

The Illustrated
**CANADIAN
FORESTRY**
Magazine

VOL. XIX

OTTAWA, CANADA, FEBRUARY, 1923

No. 2

***This Issue
Contains: -***

***Fifteen Years of
Tragedy***

*By
James Oliver Curwood*

***Wood Crops on
Prairie Acres***

By Archibald Mitchell

***Raising Reindeer
in Canadian
Arctic***

***Henry Ford's
Forest***

***A Plea for Game
Conservation***

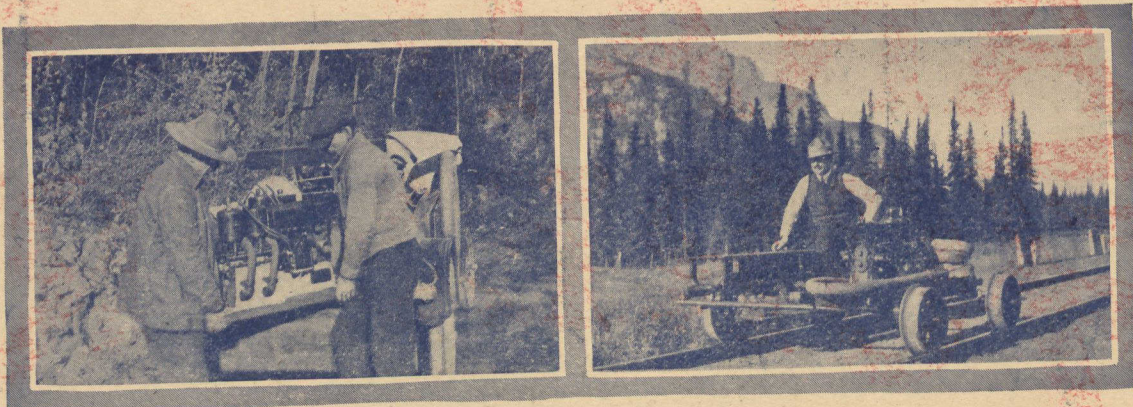
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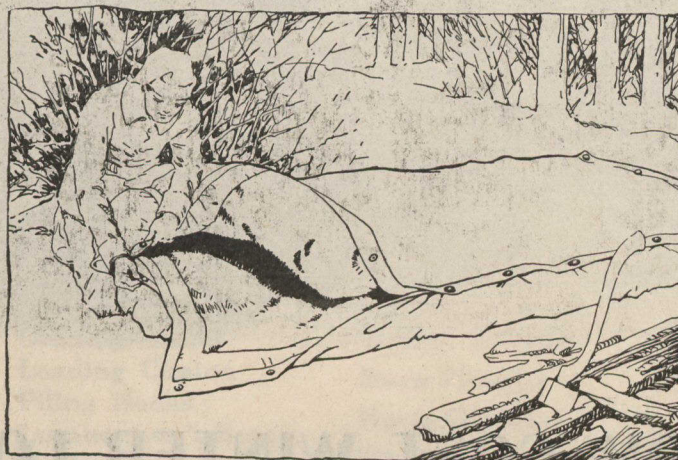
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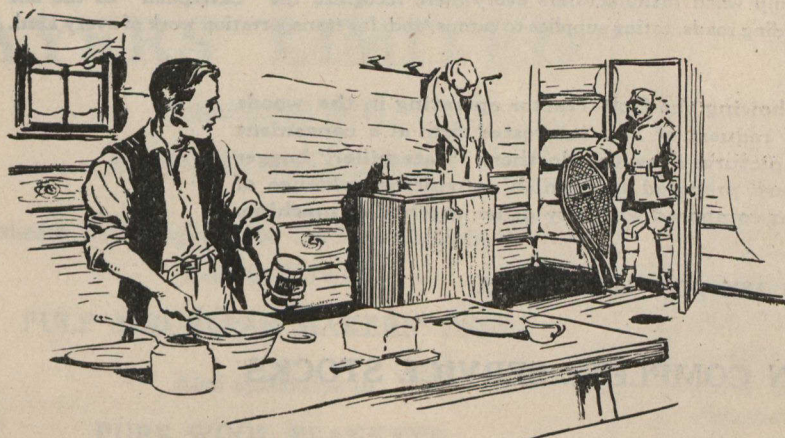
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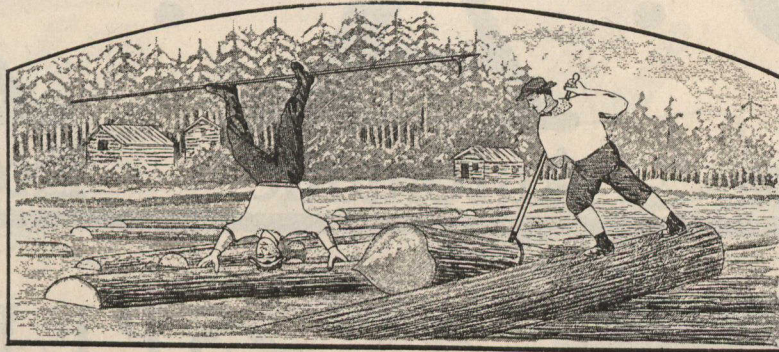
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THE ILLUSTRATED CANADIAN FORESTRY MAGAZINE



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

VOL. XIX

OTTAWA, CANADA, FEBRUARY, 1923

No. 2

Published and Owned by The Canadian Forestry Association

Editorial and Business Offices

SUITE 224 JACKSON BUILDING, OTTAWA, CANADA.

Official Organ of The Ontario Sportsmen's Game and Fish Protective Association

Entered as second class matter in Post Office Department, Canada.

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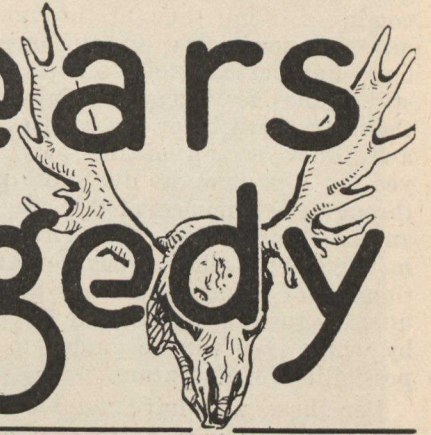
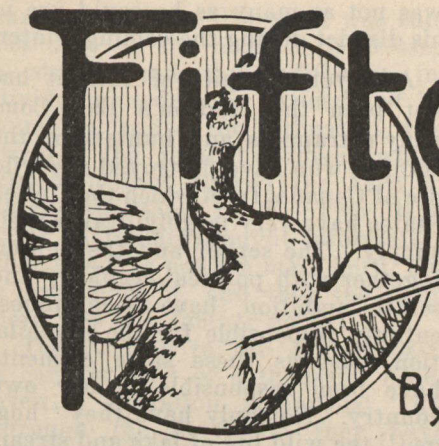
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Fifteen Years of Tragedy

By James Oliver Curwood



JAMES OLIVER CURWOOD

The accompanying article from the virile pen of James Oliver Curwood, America's leading literary exponent of the Great Outdoors, while written particularly from the viewpoint of his native State of Michigan, is entirely appropriate to parallel conditions in Canada. Mr. Curwood has earned a very enviable reputation as a writer of stories and motion picture scenarios, the locale of which are invariably distinguished by scenic and wild life features. The Illustrated Canadian Forestry Magazine is deeply indebted to Mr. Curwood for

this scathing indictment, which has been contributed by him to the cause of forest and wild life conservation to be published contemporaneously and exclusively by the Isaac Walton League Monthly and the Illustrated Canadian Forestry Magazine. Mr Curwood's article adds zest and point to all that has previously appeared in our publication along similar lines. We trust that it will serve to focus public opinion upon this important matter in such a fashion as will assure some prompt remedial action.—EDITOR.

MORE than once I have been asked to give the fundamental reason for my fight to preserve what remaining wild life and forests we still have in my native state of Michigan—a bitter fight waged against those same elements of political machinery, incompetence and lack of practical intelligence which have played such deadly parts in the slaughter of natural resources throughout the country, and always my mind has swept back over the tragedy of the last fifteen years to find its answer. While my own state, where I was born and where I have lived for almost forty years, is in my opinion the darkest blot on the map of the American continent when it comes to the matter of forest destruction, and while I am confident it will take a quarter of a century of intelligence and technical ability to give back to us the wild life which lack of conservation has lost to us in a pitiable fraction of that time; and while, moreover, I shall continue to wage war until big and broad-minded men specially fitted to direct

the conservation machinery of a mighty state replace the present system of political appointments, I am convinced that every true conservationist should put his shoulder to the "national wheel," and pull for the country at large as well as for his local environment if the ultimate and greater triumph is to be achieved.

A Breed of Destroyers.

We Americans are, and have been, a breed of destroyers and of monumental egoists; in the blindness of self-conceit we have reaped but we have not sown; on the treacherous sands of human "almightiness" we have set ourselves up on pedestals, and we are only now beginning to see our sins and our weaknesses. My own life has been typical of millions whose boyhood began a generation ago. From the beginning, as a boy, I did not need argument or education to tell me that I was the greatest of all created things—that my particular brand of life, of all life on earth, was the only life that God

had intended to be inviolate. That fact was pounded home to me in the public schools; it was preached to me in the churches. I was part and parcel of the great "I Am." For me, all the universe had been built. For me, the Great Hereafter was solely created. All other life was merely incidental, and made especially for my benefit. It was mine to do with as I pleased. In a mild sort of way the school and the church told me to have a little charity, and not to "hurt the poor little birdies." But at the same time both religion and school instilled into me that I was next in place to God, and that all other life, from the life of trees and flowers to that of beasts and birds, was on earth for my special benefit, and that no other life had a right to exist unless the human egoist saw fit to let it live.

While we are slowly but surely awakening to the deadly error of these teachings of our youth, and while the necessity for a proper conservation of the resources which God

gave to us in the beginning is becoming a living thought throughout our commonwealth, in our homes, our churches and our schools, one still cannot feel himself a fighter in the ranks until he or she realizes the awful devastation of the past few years. Our youth did not pass through the grimmest of that tragedy and millions of boys and girls now in our public schools, our conservationists of tomorrow, must depend upon us for those visions of the past by which they will be guided to the possibilities of the future.

For those who have not seen the Great Change with their own eyes, and who have not been in a position to witness the tragedy of destruction—not only in a local environment but in a scope covering two-thirds of a continent, my own experience of fifteen years in the open spaces may be of interest, if not of actual value, in showing how swiftly the destruction of our wild life has swept upon us, and how quickly we must now act to save it from utter annihilation.

Explorations in Canada.

With the beginning of those fifteen years, almost the entire northern half of our continent was one vast breeding ground of wild life, and this in spite of the fact that for nearly two hundred years the Hudson's Bay Company had steadily used large areas of it as their hunting and trapping grounds. Fifteen years ago the Buffalo were gone, it is true, with the exception of a few survivors in the Athabasca country. In those days I was employed by the Canadian Government as a sort of "last frontier" investigator and explorer, and I had unexcelled opportunities for coming in contact with the wild life between Montreal and the Pacific. On every railroad then running in western Canada the daily recreation of passengers was counting the coyotes and antelopes. The buffalo trails and wallows were then, and even later, plainly visible from the car windows, and over vast areas the prairies were criss-crossed with them. But in the face of this tragedy of the recent passing of the buffalo, people marveled at what seemed to be the inexhaustible supply of wild life still left. From the car windows wildfowl could be seen not only in thousands, but in countless millions. Every bog-hole and lake was black with them. One early autumn, when I rode several hundred miles horse-

back from Medicine Hat to the Caribou Mountains to run down a rumor of buffalo living there, I was not for an hour at a time where I could not hear the thunder of the wings of rising wildfowl. For years I looked upon the tragedy of settlers slaughtering ducks and geese literally by the wagon load. At Dundurn, Saskatchewan, I was the guest of a wealthy rancher when a hunt was planned. There were six of us in the party that visited a lake several miles out in the prairies. Shooting began at dawn. Marksmanship was not necessary, and by the time the evening shoot was over the kill was over six hundred ducks, and filled a wagon. In those days game was slaughtered in this way, cleaned and placed in ice houses for winter use.

