FINAL REPORT

The following requirements are submitted as proposed revisions of Rule 86 National Electrical Code:

86 Radio Equipment.

Note: These rules do not apply to Radio Equipment installed on ship-board.

In setting up Radio Equipment all wiring pertaining thereto must conform to the general requirements of this Code for the class of work installed and the following additional specifications:

FOR RECEIVING STATIONS ONLY.

Antenna:—

(a). Antennas outside of buildings shall not cross over or under electric light or power wires of any circuit of more than six hundred (600) volts or railway trolley or feeder wires nor shall it be so located that a failure of either antenna or of the above mentioned electric light or power wires can result in a contact between the antenna and such electric light or power wires.

Antennas shall be constructed and installed in a strong and durable manner and shall be so located as to prevent accidental contact with light and power wires by sagging or swinging.

Splices and joints in the antenna span, unless made with approved clamps or splicing devices, shall be soldered.

Antennas installed inside of buildings are not covered by the above specifications.

Lead-in Wires

(b). Lead-in wires shall be of copper, approved copper-clad steel or other approved metal which will not corrode excessively and in no case shall they be smaller than No. 14 B. & S. gage except that approved copper-clad steel not less than No. 17 B. & S. gage may be used.

Lead-in wires on the outside of buildings shall not come nearer than four (4) inches to electric light and power wires unless separated therefrom by a continuous and firmly fixed non-conductor that will maintain permanent separation. The non-conductor shall be in addition to any insulation on the wire.

Lead-in wire shall enter building through a non-combustible, non-absorptive insulating bushing.

Protective Device

(c). Each lead-in wire shall be provided with an approved protective device properly connected and located (inside or outside the building) as near as practicable to the point where the wire enters the building. The protector shall not be placed in the immediate vicinity of easily ignitable stuff, or where exposed to inflammable gases or dust or flyings of combustible materials.

The protective device shall be an approved lightning arrester which will operate at a potential of five hundred (500) volts or less.

The use of an antenna grounding switch is desirable, but does not obviate the necessity for the approved protective device required in this section. The antenna grounding switch if installed shall, in its closed position, form a shunt around the protective device.

Protective Ground Wire

(d). The ground wire may be bare or insulated and shall be of copper or approved copper-clad steel. If of copper the ground wire shall be not smaller than No. 14 B. & S. gage and if of approved copper-clad steel it shall be not smaller than No. 17 B. & S. gage. The ground wire shall be run in as straight a line as possible to a good permanent ground. Preference shall be given to water piping. Gas piping shall not be used for grounding protective devices. Other permissible grounds are grounded steel frames of buildings or other grounded metallic work in the building and artificial grounds such as driven pipes, plates, cones, etc.

The ground wire shall be protected against mechanical injury. An approved ground clamp shall be used wherever the ground wire is connected to pipes or piping.

Wires Inside Buildings

(e). Wires inside buildings shall be securely fastened in a workmanlike manner and shall not come nearer

than two (2) inches to any electric light or power wire unless separated therefrom by some continuous and firmly fixed non-conductor making a permanent separation. This non-conductor shall be in addition to any regular insulation on the wire. Porcelain tubing or approved flexible tubing may be used for encasing wires to comply with this rule.

Receiving Equipment Ground Wire

(f) The ground conductor may be bare or insulated and shall be of copper, approved copper-clad steel or other approved metal which will not corrode excessively under existing conditions and in no case shall the ground wire be less than No. 14 B. & S. gage except that approved copper-clad steel not less than No. 17 B. & S. gage may be used.

The ground wire may be run inside or outside of building. When receiving equipment ground wire is run in full compliance with rules for Protective Ground Wire, in Section (d), it may be used as the ground conductor for the protective device.

FOR TRANSMITTING STATIONS

Antenna

(g) Antennas outside of buildings shall not cross over or under electric light or power wires of any circuit of more than six hundred (600) volts or railway trolley, or feeder wires nor shall it be so located that a failure of either antenna or of the above mentioned electric light or power wires can result in a contact between the antenna and such electric light or power wires.