The Slaughter of Wild-Fowl.

Occasionally, in the years that followed, I went over these same tramping grounds. Year by year I watched the going of the wild-fowl and the prairie chicken. During a "flight" season of wild geese I have counted as many as thirty burning straw-stacks on a single night, around which the slaughterers were gathered to kill the geese that circled low in the illuminations.

The result was appalling. Today, at the end of those few years, if you ride from Winnipeg to the mountains on either the Grand Trunk Pacific or the Canadian Pacific the probability is that you will not see even a coyote. Surely you will not see an antelope. The ponds and lakes once black with wildfowl will occasionally hold a family of ducks, or a small flock. There are no wild geese; even prairie chickens create an unusual interest when they are seen. The greatest breeding grounds that North America has ever known, outside of the Arctic tundras, are gone. In those days of a wild life paradise I saw a letter to the factor at Fort Churchill, on Hudson's Bay, from the factor at York Factory, lower down on the Bay; in which the latter asked if he might purchase or trade for a supply of wild geese, as his own luck had been poor that year. In reply, the factor at Churchill sent back word that he could not spare any geese, as his hunters had also had exceedingly bad luck that Autumn, and had only succeeded in killing *eight thousand geese*, which

was not as many as he could use in his district during the coming winter.

And yet, in spite of this, it has not been the Hudson's Bay Company's trappers and hunters or the Indians who have destroyed the wild life of Canada, from which the United States have very largely drawn their supply. The settler and the hunter, together with political stupidity and selfish ambition, have been almost entirely responsible for the annihilation, just as these same elements have been responsible in our own country. Not only have they "hogged" the wild life of lake and stream and forest, but so long as their own immediate and selfish wants have been filled they cared but little for the future. They have not made intelligent laws, and when such laws have occasionally been made they have not used the power of their vote to demand an enforcement of them. In almost every instance true conservation, where it has won at all, has had to ride over rotten politics.

Game Paradise Destroyed.

Within these same fifteen years I went ahead of the "line of rail" of the Grand Trunk Pacific, through Yellowhead Pass and the British Columbia mountains. This was before a mile of steel had been laid beyond the prairie foothills; and I found a game paradise which some might consider an exaggeration if I could describe it as it actually existed. Bear, deer, sheep, goat and caribou literally swarmed in these regions. At one time I counted eleven bears on one mountain side, all visible at the same time, and I have seen bands of sheep which numbered as high as a hundred. Several times since those days I have gone through these same regions. The so-called "sportsman," with his automatic and his pump-gun, has wrought frightful havoc. Today one must outfit a pack-train and go deep into the mountains for days and weeks at a time to find a single grizzly or sheep, and he is a fortunate hunter if he brings home either. During one season which I spent in the Firepan Mountains gathering material for my "Grizzly King" I saw twenty-seven grizzlies, innumerable blacks and hosts of other game. On my last trip I spent six weeks and saw three bears.

Still farther north one sees the result of modern day destruction. Less than fifteen years ago I was in the Artillery Lakes country at the time of the annual migration of

caribou. All one day what was supposed to be the main herd crossed a stream, and three different individuals made their estimate of its numbers, added the estimates, then divided the total by three, which approximately figured the herd at thirty thousand head. Two days later an Indian brought information that this was not the main herd, but a branch of it, and that the main herd was still farther north!

Today, even to the Arctic coast, a caribou herd of a thousand head, even in migration, is unusual. All through the northland they have split into smaller bands. Rifles have come in with the white man. The slaughter of the wildfowl life of North America on the prairies of Western Canada and over our own western states has also sounded the doom of the hoofed beasts. We must remember that the geese and ducks on Lake Superior today were on the Arctic tundras a few weeks ago, and will be in the tropics a few weeks hence. A slaughter in Florida may bring hunger and starvation to the Indian three thousand miles north. There was a time when the Arctic tundras were what the Indians conceive their Happy Hunting Grounds to be. They were the Canadian prairies, multiplied ten times; it seemed as though the wild life of the earth gathered there to breed. But the man from Saskatoon, Winnipeg, Topeka, Milwaukee, Detroit, and St. Augustine has robbed even the distant tundras of their life.

A Tragedy of Desecration.

In the United States even more than in Canada are we today seeing and feeling the effects of an appalling devastation. My own state of Michigan is an example. The story



Moose browsing in the woods of Northern Canada

of its outraged forests and wild life is a tragedy of desecration, of money-lust, of personal selfishness and political incompetence and stupidity. Michigan is a particularly good state to look at in these last days of forests and wild life simply because of the fact that God intended it to be the greatest water, forest and wild life paradise on the American continent. No other state was so completely endowed with all things or so stored with possibilities at the beginning. Its wild life and forest resources have been worth billions, and had these natural gifts been *harvested* instead of slaughtered they would be worth billions today. Yet, in this state, never have we had a man technically trained and educated in conservation matters at the head of our conservation affairs. The present Director of our Conservation Department is a man who has been thirty years in politics. Our Secretary of Conservation is a newspaper man.

And only a few days ago the dean of American forestry, Professor Filibert Roth, Professor of Forestry in the University of Michigan, found it necessary to resign from our Conservation Commission because he could no longer fight against the environment which made his life-long experience and technical worth of no practical value at all.

This system is not the fault of an individual or individuals. It is perfectly legitimate for politicians, newspapermen, railroad engineers, lawyers, preachers or candle-stick makers to run the vast natural resources of any state *if the people so will*. They cannot be held accountable for the fact that they are not technically skilled forestry men or that they have not had the long and intensive training, education, and scientific application of study which every other great corporation on earth would demand of those in charge of its resources. The people themselves are at fault. They alone are to blame for not rising in the power of their vote and bringing about a condition where the very best men that money and science can produce are employed as the guardians and care-takers of our forest and wild life our lakes and streams. Until that time comes, until every governor and every legislature in every state demand the very highest of skill, training, intelligence and technical ability at the heads of our conservation activities, we must miserably fail.

Effects of Maladministration.

The tremendous loss which has occurred throughout the United States because of lack of these things is shown by conditions as they exist



Jumping deer fawn in its native haunts. Picture taken in the woods of northern Saskatchewan

in my own state of Michigan. Because of timber-slaughter and forest fires over one-third of Michigan is virtually bankrupt, paying no more in taxes than the cost of collecting the taxes, unable to build roads and schools, and even unable to provide police protection. Fourteen million acres, or over twenty thousand of our fifty-seven thousand square miles are idle, barren and fire-blasted. In 1890 Michigan was the greatest lumber state in the union, and the annual value of her lumber products was \$70,000,000. Today Michigan is consuming between two and three times the lumber she produces, and is now one of the thirty wood-importing states in America, and the freight rates and increased cost of her imported timber alone equal the total value of her lumber products in that year of 1890. The hickory for the wheels of her automobiles comes from Arkansas and Mississippi; the oak for her furniture is cut in Louisiana and Tennessee. Michigan does not even supply herself with enough telephone poles and railroad ties, but imports the poles from Idaho and the ties from Virginia.

In spite of the newspaper propaganda which is always sent out in great volumes from the center of political activities, our wild life has gone rapidly with our forests. Of our two thousand miles of inland waters at least fifty per cent., or one thousand square miles, have been robbed and polluted until they are now what is technically known as "barren." Our grayling is utterly extinct. Our trout streams are going swiftly, and are not twenty per cent. of what they were a few years ago. While energy and money have been expended in importing and propagating the ring-necked pheasant, a semi-domestic fowl that will forever be impossible as a game-bird, our native partridge has been neglected until pot-hunters, if they were allowed to exist today, would starve to death. And while reindeer, an animal that has been domesticated for more than fifteen centuries, have been imported into our northwoods, where they are cared for and fenced and fed like cattle, one of the finest of all game animals, the black bear, is still killed in our state as "vermin."

During the two years of 1919 and 1920 there were 1,442 forest fires in Michigan, and these fires burned over 620,493 acres of forest land, or *one thousand square miles*. At the ridiculously low rate of \$50 an acre this means a total loss of over \$30,000,000 in those two years, or \$10 for every

man, woman and child in the state. While our political regime estimates Michigan's forest-fire loss at only \$2,000,000 a year, experts trained in their business have estimated the loss at \$100,000,000 a year. I have split this in two, and estimated it at \$50,000,000.

These figures for 1919 and 1920 are tragic enough, but in the year 1921 there were 1,028 forest fires in Michigan, or almost as many as in the preceding two years combined.

The People Must Act.

I have always hunted, have always loved the woods, have lived in them a great deal of my time. The money which carried me through college I earned at trapping. But it is only when I view my experiences of the past few years that I see the tragedy of today in all of its naked horror. With wild life not only going, but almost gone, it seems to me little less than criminal that the people of great commonwealths will still allow politicians to run their conservation affairs. I feel and see the sickening effect of it. A great corporation that builds automobiles would consider it suicidal to place a plumber or a carpenter at its head. A big hotel would not place its management in the hands of a stone-cutter. Yet the people of a state, the mightiest of all corporations, will see a petty politician, or a butcher, or a mechanical engineer in control of all the forest and wild life resources which God has seen fit to give it. To me this is little less than sacrilege. It is a body blow at the Great Giver of Things Himself. It is as senseless as placing a trained forester in command of a ship at sea, or a railroad engineer in charge of an electric light plant. Before success comes to us politics must go. The people of every state must make their governors and their legislatures see that conservation of forests and wild life is not for the hunter and fisherman alone. Trained men, skilled and intelligent in their professions, must replace those who are utterly unable to cope with the tragedy as it exists today. Ten years from now, five years from now, will be too late. And only *the people* can save us from an utter devastation. Only *the people*, with their power of the ballot, can put their lakes, their streams, and what wild life and forests they have left into hands capable of caring for them, perpetuating them, and increasing them. Intelligence, skill and technical ability will do these things; politics,

vote-getters' appointments, and the ignorance and selfish ambitions that build up political machines will bring still greater ruin.

People must come to an understanding of what conservation means. They must be made to realize that human life is absolutely dependent upon wild life and forests. Without these things we would become extinct as a race. If all vegetation, all wild life and all forests should disappear tomorrow the human race would become extinct upon the face of the earth within a year. Without wood we would have no agriculture, no manufacture, no commerce. Civilization, as we know it, would come to an end. In the United States today three billion dollars are invested in manufacturing plants where the raw material is wood. *Fourteen million people*, or one-eighth of the total population of the country, are dependent upon these wood-working plants for their livelihoods. Yet within the last five years seven thousand sawmills have been junked in this country because of lack of material.

Tomorrow Will Be Too Late.

The hour for action is not ahead of us. *It is here*. Tomorrow will be too late. If every governor in every state realized this today there would be a wholesale resignation of incompetents throughout the land, and their replacement by men who are technically and professionally fitted. Conservation and propagation is a science. It is a life and death problem confronting a hundred and twenty million people in the United States. It is not a trivial affair to be juggled in the hands of politicians, or to be guided happen-chance by lucky appointees chosen from any and every walk of life. It is a problem for broad and intelligent minds technically and professionally prepared for the gigantic work in hand—the very men who are now held back, kept out, and seldom employed. And there seems to me to be but one inference. Such men, the very biggest that can be secured for the work, will not prostitute their ability, their training and their profession by seeking political influence. They cannot swing counties or sections of states. Such men are employed in our colleges and our universities. Upon them we depend for the education of our children and the advancement of science. They have forgotten more about *real* conservation than the conservation departments of all our states will ever know. Yet governors seldom appoint them, legislatures rarely employ them.

Why?

Stephen Leacock Wants a Henhouse

Told Forestry Men in Convention How Rise in Hemlock Kept Him Coop-less

AT THE CONFERENCE of the Quebec Forest Protective Association in the Mount Royal Hotel, Montreal, on Tuesday, January 23rd, an outstanding feature of the proceedings was the address delivered by Professor Stephen Leacock of McGill University. This gifted writer and lecturer who combines the apparently widely dis-similar traits of a political economist with those of a humorous author and raconteur gave his audience a rare discourse which they will long remember.

Professor Leacock spoke as follows:—

I have this afternoon the very arduous task of being the last speaker at this important and influential meeting. It is my function to wind it up. It is a thing which, as a professor, I am said to do well. Indeed, it is becoming a custom in Montreal that at the close of every convention a professor is sent for to wind it up, so that the people may go away glad that there are no more speeches to come. A professor in other words acts the part of undertaker; and I am here to give your meeting a fit and decent burial.

I understand that it is my office today, in speaking after a brilliant crowd of experts, to represent the public: the great unintelligent, unthinking, unwashed public. That's me. You here present are forest men, lumber men, paper men, pulp men; in short men of the woods — I mustn't say wild men of the woods. And naturally as you all know so much about our forests and forest industries, you felt that you wanted, just for variety, some one person here who didn't know anything. So you invited me.

Wants Wooden Henhouse

I am here, therefore, to tell you, as the representative of the public, to what extent I do, and to what extent I do not sympathize with your point of view.

In a general way I suppose you are all interested in seeing the price of lumber go up, and stay up. I am not. I want it to come down, away down, till I can buy a bit of it and take it home with me. I want altogether a

thousand feet, I need it up at my some one group of workers should bear an unnecessarily great, or unsummer cottage at Orillia—a town that you may know about; it is the intellectual capital of Ontario; I live there. It has for many years been a dream of my life to build a wooden henhouse, all made out of hemlock lumber. This is, you will admit, a laudable and patriotic ambition. But I have never realized it. Twenty years ago, when I first came to McGill, the price of hemlock was ten dollars per thousand feet. But I had only nine dollars. Ten years later I was able to afford ten dollars for a thousand feet, but the price had gone to twenty dollars. Ten years later than that I had with advancing years and increasing success as a professor, twenty dollars. But the price of hemlock had gone to forty dollars. A little later, when I had forty dollars the price had gone to forty-five.

Now, gentlemen, I do want, before I die, to overtake the price of hemlock. I want that henhouse. I feel that I have done pretty well in my career. I have got enough degrees after my name to cover a square foot, board measure, of dressed pine — though, of course, pine is worth more than my degrees and I wouldn't waste it by writing them on it. I have, as I say, in some measure succeeded in life and I feel that I should now have the rank of a man who can leave a henhouse behind him when he dies. I look to you as lumber men to help me realize my ambition.

Lower Prices and Wages

Gentlemen, my henhouse, as you no doubt suspect, is a parable. What I mean as a plain economic fact is that we need cheaper lumber in Canada, and I think that until we can get it we are crippled and hampered in a hundred ways. We cannot carry on any larger enterprise of building, housing, and land settlement until we can get cheaper materials — not alone lumber prices — but prices all round. Prices and wages have got to come down. It is the only way of salvation. No one wants to be first. You are no more anxious to lower the price of lumber for my henhouse than I am to lower the salaries of profes-

sors of political economy. And it would be grossly unfair if by deliberate policy or by the ill-fortune of circumstance some one industry or necessarily sudden fall in its share of general earnings.

But the only sane and rational way in which to envisage our present situation is to look upon this as a painful era of transition from the inflated prices of the war to the solid level of the gold standard. Till we get back to that, there can be no safety and no certainty in our national business or our international trade.

So much for that, or, as they say in England, that's that. But with one other aim of your convention, its larger and its greater purpose, I want to tell you, as a representative of the Canadian public — you have our most sincere and enthusiastic sympathy. I refer to the conservation of our forests and the adoption of an adequate and scientific system, both of preservation and extension of the magnificent heritage into which we started. It is a melancholy thing to look abroad over the globe and estimate the atrocious ravages of modern industry upon the resources of mankind. The human race for a hundred years has been living on its capital. In the midst of wealth it has grown poorer. It is now beginning to find the limits of its boasted power over nature in the exhaustion of nature itself. It is our good fortune in Canada that as yet nothing irremediable has been done. Our future is still before us. There are still vast forests standing silent in the north and vast areas that can yet be restored to the silent splendor that once was theirs.

Stimulate Public Opinion

But for the adoption of a proper policy of conservation, the first thing needed is the stimulation of public opinion. It is for that that we are here. And I want to tell you that if at any time in the future I can help the growth of the forests of Canada by leaving my classes at McGill and joining you here at the Mount Royal Hotel—I'll do it.

HENRY FORD'S FOREST

A Million Trees to be Used in the Manufacture of a Million Fords
is Yearly Crop required

By Ovid M. Butler, Forester, American Forestry Association

(Article and Photos reproduced by courtesy of the American Forestry Magazine)

IN THE upper peninsula of Michigan, where there are still some long stretches of wooded landscape, Henry Ford has acquired a forest of several hundred thousand acres. It is a good game country, as game in that part of the state goes, but Mr. Ford did not buy those timbered acres as a hunting ground. Far from it. He had another purpose and that purpose forms one of the most interesting stories in American forestry today.

Already, Henry Ford's forest has become an active unit in the Ford operations. At Iron Mountain, Michigan, Mr. Ford has built one of the most modern sawmills in the world. Forest and mill are one hundred miles apart, more or less. Up in the woods, Ford tractors are building logging roads in the timber, and when the snow flies, they will be busy from daylight to dawn hauling logs over iced roads to a railroad which will transport them to the Iron Mountain mill. There they will be ripped and resawn into boards which will pass on automatic conveyors out of the mill directly to the lumber piles in the yard and then to the dry kilns for final seasoning.

At the rear of these dry kilns, great doors open into a body plant of steel and concrete construction 420 feet long by 120 feet wide and the lumber, now manufactured from logs purchased from contractors, moves on continuous tracks to a score or more of different machines which convert it into a score or more of different wooden automobile parts. These in turn are shipped to assembling plants back in the Detroit district and in the course of a few weeks are part and parcel of the finished Ford car to be seen on every highway in every state in the whole United States. Why did Henry Ford buy this great tract of timberland, which in

the aggregate is almost equal to the total area of improved farm land in the whole northern peninsula?

A Million Cars! A Million Trees!

If you will take the trouble to investigate, you will probably be surprised to find what a factor the forest

making around a million cars a year, a forest of a million trees a year begins to pass before your eyes. A sizable forest, indeed! Twenty-five thousand acres of timber annually to Ford the present generation from one year's end to another! That will give some clue to why Mr. Ford has bought a big forest.

"But is Henry Ford actually practising forestry?" Among foresters and lumbermen — and a lot of other people, too, for that matter — this question has been asked many times since announcement of Ford's timberland purchase was made. Some of the lumbermen were inclined to shake their heads and smile wisely. Most of the foresters assumed a hopeful attitude and tried not to be skeptical. They have been fooled before on newspaper reports. But no one seemed to know exactly how Henry Ford was setting out to handle his newly acquired forest, so I went to Iron Mountain to see for myself. And I found that in a very serious minded way, he is harvesting his mature crop of trees, leaving his young, fast growing trees for an oncoming crop and ridding this young forest of the hazards of fire by cleaning it of all brush resulting from logging. If that isn't forestry, what is?



Henry Ford's Forest in Northern Michigan, showing character of the Hardwood Timber. Mr. Ford is going to use his forest, but he is going to keep trees always growing on the land.

is in the making of Ford cars. Weight for weight, wood is stronger than steel and Henry Ford's eternal quest is to obtain the required strength and elasticity without having to lug useless weight. It requires on the average 250 board feet of lumber for every car Ford manufactures. That is a pretty good lumber content for the average northern hardwood tree and when you consider that Ford is

The first man I talked to in Iron Mountain was Mr. E. G. Kingsford, vice-president and general manager of the subsidiary company which is conducting Mr. Ford's forest operations. Mr. Kingsford knows timber. He knows the lumber business. Years ago, he started as a timber cruiser in the north woods. He has seen the northern forests recede and great areas of fire swept desolation take their place. He has studied these northern lands and he has lived long enough to see what they will do in the way of growing new crops of timber if given half a chance.

Mr. Ford's Look Ahead

When I expressed an interest to know what led the greatest of automobile manufacturers to embark upon a forestry program, he replied:

"Mr. Ford is simply looking ahead. Like a great many other large manufacturers in this country, he needs lumber. His present requirements call for over two hundred million feet annually. He may need more. In any event, he needs lumber in very large amounts year in and year out. He doesn't want his business to be in any way unsettled by sudden or periodic timber shortages. He doesn't intend that the production of Ford cars will cease when he dies. He wants to assure the next generation a Ford car at a low price.

"In the past, Mr. Ford has been buying his lumber in the general market. Following the war, circumstances arose which turned his attention to the timber situation in this country. The lumber mills charged him \$140 and \$150 a thousand feet for some of his lumber. Anyone who knows anything about the cost of manufacturing lumber, knows that such prices at the mill are unfair. Why did the mills do it? Because the demand for logs and lumber was far in excess of the supply.

"That was a temporary situation, to be sure, but with the supply of timber in this country disappearing at an alarming rate and the demand for wood gradually increasing, it is only a question of time until such situations become chronic. Mr. Ford

does not desire to have his business in any way dependent upon a disappearing supply of raw wood. He has not taken up lumbering and timber growing as a hobby. It is strictly a business proposition. He is simply making permanent provision for his future lumber and wood requirements.

Starting In a Small Way

"In our woods work, which began last winter, we are starting in a small way. We logged only about a million feet. That is only a drop in the bucket for our mill which has a capacity of 115 million feet a year. But we are buying logs on the outside from jobbers and contractors while we can. That won't be possible long, because the big lumber mills are grabbing up the remaining patches of stumpage as fast as they can get the money to buy with. And the lumber mills are not selling logs. This winter we will log about three million feet and then we expect gradually to expand our operations so as more nearly to meet our mill requirements."

The next day, I traveled a hundred miles northward to the little village of Sidnaw and then four miles beyond to the Ford logging camp, its line of freshly-painted portable houses standing out bright against the forest back-ground. There I met Hermann Hartt, logging superintendent. Mr. Hartt is a timber man of long experience who admits that lumbering according to Ford's program keeps

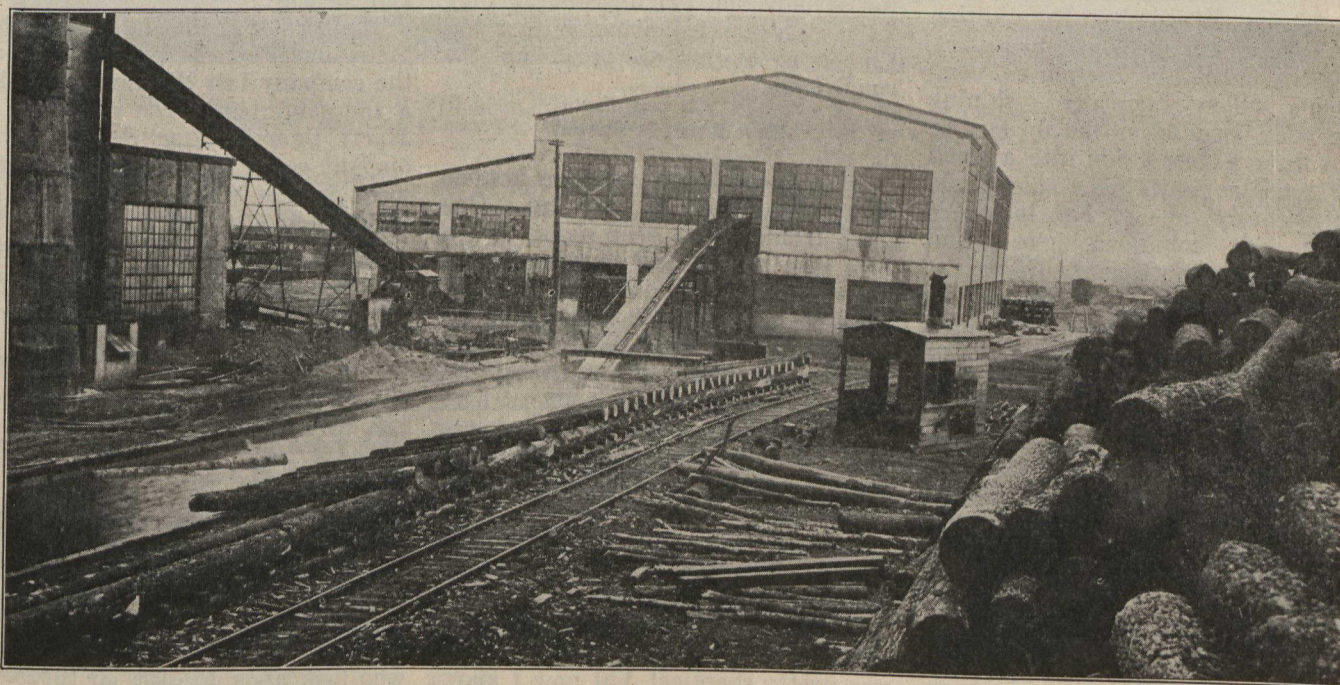
him thinking in high gear and is opening his eyes to a lot of things he didn't used to believe.