Antennas shall be constructed and installed in a strong and durable manner and shall be so located as to prevent accidental contact with light and power wires by sagging or swinging.

(For further revisions see September issue.)

Radio in the Forest

Have you ever considered the advantages of a Radio Receiving Set installed in a Lumber Camp or a Fishing Camp?

Imagine two camps far apart communicating with each other with no other trouble than speaking through a mouth-piece.

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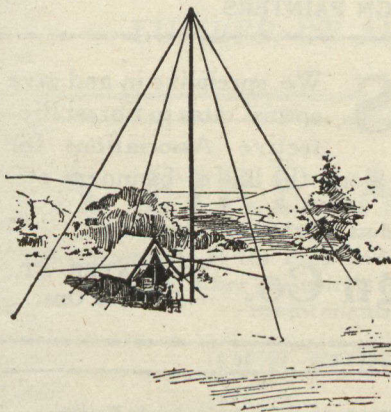
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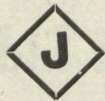
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A FIRE ALARM

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

OUR FORESTS

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by
CANADA PAPER CO.

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FOREST FIRES

TAKE AWAY JOBS !

Size up Every Timber Fire as Your Personal Enemy and get After Him; Put Out Your Camp Fires. Never Toss Away a Lighted Cigarette. There are hundreds of jobs in a live forest. Dead forests drive out population.

This advertisement inserted in the interests of forest protection by

The Spanish River Pulp & Paper Mills, Limited.



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FREE GRANTS AND HOMESTEADS

Department of Lands and Forests,
Toronto, Ontario.

HON. BENIAH BOWMAN,
Minister of Lands and Forests,
Toronto, Ontario.

W. C. CAIN,
Dep. Min., Lands and Forests Dept.,
Toronto, Ontario.

The Secret of Success for Prairie Farmers

(Continued from page 951)

where it belongs. The trees make the difference

That was a very significant report by Mr. Tinline, Supt. of the Dominion Experimental Farm at Scott, Sask., which appeared in the April (1922) issue of the Canadian Forestry Magazine, "Three to three and a half times as many potatoes inside the shelter belt as compared with the open field under parallel conditions in 1920 and 1921." He says: "I do not know of any other factor that entered to influence the crop yields other than the fact that they were grown inside the windbreaks. The snow does collect to quite a depth during the winter months. The hedges being seven to eight feet high."

Here is evidence of the highest order as to the value of trees helping to produce crops in dry years, and there are doubtless many other instances scattered throughout the West, where men have noted benefit arising from storing snow over winter behind a tree shelter. Many a man at least, has experienced it in his garden. Near Alsask, about the peak of the dry records in Saskatchewan, there are a number of

men who have grown fine crops of vegetables, raspberries, strawberries and other garden stuff in the driest years, simply because they have been able to preserve the snow behind a belt of trees i.e., because they have been able to keep the moisture they get.

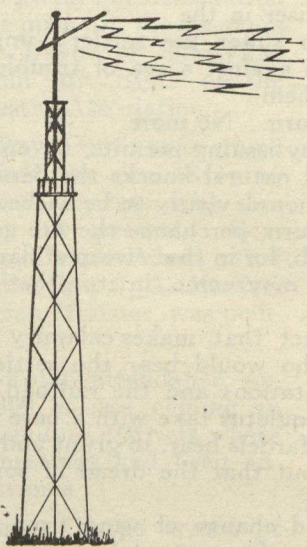
Tree Belts Preserve Moisture

We hear a lot these years about Natural Resources. Every now and again there is quite a crop of paragraphs in the papers and a lot of consultations and correspondence about them. And it is right it should be so. But it certainly is curious to note that not once has any mention been made of the most important resource we have on the prairies "The water we can keep."