A Modern Logging Camp

He first took me through the camp. It is built to accommodate eighty men. Sixty were then employed, building logging roads, felling timber, burning brush and skidding logs. The camp is modern in every respect and is run in a modern way; but it is not overdone. There are other logging camps, particularly in the west which are just as modern. It is electrically lighted and steam heated throughout. The bunk houses are furnished with double-decked iron bunks. A flunky makes the men's beds and cleans the houses daily. A washwoman is provided who looks after the men's washing for the small sum of \$1.25 a month each, and there is a commissary where new clothing, smoking and chewing tobacco, etc., is sold at cost. Cleanliness looks out from every corner. One building is set aside as a club and reading room for the men and furnished with chairs, tables, and magazines. There is a rule here: "No spitting on the floor."

"The old-time lumberjack don't like that rule," said Mr. Hartt. "Some of them hit the trail rather than live up to it."

"It has been reported that the lumberjacks are furnished with bath tubs. Where are they?" Mr. Hartt was asked. "They are not in yet, but



Henry Ford's sawmill of steel and concrete construction and one of the most modern in the world, located at Iron Mountain, Michigan. It has a capacity of 115 million feet a year.



The chain conveyor which carries the lumber from the mill to the lumber piles in the yard. Thus saving man and team handling. From the yard the lumber goes to the body plant, where it is made into parts for the Ford car.

they are coming this winter," he replied.

Mr. Ford's Personal Quarters

"There are some bath tubs at the other end of camp, though," he continued, and then he showed me the quarters set apart for the accommodation of Mr. Ford and his associates when they come to inspect operations. These quarters consist of several portable houses similar in exterior appearance to the others, but the interior transports one back to the comforts of the modern city. In addition to electric lights and steam radiators, there are home-like fire-places, comfortable willow furniture, shining new, and rugs cover the floors. In one corner a door leads into a small bath room as white as a snow-bank. Unconsciously, one garbed in woods clothes and hobnailed shoes found himself stepping about on tip-toe.

From the camp we went back in the woods and looked over the area which was logged last winter. Cutting to a twelve-inch diameter limit, they had removed some seven to ten thousand feet to the acre and yet here was a fair young forest remaining and clean of brush and debris. Ford's forest is largely northern hardwoods and hemlock, the latter species making up about 25 per cent of the stand in volume. The hardwoods are mainly birch and maple with an understory which runs heavily to maple. On the area cut over, the understory appeared to have been lighter than in the adjoining stands.

"This is where we started,—sort of a try-out," explained Mr. Hartt. "We are not cutting and logging much differently from the ordinary lumberman, but we are looking out for our young trees and getting rid of the brush. We leave all thrifty trees twelve inches and under, excepting on these hemlock ridges where we cut the hemlock clean. It's a bad fire trap there. In the swamps, we aim to leave as much young cedar and spruce as possible. I try to make my men use their heads about cutting low stumps and we insist that they be mighty careful about falling big timber so as not to break up the small trees.

How Brush Is Burned

"Brush piling and burning is done right along with the cutting. One good trimmer can keep eight or ten men busy piling and burning brush. Just as soon as the limbs are trimmed from the tree after it is cut, they go on the fire. I find that's the most practical system. About twenty-five piles to the acre. That burns over only five or six per cent of the area and we try to keep these piles away from the young timber just as much as we can."

"There are men who claim that hardwood brush can't be burned satisfactorily," I suggested.

"That's just what I thought when I started," replied Mr. Hartt. "I was pretty skeptical, but now I know better. We can burn hardwood brush any time—during the Summer or in

a blinding snow storm in Winter. All you've got to do is to start a small fire with birch bark and twigs and when it's burning good pile on your limbs. You can burn it slick and clean. And I tell you this brush burning in the woods is a great thing. At first, I couldn't see it, but now I'm enthusiastic about it. It makes logging a lot easier and then it's the best sort of fire protection. I figure that our cost of skidding is cheapened seventy-five cents a thousand by getting rid of the brush before we begin moving logs."

The cost of handling the brush in the manner described, I was told, cost the company last Winter about \$2.50 a thousand feet. The net cost, Mr. Hartt figured after deducting the amount saved in skidding and other work in the woods, would be from \$1.50 to \$1.75 cents a thousand feet.

"But however you look at it, I believe it's a paying proposition," declared Mr. Hartt. "If you are going to grow timber on the land, the young forest you've got left is worth the cost and if you are going to sell the land for farming, its worth just that much more for having the brush cleared off of it."

Out of the Old School Into the New

Here was an old-time logging man talking like a forester. Less than a year before, he had been taken out of the old school of timber-faring men who look upon forestry as theoretical bunkum and he had been set up against the task of putting his own

logging operation on a forestry basis and making it pay. It was apparent that he had done a lot of thinking and that he making progress fast.

There was no doubt but that Mr. Hartt had burned his brush clean. Limb and top material under four or five inches in diameter was little in evidence on the cut over area. The company is cutting to an eight inch top limit and seven inches where the logs are straight. Some material below this size remained. I was told that the company is endeavoring to work out a plan of utilizing this small waste in a distillation plant or otherwise. It has sold some for cordwood and mining timbers, but the local

woods as cheaply as horses. The logs were being decked along the roads, where during the winter they will be loaded on sleighs and hauled to Sidnaw for shipment to the mill at Iron Mountain.

From the woods to Sidnaw is three and a half to four miles and all log hauling is done by tractors on snow roads. Last winter the company used nine foot sleigh bunks, and averaged 3,000 feet to the load, six loads a day to the tractor. The cost was given me as seventy-five cents a thousand feet. This winter the plan is to use 12-foot bunks which are expected to about double the loads. The tractor runs inside the iced tracks and ac-

Mountain. There were a lot of questions I wanted to ask. For example, how could the company as a business proposition pay its lumberjacks three and four times the wage other lumbermen are paying and in addition \$2.50 a thousand feet for disposing of the brush? Mr. Kingsford smiled when we got to that point.

"Last winter the logs we bought cost us \$28 a thousand feet and that included a freight charge on the haul from Sidnaw to Iron Mountain of \$5.75 a thousand feet. Bear in mind, too, that last winter, we were just getting started, we logged a very small amount of timber and we charged off initial expenditures pretty heavily.



"Where lumber has grown once it will grow again," said Mr. Kingsford. This is a scene in the area cut over last winter, showing absence of brush and young timber left for a second crop.

market is limited. Hemlock logs are being barked in the woods and the bark shipped to a tannery. The accompanying photographs show how the woods look after lumbering is completed.

Horses Persona Non Grata

We then went over to where logging operations were in progress on another season's cut. Ford tractors were at work pulling stumps and grading the logging roads. Brush was being burned as it was trimmed from the logs and tops. The only place that horses were in evidence was in the skidding and this was being done by contract. Apparently Mr. Ford does not believe in owning horses, but it hasn't been yet established that a tractor can skid logs in the north

cording to Mr. Hartt can attain the maximum speed of twenty miles an hour.

Ford Wages to the Lumberjack

The standard Ford wage is \$5 a day for the first sixty days and then \$6 a day is paid in the woods as well as in the Ford mill and factories. But he has to be a good lumberjack or he soon gets his time. This wage includes board, the company figuring board at \$2 a day, so that the wage scale is better stated at \$3 and \$4 a day and board. This stands out in marked contrast to the wage of \$1 to \$1.50 a day and board now being paid in other logging camps in the north woods.

The next day I again spent several hours with Mr. Kingsford in Iron

As for the higher wages, we get more work out of the men.

Preparing For the Bad Fire Year

"The cost of the brush burning, we admit, seems high. We hope to get that down, but whatever the cost we are going to burn that brush. Fire is ninety per cent of the problem of growing timber here in the north and I believe the forest fires can be definitely prevented only by getting rid of the brush menace. A fire protective system is a good thing and will help keep down forest fires, but during a dry windy Summer such as we have up here every five, six or seven years, it won't stop the fires once they get started in old cut-over slashings. With the slash cleared up, I believe that our woods will be quite



The Ford logging camp four miles from Sidnaw, Michigan. It is electrically lighted and steam heated throughout. No bath tubs yet, but they are coming this winter.

safe from fire after about two years. By that time the sprout growth will be up and there won't be much inflammable material to give trouble. Of course we will have to maintain some protective system because our holdings are not all blocked up,—how much we haven't worked out."

That was Mr. Kingsford's explanation of why the company had adopted the policy of burning its slash rather than in leaving it in the woods and expending possibly a smaller amount of money in intensive fire protection.

"Mr. Ford is possibly able to practice more expensive and intensive methods of lumbering than the average lumberman, who is looking ahead only until he dies. The protection of cut-over lands for timber production does not appeal to him for this reason and also because of the tax burden. Until timber taxation is put upon a fair basis, I doubt if the profitableness of protecting cut-over lands will appeal to the average business man, but it must be clear that if these northern lands which were cut over thirty and forty years ago and which today are burnt and

barren for miles, had been protected, they would now bear a timber crop which would make them worth many times their present value. The holder of such cut-over lands would have a valuable property instead of a barren waste which he is glad to sell for \$5 or \$10 an acre or less.

"Timber! That's Our Crop"

"Yes, lumbermen tell us that raising timber as a business proposition won't go. So far as Mr. Ford's business is concerned, we believe that it will. I have studied these northern lands for forty years and I think I know what they will do in the way of growing timber. Land which has grown timber once will grow timber again."

"How about the common cry that these northern cut-over lands are needed for agriculture," I asked.

"The trouble with the American farmer today," replied Mr. Kingsford, "is that he is suffering from over production. Whenever there is demand for it, he can raise two years' supply of farm produce in one year.

Why weigh him down with more land, particularly up here in the north where the land must be classed as generally poor. Of course, there are areas of good farm land here, but the sum total of land acreage which is poor for farming and good for timber growing is so large that the high grade farm land will naturally pass into farms on its economic merits.

"So far as Mr. Ford's holdings are concerned, we are not even distinguishing between so-called farm land and forest land. These holdings aggregate about 400,000 acres, of which some 250,000 contain merchantable timber. The remainder bears young growth and some of it is too rough and rocky to even grow timber. We don't know what we will do with that. But where timber will grow, we are going to grow it. The one essential crop that is suffering from under production—yes, almost total lack of renewal—is timber. That's our crop."

And looking at it in that light, the Ford organization has adopted a definite forest program and is on its way.

PLEASE MAIL THIS COPY TO A SCHOOL TEACHER

Scores of readers of the "Canadian Forestry Magazine" make each copy do double work by mailing it to school teachers, clergymen, and other influential citizens of their acquaintance. One man mails his copies to Wales, another to India, but what we are asking now is that you give your copy to a school teacher, if possible. Two cents will accomplish this service. You might mark any special articles that you consider more than commonly worth while.

The Forestry Magazine is a publication with a positive patriotic purpose.

Help to double its influence!

A Plea for Game Conservation

The Relationship of Forest, Fish and Game to the State is Traced

By Sam Harris,

President, Ontario Sportsmen's Game and Fish Protective Association.

PRESERVATION of the forests means to the community as much as any premium paying investment; it is a reducer of taxation and a guarantee of many blessings, now and to be, enjoyed. Every citizen is interested in it and should be a "save the forest" booster.

Forest preservation means the conservation of our water supply. It means cheap timber, firewood, paper, etc., and a continuance of game and fish, for without forests, these disappear. This results in the settlement of parts of the country by those who supply the needs of sportsmen, which, in turn, means revenue for the railways, the settler, the outfitter, and all those who manufacture supplies, such as guns, boats, fishing tackle, clothing and the numerous things that enter into an outing.

Man—Not Game—Is Wild.

My experience has taught me that game is not wild—only on the alert for self-preservation. It is the human being that is wild. He goes out to kill without considering the consequences and uses any and all methods which help him destroy, taking from the game every chance, even that which is considered a "sporting" one. When I first went to the bush, game was plentiful,—deer in abundance; but hunters in the deer season with their dogs increased in number, and it did not take many years before the term "deer in abundance" had to be changed, and the bush was lonely (leaving a feeling similar to that when you go to visit a fond friend and he is there no longer). The joy is all gone! It did not need much investigating to determine that the running of deer with dogs and killing indiscriminately buck, doe and fawn, along with the accuracy and power of the rifles of the present day, were the causes. Wolves are a menace also but they have been in existence as long as the deer, and while they are bad actors, taking their toll, for which they should be exterminated, still there always have been plenty of deer, when they only had wolves to contend with — the deer being able by a



SAM HARRIS

"On the Snow-Shoe Trail"

natural law to take care of themselves against the wolves.

The high-powered rifle with its accurate killing power is desirable, as it means a greater certainty in the game being secured. Yet there is a limit to its advantages. A weapon that will kill at a mile or more, is dangerous to more than game. No wonder men have been shot, who have not heard a sound! In the interest of safety to the hunter, something should be done to control the killing distance of the bullet, for as far as red deer are concerned, about 200 yards should be sufficient.

Use of Dogs Condemned.

Running deer with dogs is about the worst form of game destruction possible, principally for the reason that as a rule, open season is rutting or mating time, and the chasing of deer interferes with the natural law of reproducing kind. No breeder of sheep or any other domestic animals

would permit for a moment the animals being run or worried at that time. It is unthinkable! and the same applies to deer. The natural increase per annum is two fawns. Exceptions have been known where three have been seen and on the other hand, only one. Two, however, is the average. In districts where dogs run deer it is rare to see a doe now with more than one fawn and there are many dry does, which shows that the natural law has and is being interfered with.

The usual results from violations of natural laws follow. We pay the price in loss of production. There are those who say if a wolf which is around all the time (including mating season) does not seriously affect the supply, how can a dog who is only there for a few days? The answer is easy:—the wolf does not take to water so that the deer protect themselves by getting near the water and easily leave the wolf. The wolf does his dirtiest work when the snow is deep with a light crust that will bear him, but not the deer. Further, the does are heavy in fawn. A dog will follow a deer for miles—water or no water—often until the deer is exhausted. Should the deer get away, it has little chance of reproducing its kind, for that season at least, and should the hunter kill and get it, the meat will not be desirable to eat.

A lost dog will howl and run night and day, and when two or three run wild together, as far as that district is concerned, there is little chance of any annual increase. Dogs will force deer to take to water, which at that season of the year is very cold, and the deer being hot, the plunge is a shock to the body and must affect the animal in reproducing its kind. Shooting an uninjured deer in the water where it has absolutely no chance (except that its head offers a small target, particularly when a hunter is shooting from a canoe) is the meanest method of shooting a deer, for the reason that the sporting element is entirely absent. In all these things however, the important point is that the natural law of increase is interfered with.

It is gratifying to note that many,

even among those who use dogs in running deer, are realizing that the outing with safety is the great thing after all, — not just getting so much meat. Several men this year spoke to me, stating (although using dogs) they are through with them. They say it spoils the outing looking after them and sitting on a runway, though made as "comfy" as possible and waiting until a dog drives a deer to them (their only part being to kill somewhat like a butcher killing a cow—lacks all the elements of sporting conditions.

In Canada the dog is prohibited in the nine provinces, with the exception of Quebec and Ontario. In Quebec, out of 90 days' hunting, there are only 10 days allowed to run deer with dogs, but the fawns of either sex are protected. In Ontario, dogs may run deer for the full season, which is, north of the Transcontinental Railway, 60 days, south of that to the French River, 45 days, and south from there, 16 days, except Sundays, and you may kill buck, doe or fawn.

Advantages of "Buck Law."

The "Buck Law" whereby only bucks, the interest of deer life, may be killed, has these advantages:—

It protects the hunter, for the reason that if the horns are seen, it can not be a man. The only time men are shot in mistake for deer, where a 'Buck Law' prevails, is when in direct violation of the law, the trigger is pulled before the target is seen. This cannot be too strongly emphasized, condemned and pun-

SOME CANADIAN GAME WHICH IS BEING CONSERVED



Reproduced by courtesy of Canadian National Parks.

Wild Deer in Rocky Mountain Park, near Banff, Alberta.

ished! There are those who contend that very often it is not possible to tell what sex the animal is, while on the run. Admitting this, let it go. In two or three years, the increase will be such that there will not be any difficulty in getting your buck—and it will be one worth taking!!!

"Spare the Doe" also means two extra deer next year. This natural annual increase brings its proportion

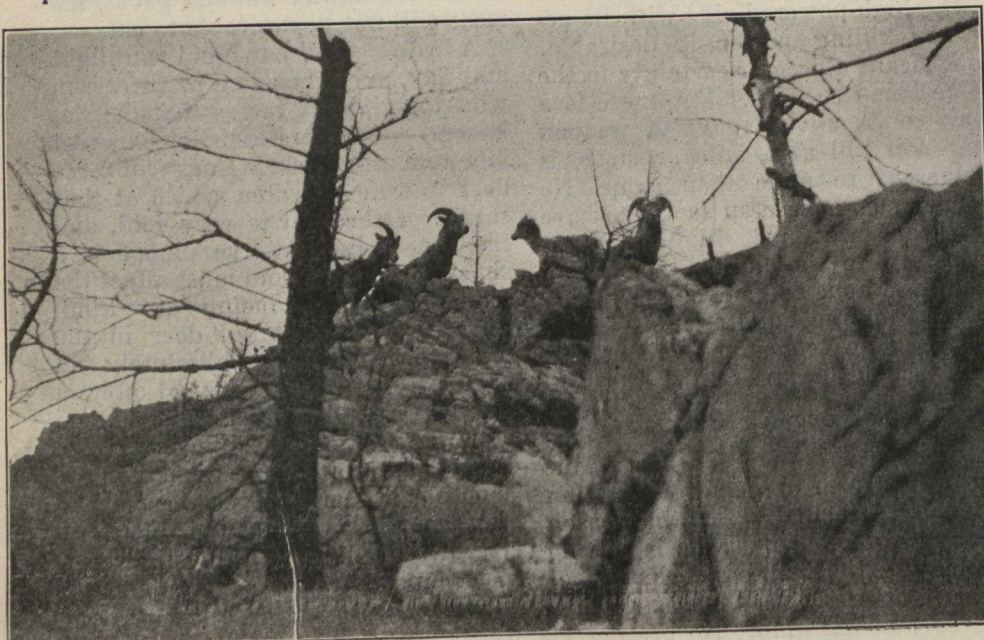
of bucks—the natural interest of this big game, and insures in perpetuity this annual outing, so long as forests last, which means every hunter should be a protector of forests.

Canada has a "Buck Law" in every province, except Ontario, New Brunswick and Quebec, but only in Ontario may fawns be killed; but in all provinces the cow moose is protected. Why not the doe?

For the safety of the hunter, some regulations should govern and restrictions should be placed on the man who, by right of a license may use firearms. After an accident, an examination is made. This should have been made before issuing the license. Highly strung persons or mental defectives have no right to carry fire-arms, whereby they may take the life of a human being and not be held criminally responsible.

Leaders in Game Conservation in the United States have recognized for some time that the dog is not only unnecessary, but an exterminator of the deer, that the 'Buck Law' does save lives, and that sparing the doe means more deer and a guarantee for the future of the sport. Dogs legally running deer has practically ceased in the United States. The efforts of the Ontario Sportsmen's Game and Fish Protective Association in Ontario has been to bring that province into line with the great Game Conservation States and Provinces, and we intend to work until that is accomplished.

SOME CANADIAN GAME WHICH IS BEING CONSERVED



Reproduced by courtesy of Canadian National Parks.

Herd of Wild Rocky Mountain Sheep, near Banff, Alberta.

Building Population by Building Forests

As a Fashioning Factor of the Human Race They are Unexcelled

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

In two parts—Part I

A LITTLE meditation reveals to any man the fact that his environmental conditions have a marked influence upon his life. Sometimes his development, his career in business or profession are much more a product of his environment than he would care to acknowledge. Passing from the unit to the mass, we find that races of men and nations have been largely guided in their development, industrial and social, by their environment — our own country is an excellent illustration in point. The climate makes a hardy people; the extent and fertility of the soil make an agricultural people. The richness and availability of the ore deposits make a mining people. The farm, the forest, the mine, these engage the attention of much the greater portion of our people and they have placed their imprint in some form or other upon us all.

Of all the fashioning factors of environment probably none has had a more profound influence upon the human race than the forest. Our remote ancestors of Asia and Europe worshipped in the forest and singled out certain trees, such as the oak, ash and pine, as objects of adoration. They filled the forests with good and evil spirits, with fairies and goblins. The tree is the symbol of life's creative power or of the origin of good and evil in many religions besides our own. The tree or some part of it has been the symbol of victory or peace since the beginning of strife among men. The tree motif, with the significance indicated above, is found in the architecture of most peoples. The trees and forests have appealed to the artists and poets of all ages. Trees in some mysterious manner penetrate to the soul fiber of the men who come into contact with them.

Influence of Forest.

The history of Canada in relation to the forest has been no exception. Who can measure the influence of the forest upon the life and development of the Canadian people? Who can tell how much it has added to



DR. CLIFTON D. HOWE

Demonstrating Coue methods on a young fox captured by him on his vacation tour of the old Grant Farm in Maine. This is the historic spot immortalized in the writings of Thoreau.

the romance and adventure of the early days of exploration and settlement? One needs only to refer to Champlain, LaSalle and Iberville, to the voyageur, the fur trader, the later French colonist, and to the conquest of the forest in Upper Canada by the English-speaking people to recall the vision. The struggles with and adventures in the forest developed

hardiness and certain traits of character manifest even to this day—and we are grateful for that.

Indeed, I would be remiss if I referred to this matter only in the past tense. In fact, the utilization of the forest, the development of the lumber industry, notwithstanding its frequent failures and tragedies, has been a romance of first magnitude. The lumber kings and timber barons of a generation gone were decisive, and often picturesque, factors in the industrial — and sometimes political — development of the country. Within the past decade a phase of forest utilization has experienced a most phenomenal growth. The development of the pulp and paper industry can only be numbered among the greatest industrial romances in these times of great achievements. The men who have built up and maintained these great enterprises are not alone mere captains of industry; they are generals of great armies; they are monarchs of extensive realms. Their holdings are often larger than some independent countries on this continent and larger than certain principalities of Europe, and I doubt not that their financial budgets are larger. The happiness and welfare of whole communities, in the aggregate of many thousands of people are in their hands.

In fact, the influence of forest utilization upon community development is more intimate than most of us realize. We are all familiar with the fact that in the early settlement of Eastern Canada the forests were destroyed to make way for agriculture. The markets for wood products being few and far between and the forests being abundant and practically continuous in extent, the forests were destroyed in a very literal sense. We are not so familiar with the fact, however, that actual forest utilization has made settlement possible. If we go back to the early days of the lumbering industry, we find that it paved the way for agriculture.