Careful records are kept of the water we get, and have been for many years, but beyond that we have no information. Yet we all know Principal Bracken uttered a most profound truth when he emphasized the need of keeping our water. Surely it is time we gave some real attention to this matter. Anybody that has given it any thought knows that tree belts preserve moisture and might go a long way to help solve some of our dry farm problems if the proper steps were taken.

Is it not time something were done about it? Is it not possible to try it out on a scale big enough for a real test, say a township or a section or two? Even if it only proves a failure it should be done. A great many people believe it would be of very great benefit at least locally, through the more level country. Is it not absurd that a country whose actual existence depends upon its already too scant water supply, should allow any portion of that water to be lost without taking every possible steps to preserve it? What would be thought of a business firm that allowed the greater portion of its most valuable raw material to go to waste, or how long would it last? That is precisely our situation, "It's not the water we get that's important, it's the water we keep," and we are not keeping it.

So far nothing has been said about preserving the rainfall in summer but we know Professor King of Wisconsin found the evaporation from the soil to be from 25 to 63% less behind the shelter of a belt of trees, and Carlos Bates, found the saving to be as high as seventy. These are important savings in a dry country. Is it not time something was done about it?



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MOOSE TRAPPED IN BARB WIRE



Mr. William Martin, President of the Manitoba Gypsum Company, Ltd., Winnipeg, sends in the above interesting photo with the following explanation and comment:—

"I enclose a somewhat interesting photograph of a moose that was caught in a barb wire fence near Gypsumville, Manitoba. The moose was evidently jumping the fence and got tangled up in the wire. You might like to use this as one of the illustrations in your Journal. I get your paper at my house, 125 Wellington Crescent, and consider you are doing a very good work in connection with the Canadian Forest."

Canada and China Legislate Alike

A MEMBER of the Canadian Forestry Association who has lost some woodlands by fire this year writes to the Magazine as follows:—

"The practical suggestion I want to make is this: There is a law in China which provides that where a man is robbed, the community immediately around the place where the robbery occurred must make good the loss. We might learn something from China in this matter. If a township where a loss occurred were required to make good the loss, every citizen of it would have a personal interest in finding out and following up the offender who had been guilty of starting the fire. As it is at present, the ordinary member of the community looks the other way if he sees a fire starting. He does not want to go as a witness. He might suffer some personal inconvenience about this kind of thing. I have been interested in your work for some years and I feel the immense value of it to the community."

The common sense of the Chinese people in making a community pay for the losses occurring within its boundaries has been reflected in several practical steps taken by Canadian forest administrations. For example, the government of New Brunswick now makes an organized municipality responsible for the fire fighting costs connected with fires starting within its borders. This should have a wonderful effect on local vigilance and on the public sense of responsibility. A new Quebec law also makes an owner of timberland responsible for fires occurring on his property no matter by whom started. The trouble in the past has been that forest fires have

been started and allowed to burn without any fear that the individual or the locality would be mulcted for costs or damages. It has always been: "the Government's job," a phrase which to a multitude of people suggests nothing personal whatever.

"A Wholehearted Organization"

THE Canadian Forestry Association—that most wholehearted of organizations—have in the course of their activities issued countless appeals on the subject of forest protection to the highest as well as to the most commonplace imaginations of the populace," observes the Pacific Coast Lumberman. "We are satisfied, however, that none of these messages will meet with readier response than the leaflet recently addressed to the boy scouts of the Dominion. Here, at any rate, unless we err greatly, the warnings will not fall on deaf ears, and the result of the C. F. A. manifesto will be excellent. Is it too fantastic and impracticable to suggest that during the extreme fire hazard period (usually coincident with the holidays) some public use might be made of the older and more responsible of these keen and indefatigable youngsters? One can hardly suggest the policing of certain of our forests by boy scouts, but there is something so workmanlike and so utterly superior in their open air methods to those of the average amateur adult that there may be the germ of commonsense in the idea of setting these competent campers to watch the incompetent ones."