I have lately been reading the history of the administration of the

crown lands in Eastern Canada, and I have been impressed by the fact that the license system of handling timberlands had its origin in the necessity of clearing away the forests in advance of agricultural settlement. Many of the fine farming counties along the St. Lawrence and its larger tributaries and along the shores of the Great Lakes have been prepared for settlement by the lumberman. We have a modern illustration of the same process in the southern portion of the great Clay Belt. Some of our railways were first built as logging railways. The settler followed them up because they gave him a ready opportunity to get his produce to market. Most of my audience will recall a striking example of such a railway being incorporated into a through line to the West. There are many prosperous communities in Eastern Canada that owe a deep debt of gratitude to the pioneer lumbermen. We must, also, bear in mind that the enterprise of the lumberman has furnished as a whole cheap building material for the settler and all the farmers of the country and he has thus contributed directly to the upbuilding of the agricultural interests.

Natural Forest Soils.

So much for the policy of selling timber preparatory to the settlement and development of agricultural lands. Now let us examine the working out of such policy for lands unfit for farming. You know that between the agricultural lands of the south and those of the north lies an enormous extent of country where the underlying rock is so near the surface and the deeper soils so sandy or stony as to render them unfit for farming purposes. Such soils nature designed for the raising of trees and only for the raising of trees. Between the natural forest soils and the soils capable of raising profitable farm crops, lies a widely distributed class of soils intermediate in character. These soils may give abundant crops for a term of years, usually very brief, and then wear out. They at first give hope to the settler, but their declining fertility soon leads to discouragement. Then follows a period of tenacious hanging on in dire poverty and finally abandonment either by the settler himself or by his children. Soils of this kind have a potential agricultural value, but not for the pioneer. They are adapted for certain specialized crops and can be worked profitably only

when within short hauling distance from large centers of population. It is probable that several generations of trees could be raised upon these intermediate soils before the population of the region becomes sufficiently dense to justify their use for agriculture.

Both the settlement and finally abandonment of the inferior agricultural soils have been stimulated by the lumber industry. The settler follows the lumber camp into the forest; he is especially inclined to locate about depots and headquarters of logging districts. Sometimes small farming communities establish themselves about the larger depots. For several years the settlers find a good market for their produce with the lumber company. Since our forests are regarded as mines to be abandoned when the commercial timber is cut, the lumber industry is of necessity a roving one. When the timber is cleaned out of a district, the camps and depot sites are abandoned and business re-established in another district. The withdrawal of the logging operations takes away the settler's local market and leaves him no outlet to distant markets. He is thus reduced to extreme poverty and he ekes out existence for himself and family by hunting or trapping or by getting employment in the winter in distant lumber camps. His children are far from school or church and they often grow up without the influence of either.

This process of cutting the forest clean from non-agricultural soils, moving on to other sources of supply and leaving a scattered and depauperized population behind, has been repeated over and over again in Eastern Canada. Instead of encouraging and stimulating community development, the unstable nature of the lumbering operations has strangled it. Not only the hope of the soil, but the hope of the forest, also, has been destroyed. It was cut with no provision for another crop on the same area and as a general rule the efforts of nature to reforest have been made abortive by repeated forest fires. The result of such a system of forest treatment is to be found in thousands of square miles of barrens, semi-barrens and inferior forest growth through which is scattered an isolated population, without permanent employment, with few churches and schools and few contacts with outside markets. Their conditions of life are exceedingly hard and not of their own making.

They are the victims of a public policy towards the forest, over which they had no control.

A Disastrous Policy.

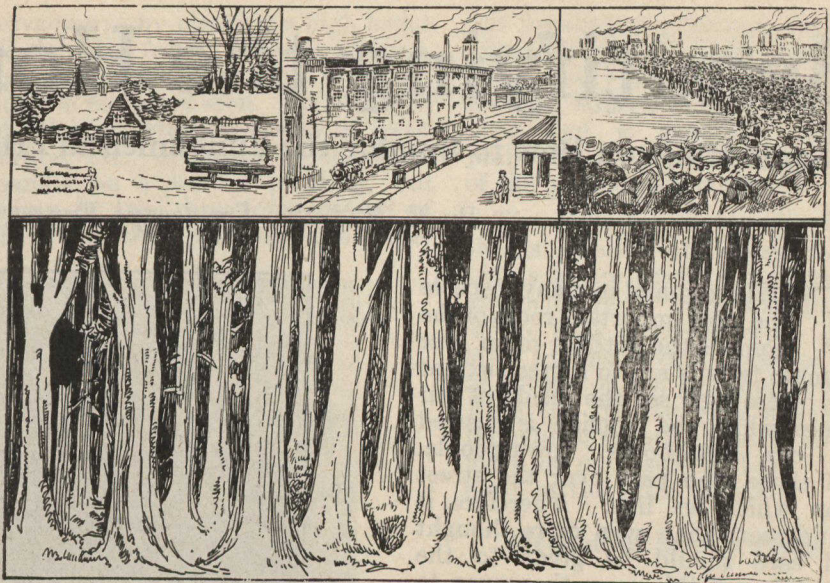
The disastrous effect of a forest policy which compels the lumber industry to migrate from place to place is to be found not only in the forest itself and on the farm, but, also, in the larger towns. Throughout Eastern Canada there are many towns once growing and prosperous, but now declining and discouraged because the saw-mill, or other wood-using establishment, has gone out of business through the failure of forest supplies. They are in the condition which the commercial traveller so aptly designates as "dead." Many other towns have been saved from a like fate by the coming of railway shops, by development of the water-power site or their geographical situation made them natural trading centers for developments in agriculture, mines or pulpwood farther to the northward.

The older men of my readers will at once recall illustrations of what I mean, but for the benefit of the younger men let me give one example. Forty years ago the town had a population of 1,300. Then came a sawmill or at least the old mill was rejuvenated and enlarged. In ten years the town had a population of 3,000 and in another decade it had reached 3,800. From this point the output of the mill declined and about fifteen years ago the work became spasmodic and finally the mill went out of business because the river valley above had been logged out. The population decreased with the declining fortunes of the mill until now the town has less people than it had 40 years ago. Stores and shops have been abandoned; whole streets have vacant, tumbled-down houses. Discouragement and despair are written everywhere in that village—in the faces of its people as well as in the condition of its streets.

This town, like many others, is the victim of an administrative policy on the part of the government which regards a forest only as so many trees to be cut and not as a restorable resource capable of producing crops indefinitely when properly treated. The river valley had and still has forest soil enough to support three such towns as the above at the time of its best development, under intelligent use and conscious effort to keep the forest continuously productive.

The influence of the forest on community development is something very real and tangible in the cities and older settled portions of the country, as well as in the more rural and pioneer districts. In fact, our whole development, industrial and social, is based upon wood. Not long ago we spoke of the age of steam and the age of electricity, but now we are in the age of wood, the product of the forest. We can neither eat nor sleep with comfort without coming into contact with or using in some form the products of the forest. We cannot go to business or use the materials of our office without being impressed by our dependence upon wooden articles. Even in our relaxation at the movies we look at impressions on a film, into whose composition a wood product has entered.

Notwithstanding the popular conception to the contrary, we are becoming each year more dependent upon wood products, instead of less so. The introduction of substitutes does not keep pace with new and extended uses of wood. I believe this ratio will be maintained for years to come. I mean the forest has not yet



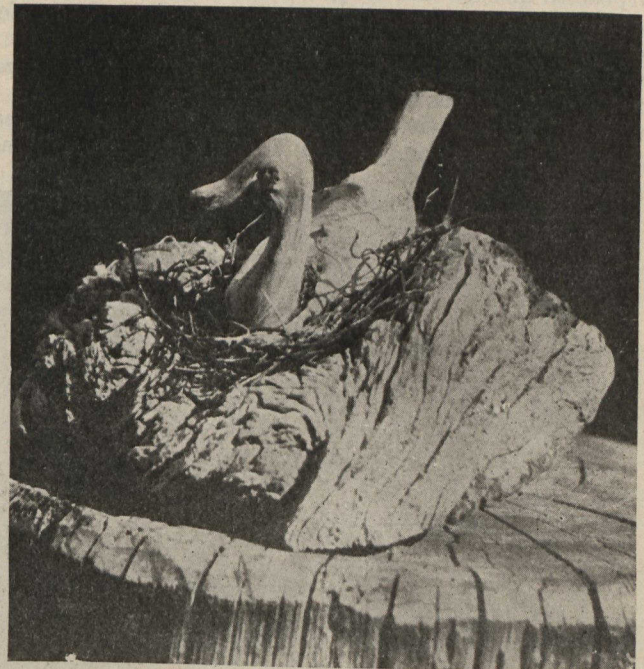
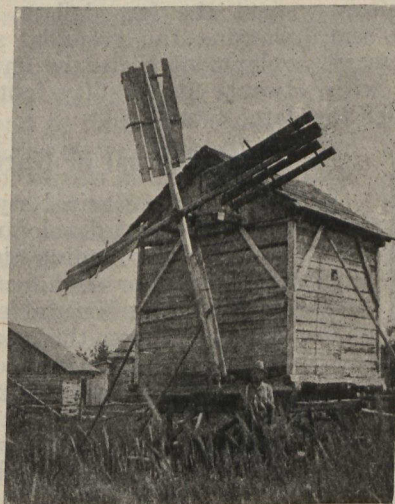
Forests are the prop of national existence. If the forests fail us, industrial activity ceases.

rendered its maximum service to the industrial needs of man. As I indicated at the beginning of this article, the forest forms one of the chief supports of our economic structure, being second only to agri-

culture as a wealth producer. Yet through indifference and ignorance we are letting that support slip out from under. The impending disaster will be great; it will, also, be unnecessary. (End of part one.)

A UNIQUE WINDMILL.

A QUEER BIRD IS IT?



Courtesy Dept. of Interior, Secretary's Branch

Photo from Wide World Photos.

This unique windmill, used for grinding grain, was constructed by an Austrian settler, near Vidir, Man. It revolves on a pivot and may be swung around by means of a lever to face the direction of the wind. The photograph was taken by S. D. Fawcett, D. L. S., of the Topographical Surveys Branch of the Department of the Interior, while engaged on surveys in the vicinity last summer.

This is not a Fatu-Liva bird discovered by the famous Dr. Traprock on his cruise to the South Seas, but a piece of a root found in one of the Silver Forests in Rainier National Park, U. S. A., and so similar in appearance to a duck, that a nest was made and the mountain freak is now on exhibition in Tacoma, Washington, U. S. A.

Beautifying the Home Grounds

Some Hints on How to Employ the Fundamental Principles of Landscape Gardening

By *E. B. Luke, Landscape Expert, Montreal.*

THE largest and in many respects the most important room of the home is the outdoor room. Our intimate friends are to a great extent only those who see the inside of our homes while the outside is viewed by our neighbours, townspeople, and those who pass over the street upon which we live. Therefore, it would seem that even more thought and care should be given to the decoration of this room than even to the interior of the house itself. The art of developing the grounds surrounding the home, call it ornamental gardening, landscape architecture or what you will, is simply the art of creating organized beauty in that the grounds are brought in harmony with the house itself. And there is no intelligent person who loves and knows something about plants and flowers, who, if he possesses some little taste, cannot succeed in suitably and tastefully decorating his home grounds if he will but employ the fundamental principles of landscape gardening.

In this short article it is not my purpose to discuss this subject from a complicated or technical standpoint, but rather express as plainly and as simply as possible the principles underlying the work of developing the home grounds. In the first place, it is surprising how often we see costly

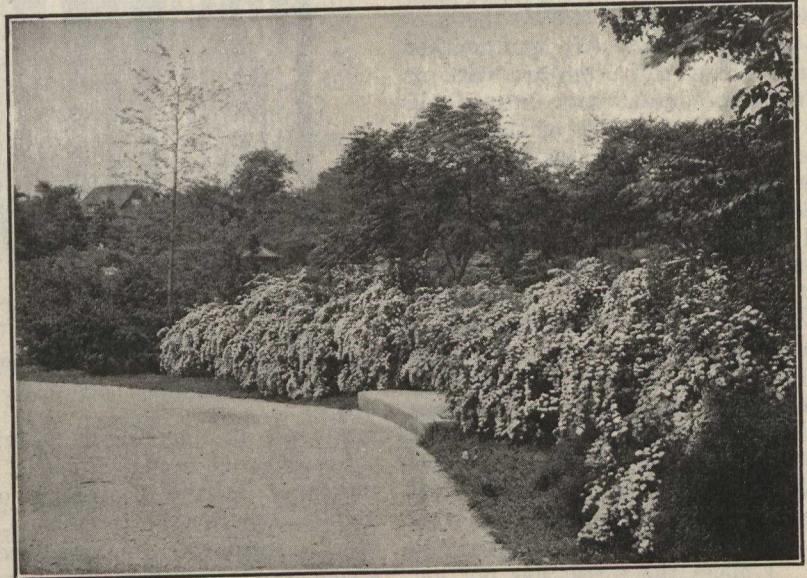
houses tastefully and expensively decorated and beautifully furnished, while nothing is done to relieve the bare, cold, cheerless and ugly appearance of the grounds. One would not consider his house completely furnished and comfortable without rugs, pictures and appropriate furniture artistically placed and arranged, and I submit that it is just as necessary to furnish the outside room with trees, shrubs and flowers in order to

take away its bareness and bring it into harmony with the inside furnishings and its surroundings. The builder or the landlord would find that the property for sale or to let would sell or rent for a figure out of all proportion to the cost of such work if he spent the few dollars necessary in planting the grounds, and this development is just as important on a twenty-five or fifty foot lot as on a large estate.

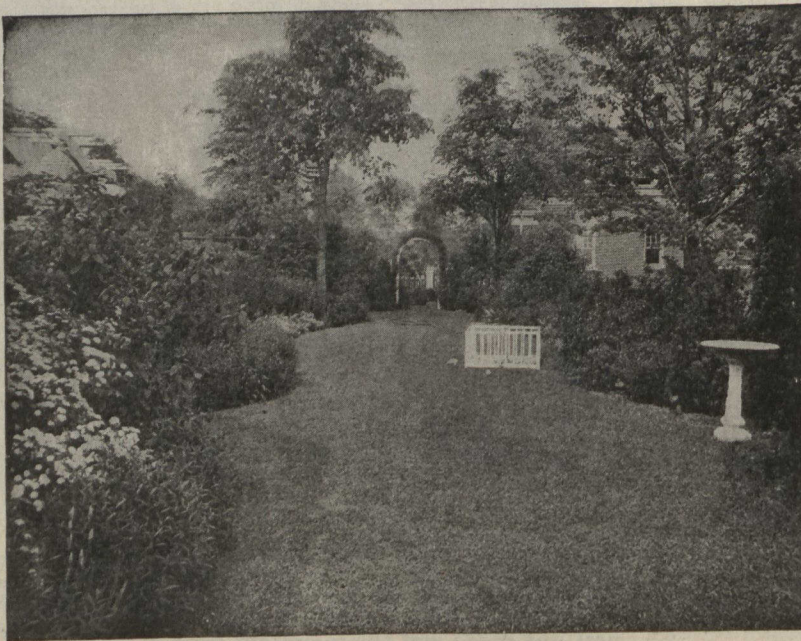
Formal or Natural?

The two principal styles generally used in the development of the grounds surrounding the home, are the Formal or Architectural and the Natural. The Natural is undoubtedly the favorite on this continent, as it harmonizes more perfectly with our surroundings, and it is this style with which I shall deal.

In the first place the lawn should be as large and as little interrupted as circumstances will allow. Generally speaking, it is good practice to devote all the centre and interior to open lawn. The planting of trees, shrubs and flowers should, therefore, be generally confined to the boundaries. One would not want the furniture in the living room to take up three quarters of the room; much less would one want the green carpet of the lawn nearly covered with such furniture as trees, shrubs and especially gaudy flowers planted in



Entrance planting—featuring *Spirea Van Houtii*.



Informal border planting of Shrubs and Perennials.

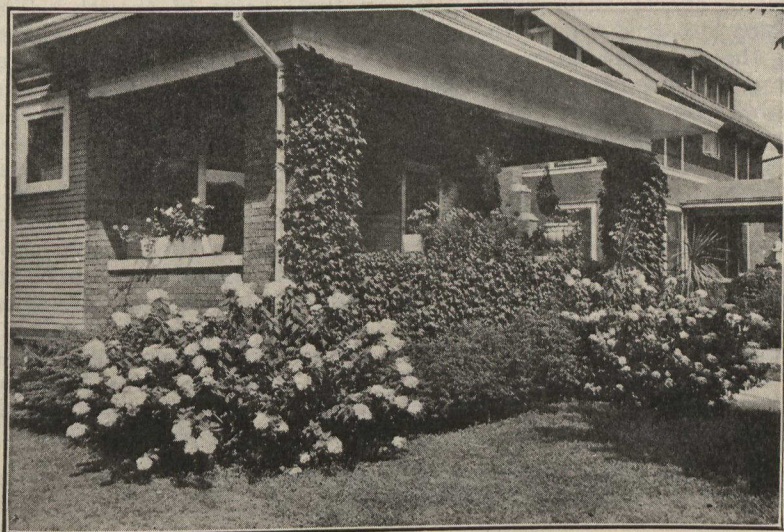
beds very often in the shape of such products of the kitchen as tarts, pies, doughnuts, etc. Buildings as far as possible should be placed to one side, and drives and walks should never be cut through the middle of the grounds nor should they be in straight lines where curves are possible.

Grouped trees conform to the

privacy was by planting a high hedge all along the front. There is a practical modification of this plan, however, but one not often seen. It is that of planting an irregular screen of trees, shrubs, etc., arranged in the same manner as a border planting, but facing in two directions instead of one. In this planting, the taller

but foundation plantings even if the lawns be only the space between the house and sidewalks in front, has a broader, larger and more open appearance and is generally considered preferable to that where any or all of the grounds are enclosed.

The place for the garden flowers, that is, annuals and roses and such plants as are grown for cutting is in an enclosure by itself and preferably at the back or screened off from the lawn by means of a hedge or clumps of shrubs or tall growing perennials. Here can be had with a little forethought in planting that privacy that most of us desire to have on some parts of the home grounds.



Foundation planting of shrubs and vines.

Method of Border Planting

The planting of next importance to the foundation planting on the ordinary sized town or city lot is the border planting. Here if there is space for a fairly deep border, shrubs should be used as a back ground, and in front of these should be planted perennials, annuals, bulbs, edging plants, etc., placing the taller growing varieties at the back, the medium in the centre until the border is faced right down to the ground, but it must be emphasized that the best effects are had from massed and clumped arrangements, even if there is only room for two or three of a kind. The right idea is to bring together such kinds as possess contrasting qualities, arranging these group against group, with an accent shrub or plant here and there, but all done with the idea of making the strongly marked characteristics of one kind, relieve and offset those of the others.

natural method of planting, because in nature trees are almost always seen in groups, certainly never in straight rows. Shrubs are seldom used in too great profusion, usually the reverse. Often we see a shrub or tree stuck in here or there, generally in the very place it should not be, bearing no relation to any other tree or plant, or any plan and having no reason for being in that particular place. The union of the house with the ground so that the former seems a part of the latter is best effected by the use of shrubs intermingled with a few perennials and flowers. A building which rises abruptly out of the ground gives an impression of lack of harmony. The remedy is to break up or obliterate the line of junction and to tie the house to the ground. This is called foundation planting, and without foundation planting, a house has much the same appearance as a man with a collar and a shirt, but minus the tie. In the development of the foundation planting, shrubs and perennials should be irregularly grouped along the walls and massed in retreating angles, and with them climbers can be used most effectively on walls, porches or verandas.

materials are placed in the centre, the medium growing material next on each side, and these are bordered on both sides by dwarf growing shrubs, perennials and border plants, the beauty of which can be enjoyed by all. It is also less expensive and a thousand times more beautiful than the most fancy and expensive fence which is usually the ugliest fence.

In this country, however, where our Summers are comparatively short, our people do not live much on the lawn and prefer that the lawn, however small, should be a setting for the house so that the whole will give the best possible effect from the street. The whole street of open lawns with

For instance, in clumping or grouping ornamental trees on large grounds where there is room for them; dark evergreens offset birch of lighter bark or beech of lighter foliage; purple leaved trees plant well with golden

How To Secure Privacy

The first question to be settled in laying out the grounds of a new home is whether a fine street effect or outdoor privacy is desired. The good old English method of securing



Spirea Van Houtii used as hedge.

or light leaved varieties. In shrubs, small leaved varieties such for instance, as some of the Spireas plant nicely, against the large leaved Virburnums, Weigelias or Hydrangeas but again the use of striking contrasts like anything else can be overdone for Nature delights in a predominance of the more delicate tints of greens and in the Fall browns which should therefore predominate.

In the border planting, however, where flowers, perennials or annuals predominate it should be remembered that the continuity of bloom does not always work out on schedule. The early flowering varieties can be depended on to fulfill their role but the results expected from the mid-summer and the Fall flowering groups may be entirely upset by a dry spell or other unfavorable weather conditions so that some patience should be exercised and more than one season's experience with a border planting is necessary before an impartial judgment can be passed on its merits.

Tree-Planting On Streets

For street planting of course, only one variety of ornamental trees should be used, and on both sides of the streets.

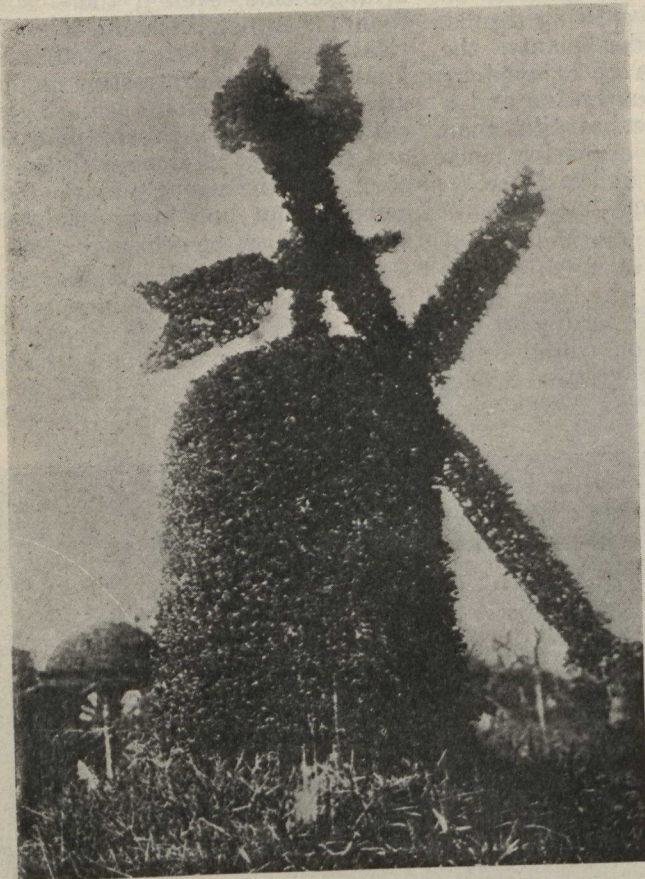
In any contemplated planting the planning should be followed by preparation. The materials are generally planted closely together for the clump and mass effect; they must have something to feed on. In other words, the soil must be made rich, well dug up, and after planting kept cultivated, free from weeds, and watered during the dry spells. In the planting of ornamental trees, it is even more necessary to give them every care, because considerable portions of the roots have been taken off in digging. Furthermore, tall ornamental trees should never be planted without being firmly staked, and my experience has been that most of the losses have occurred in planting ornamental trees by not staking and by loose planting. By

that, I mean that the trees have not been firmly set, the wind blows them about, the rain, air or snow gets into the roots, and the tree is gone.

Trees of an ornamental nature need little or no pruning, and where necessary to prune shrubs, the pruning should be done at the base. Too often shrubs are cut back much like a hedge which spoils the graceful and natural habit of growth. The best method is to cut out the old straggling stems so that fresh, clean and vigorous stems may come up in their place. There are, of course, exceptions, such for instance as the hydrangeas, which can stand vigorous pruning.

Another thing to be remembered is that most shrubs bloom from old wood and should therefore be trimmed right after they have blossomed. A good safe method to follow is to prune early blossoming shrubs right after blooming while late blooming varieties can be pruned in the late Fall or in the early Spring.