The Ranger's Soliloquy

J. A. KENT, in "The North Woods"

To permit, or not to permit
That is the question.
Whether 'twere wiser in the
Ranger's mind to suffer the settler's importunities or
to take a stand against a sea of troubles and by op-
posing, end them.
To permit. To burn. No more.
And to say that by issuing permits, we end the troubles
And the thousand natural knocks the Service is heir to;
'Tis a consummation devoutly to be wished.
To permit. To burn, perchance the fire gets away, aye;
there's the rub, for in that sweep of flame
what devastation may come, in its ghastly wake, must
give us pause.
There's the respect that makes calamity of so ticklish
a job, for who would bear the settler's pleas, the
logger's solicitations and the railroad's kicks, when
he might his quietus take with a bare permit.
Who would these fardels bear, to grunt and sweat under a
weary load but that the dread of something after-
wards;
That undiscovered change of wind from whose bourn
no traveler has forewarned us; puzzles the will and
makes us rather bear those ills which we have than
to take chances on others we know not of.
Thus conscience does make cowards of us all and our
will to do is sicklied o'er with the pale cast of thought
and enterprise of great pith and moment with this
regard their currents turn awry and lose the name
of action.
Soft you now; the Forester!
Chief; in thy cogitations, be all my perplexities remem-
bered?

Crowds Throng to Exhibits Car and Lectures

THE Forest Protection Exhibit Car of the Canadian Forestry Association is devoting considerable time to northwestern Quebec and will later cover Ontario, and other portions of Quebec and the Maritime Provinces.

The car, which recently attracted over 80,000 persons in British Columbia on a forty-five day trip, left Ottawa on July 5th on the Waltham sub-division of the C.P.R., stopping a day at Shawville, Campbell's Bay, Waltham, and Fort Coulonge.

It also was located two days on the main street of Hull, P.Q., where the attendance exceeded six thousand persons.

Other railway branches will be covered in succession. A special feature this year is the sending of Mr. Napoleon Lemay, former M.L.A., an excellent public speaker, into some of the more remote communities back from the railways where he will be accompanied by a motion picture operator, with electrical equipment and educational films. While in Quebec with the Car, Mr. Lemay gives daily addresses to audiences averaging from 500 to 1,000 people.

Record of Attendance

Shawville: 600 persons visited the car. A motion picture demonstration was held in the open air, the speakers including the Mayor of Shawville, Dr. Fraser and Mr. Blyth of the Canadian Forestry Association.

Campbell's Bay: Continuous crowd of people visited the car. Evening meeting a great success with approximately 500 present. Rev. Father Murray, Parish Priest, acted as chairman and Rev. J. A. Macfarlane, Presbyterian Minister, was principal speaker.

Waltham: Total attendance approximately 300, scores coming in from the surrounding districts where the car and meetings had been advertised in advance.

Fort Coulonge: Large crowd of children visited car during afternoon. In the evening nearly 600 persons went through the car, many of them being employees of the lumber mills. Approximately 450 people attended the evening meeting. Audience very appreciative, cheering the educational pictures many times.

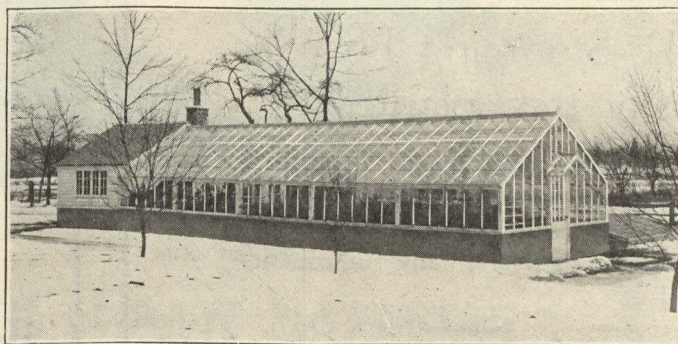
Buckingham Junction: 400 visitors.

Buckingham Town: Steady stream of visitors all evening and many turned away. Six hundred passed through the Car. Public open-air meeting on forest protection with 1,000 present. Thirty-five motor cars and eighteen buggies on hand. Mayor acted as chairman. Mr. Napo-

leon Lemay and G. G. Blyth gave addresses with motion picture illustration.

Thurso: 540 persons passed through the car, all greatly interested. Evening meeting with 400 present, Mayor acted as chairman.

Papineauville: Attendance at car 700. Attendance at evening meeting on forest fire prevention, 500.



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BY the least money, we mean, the least that is consistent with lastingness and the making of a happy, healthy home for your plants.

It's just a clean cut, thoroughly practical greenhouse, in which the ornamental touches and extra refinements, so to speak, have been eliminated.

Still it is decidedly good looking, and will grow just as many and just as fine quality of flowers, as any house that costs more.

It is a house we have been building for years. But the times have made so many folks want to strip things for the running, as it were, that they quickly buy this Practical Purpose house, when they would not buy our regular one with its curved eaves and other features.

Glad to send you fullest of particulars, or one of us will come and talk it over with you.

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WE GIVE YOU—Reliable Equipment with a Guarantee.
Tamper-proof Systems.
Indisputable Records.
Assurance of Work Well Done.

BACKED UP BY—Efficient Service when required and Relief Equipment furnished without Charge in case of accident.

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Where we can furnish fire-fighting equipment on short notice.
We have supplied several Forest Protective Associations, and can give excellent service.

Among our products are:—

Fire Hose Fire Department Supplies
Fire Extinguishers General Rubber Goods

The Canadian Fire Hose Co., Ltd.

**POSITIVELY
NO FLIES OR MOSQUITOES**

when using

"FLY TERROR"

MADE IN
CANADA



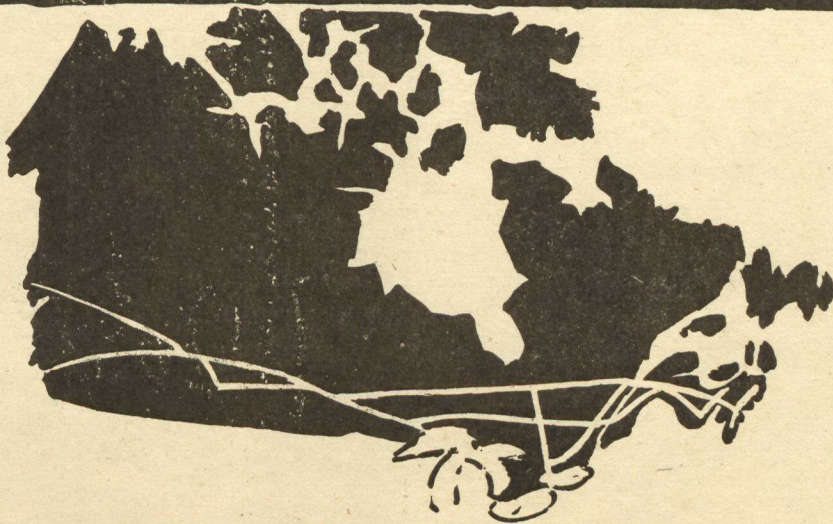
the only Fly repellent on the market used with satisfaction by all Sportsmen, Hunters, Anglers, Foresters, Surveyors, Prospectors, etc., wherever Flies or Mosquitoes abound. It is effective as well as agreeable. Absolutely harmless to the skin. You cannot go in the bush without it. You will need it. You will appreciate it.

Ask your dealer or write to:

The Fly Terror Manufacturing Regd.

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**A WEALTH of RAW MATERIAL
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Unequalled Agricultural Opportunities**

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

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

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

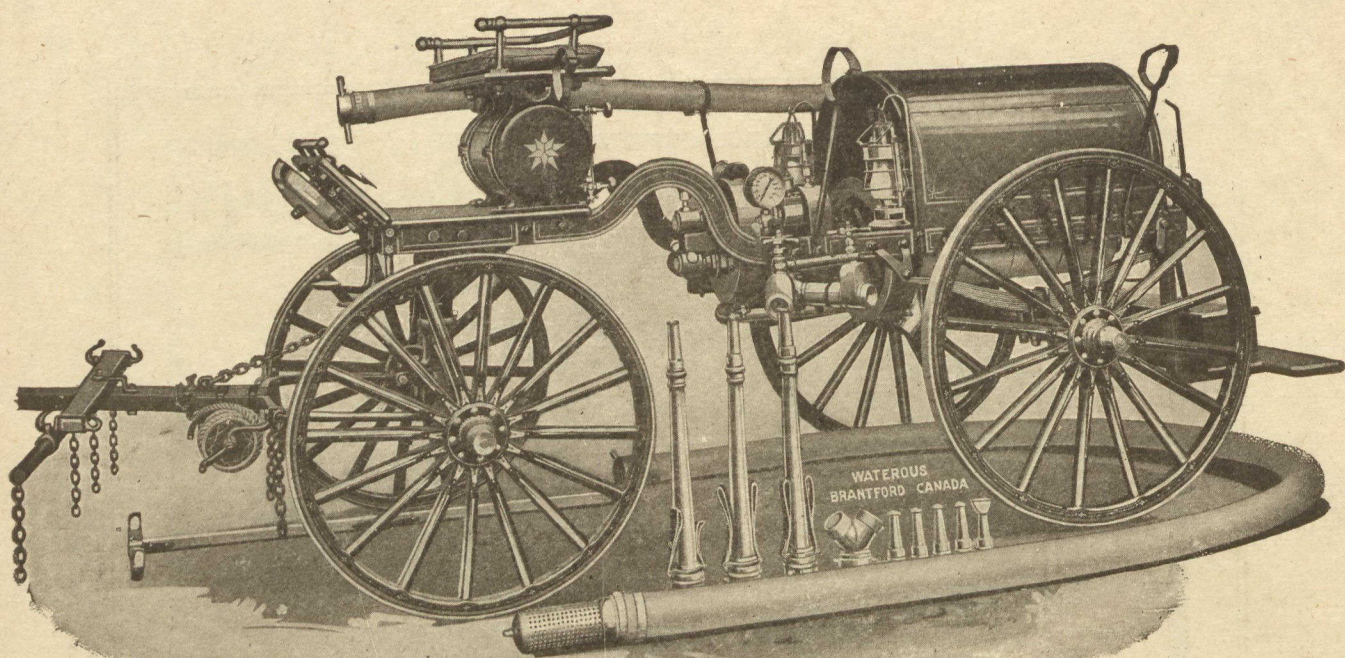
Correspondence is invited from manufacturers, mining men, trade representatives, chemical engineers and others desiring information on Canadian conditions, resources, and industrial opportunities.

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

J. WARDROP, General Agent,
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Commissioner,
Industrial and Resources Dept.
TORONTO





The Waterous Gasoline Fire Engine

Offers Real Fire Protection to Your Timber

EFFECTIVE ANYWHERE WITHIN REACH OF LAKE OR STREAM,
AND WILL GO ANYWHERE A WAGON CAN BE TAKEN.

Built in sizes to deliver 200 to 400 gallons per minute, it combines the power and fire fighting ability of the steam fire engine with the ease of handling and convenience of the gasoline motor.

Its four cylinder 48 H.P. Power plant is absolutely trouble proof. The engine will start instantly and run 24 hours without a hitch.

It throws from one to three powerful streams and will simply smother the fiercest blaze.

A novice can handle it, it works in any weather and is ready for use all the time.

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