Tree Shaped Like Wind-Mill



Years of patient pruning and training have been necessary to secure the amazing result shown here, a living tree in the shape of a windmill. It is one of the sights in a most unusual garden on an estate in the north of France.

The Piano Organ

John Gould Fletcher in Poetry.

In the night
At the hour when the breezes waken,
And set to blowing down the gutters,
And off the benches in the park
Scraps of soiled newspaper,
White butterflies aflutter in the dark,
Suddenly my soul is shaken
By a piano-organ at the corner.
Its notes,
Dry, distant, shrill,
Quiver, still metallic notes...

And the children dance to it:
Tattered, half-fed children dancing...
The piano-organ plays away
Courage, honesty, achievement, sordid or clever,
Bit by bit.
And the children dance to it.

In the night
The piano-organ suddenly ceases,
Doubtless it has been wheeled away.
And then it starts off again;
I would like to follow it day on night,
Hear the self-same chink and roar,
Watching the children dancing to it,
Watching policemen waving it away,
From house to house, from street to street,
Until it reaches earth's last shore,
And at the ends of the world pulls up to play:
And then, I wonder, would it change
Its everlasting tune,
Or would it clatter to the moon
The same dull jig that satisfied the earth?

Raising Reindeer in Canadian Arctic

Immense Herds of Wild Caribou Constitute Greatest Obstacle to Domestication of More Tractable Cousins—Both Species are Well Worthy of Conservation.

By George A. Mackie

THE Royal Commission Report upon the possibilities of the Reindeer and Musk-Ox Industries in the Arctic and sub-Arctic Regions of Canada—the musk-ox section of which was referred to in the January issue of this publication—contains some most interesting information concerning present and prospective herds of Reindeer and their close relatives, the Caribou. This Report which was prepared for, and issued in book form by the Northwest Territories and Yukon Branch of the Department of the Interior, is presented by Dr. J. G. Rutherford, C. M. G. (chairman), Mr. James S. McLean and James B. Harkin, who comprised the Royal Commission.

After reviewing a great mass of data secured from various sources the Commissioners express the opinion that there is no doubt as to the advisability of a number of experimental herds of domesticated reindeer

being established in the most suitable locations which can be selected for the following purposes:

(1) To furnish reliable and economical food and clothing supplies for the natives, both Esquimaux and Indians.

(2) To provide future food supplies for white men who may go in to develop or exploit, as the case may be, the mineral and other natural resources of the North

(3) To lay the foundation for a possible future commercial meat industry similar to those already established in Norway and Alaska.

In this connection it is pointed out that there are now over 200,000 reindeer in Alaska, all of which, in addition to the tens of thousands which have been killed for meat, have come during the past twenty-eight years from the original importation of 1,280 animals purchased

in the years 1892 to 1902 inclusive. This is a remarkable showing but it is worthy of note that as the animals increase in number and the herds in size, unforeseen difficulties are encountered, the most of which result from the restraint which it is necessary to impose on the domesticated reindeer as compared with the caribou in its natural state of freedom. Strange to say, the caribou constitutes the greatest obstacle in the way of establishing herds of domesticated reindeer in Northern Canada due to the tendency of the caribou to attract and lead away the

With regard to the establishment of herds of domestic reindeer, the evidence indicates that great care must be exercised in selecting locations where the vegetation is of a quality and quantity sufficient for the herd. Reindeer and Caribou readily eat both grass and lichen. The United States authorities are now studying the range and endeavouring to determine a grazing unit, that is, to ascertain how much land, under the forage conditions of that country, one reindeer needs to maintain it for a year.

The nature of the country must be such as will permit of effective herd control. The evidence indicates that in some districts man, either on foot or on horse back, would find it quite impossible, especially during the Summer season, to travel over the surface in any given direction at such a speed as to permit of effective herding. While the evidence on this point is some-



Photo by R. W. Brock.

Illustrating the Domesticity of the Grenfell Herd of Reindeer.

more tractable reindeer. Many witnesses readily admitted the danger of the absorption of a small herd of reindeer by a large herd of wild caribou, but the danger is by no means confined to the large caribou herds, as a small band of wild caribou would be quite as likely to lead off any reindeer not under close and constant observation and control.

Much evidence was secured as to the numbers and habits of the wild caribou which inhabit this region, and although definite figures are not available, they seem to exist in immense numbers, herds of tens of thousands being reported by reliable observers. It is quite clear that these animals exist in such numbers and are so widely distributed that there will be a constant danger of their attracting and absorbing any herds of domestic reindeer which may be established in this area.

what conflicting, it has been fairly well established that during the Summer season, when the flies are bad, both reindeer and caribou endeavour to reach the seashore or betake themselves to higher and more open lands, where they have the advantage of such breezes as may offer. It is claimed by some witnesses that there is no tendency on the part of either the reindeer or the caribou to seek shelter in extreme weather. Be this as it may, the fact remains that the woodland caribou are much larger than those of the so-called barren land variety, their carcasses dressing out at from two hundred to two hundred and seventy pounds, while the carcasses of the barren land caribou do not weigh over one hundred and fifty pounds.

The Reindeer Industry

As regards the Reindeer industry

the Commission reports that "as a matter of fact, there is no limit to the possible extension of the industry, if gone about properly and on sound lines."

There are, however, certain lessons to be learned from the experience of other countries. Even in Norway, the home of the reindeer, there is, if we may judge from the evidence of Mr. Storker Storkerson, room for considerable improvement, at least in the matter of Winter feeding. In Alaska, over-confidence and neglect of the first principles of animal husbandry, have produced a crop of parasitic and other troubles, which it will be our duty to avoid.

Dr. Grenfell's experience in Newfoundland is referred to in the statement prepared by Mr. Jose A. Machado, secretary Canadian Branch of the International Grenfell Association, who quotes a memorandum written by Dr. Grenfell in January, 1917, as follows:

"We have completely demonstrated here that the deer can be successfully installed and herded without undue cost; they can flourish and propagate on the natural food; needing none of the necessary provisions made for elk on the Rockies. Our herd of 250 rose rapidly to 1,200 in four years, and had we had any protection whatever from the Government against poaching, we should today have five thousand of the animals. The experiment is too large a one to be successfully initiated on any scale by a private individual. I have been obliged to economize to such an extent that we have been unable under the circumstances to protect them, or to keep them on the only available headlands where poachers could not get at them, or drive them. This, and the fact that we had to make use of almost barren promontories, made the deer all the wilder in trying to get them to better pastures, and large batches escaped to the south. Two Winters ago I drove right into such a company far to the south of here, but was unable to drive them north again. This is a comparatively closely populated piece

of land. The herd has never yet been tried in Labrador with its huge hinterland. There is no doubt in any of our minds but that they can flourish there."

Some Areas Selected

The Commissioners have fixed upon several areas in Northern Canada as suitable grazing grounds for reindeer and musk-ox. As a precautionary measure certain islands in Hudson Bay have been set aside as Government Reserves. The most desirable of these would appear to be Southampton island which is suitable in every respect except that it is too large, being about equal in size to Ireland. Also, there are on it at present several herds of wild caribou and a number of wolves, both of which would require to be extermin-



Plate by courtesy of Grenfell Association.

The Original Grenfell Herd of 250 Reindeer Imported from Norway

ated. Coats island which lies southeast of Southampton island is about 60 miles long and 20 miles wide. The food on this island is reported to be excellent, there are no wolves and on the North side there are plenty of walrus available for food for Esquimaux that might be employed as herders. The whole of Ungava would appear to be well suited for reindeer. There is an ample supply of suitable vegetation and in the Northern and Western parts of the peninsula there are very few caribou. The territory lying within about 30 miles of the Arctic coast between the International Boundary on the west and Kent peninsula on the east, the interior of the Yukon Territory and the Mackenzie Basin are also believed to be eminently adapted for the maintenance of reindeer.

The deer are somewhat peculiar in their habits and the work of the herders is by no means easy, according to the testimony of C. C. Parker, Inspector of Indian Agencies for

Ontario and Quebec. In the Summer the deer invariably travel to windward. Fortunately the prevailing winds are from the southwest or southeast which brings the deer out to the headlands, where the various varieties of flies bother them least. During the night, however, when there is less wind they travel inland. The stags give the greatest trouble as they separate from the does during the Summer. Fortunately, they stay in a herd and can be driven in this way. When the wind comes off the land the herders are busy from morning to night and sometimes all night keeping the deer on the headlands. In view of the extremely rough nature of the country this is no easy task and entails much running over rocks and morass. The chief herder, in one season, naturally

wore out eight pairs of sealskin boots. The dry moss on the rocks cuts the boots like knives.

Reindeer Meat In Demand

Much valuable evidence was secured by the Commissioners as to the undoubted nutritive value and palatability of car-

ibou meat. From evidence, both direct and indirect, it was clearly shown that there is practically no difference between the meat of the reindeer and that of the caribou. Information secured by Mr. Stefansson was to the effect that in Norway and Sweden there was developed during the war period an excellent market for reindeer meat, and that as the people became accustomed to its use the price increased with the growing demand, until it slightly exceeded those of both beef and mutton.

That it also finds a market in North America is shown by the following excerpt from a most comprehensive memorandum furnished by Dr. James White. F. R. C. S.

"During 1919, about 1,000 reindeer carcasses, averaging 150 pounds each, were shipped from Nome to Seattle, making an aggregate of 150,000 pounds, or 75 tons. This meat sold for about 28 cents, f. o. b. Seattle, making the total value of

(Continued on page 123)

Youthful Foresters Rewarded

Thirty Young Canadians Win Cash Prizes for Forestry Essays

NO DOUBT there were many delighted young faces when the cheques of the Canadian Forestry Association each with a personal letter of congratulation were opened by thirty Canadian school children last month.

These prize awards represent the distribution of five hundred dollars from the Treasury of the Association to the prize winners in the School Essay Competition on Forestry which was inaugurated in October, the essays having been sorted out in late December. The Association fully expected to be able to announce the winners and distribute the prizes by the first of December last year, but owing to unexpected delays and the extreme difficulty of reaching decisions on the part of the five judges, the final announcements were only available for the Annual Meeting of the Association at Montreal on Jan. 22nd.

Letters to the winners, with cheques from the Treasurer, were at once mailed out and in the next issue of the Magazine we hope to reproduce some of the replies of our young friends and possibly a number of their photographs.

Sixty thousand copies of the essay regulations were sent out in October to school teachers and inspectors in all of the nine provinces and it is a remarkable tribute to the newly awakened interest in the national cause of conservation and the popularity of tree planting and reforestation that thousands of teachers gave the competition their fullest co-operation and encouraged the pupils to make individual investigations, as was specified in the essay prospectus. Perhaps the one error of the competition was the fact that the Association did not classify the children as regards ages, so that in the final results, the child of 11 and 12 entered the contest on the same basis as the high school boy of 15 or 16. The 1923 competition will be so arranged as to make a division on the age basis and probably also as between public and high school pupils.

It is an interesting fact, however, that in several instances the public school competitor won out against the high school. What is commonly known as "fine writing" influenced the judges not at all. The originality,

simplicity and investigative spirit of the child were given the heaviest marks. Correctness of information counted, of course, but where pieces obviously were copied from text books, the essays were considered out of the running.

For the provinces of Quebec and Manitoba two sets of cash prizes, were awarded to cover the contestants writing in English and French.

The 1300 essays sent in by the teachers and inspectors represented the cream of thousands of compositions. No one who had the unique privilege of reading through the final twenty or thirty essays culled from the efforts of each province could reach any other conclusion than that the forestry subjects covered by the competition were treated with remarkable intelligence and enthusiasm and that the children of this Dominion have in the main a fairly correct fund of knowledge on the question of conservation of natural resources, or those auxiliary subjects such as tree planting, reforestation of idle lands and the protection of wild life.

THE WINNERS.

Nova Scotia,—

1st, \$25, Jean Brothers, Box 363, Antigonish, N.S.

2nd, \$15, Mabel H. Fenerty, Hantsport High School, Hantsport, N.S.

3rd, \$10, Muriel B. Dockie, Meagher's Grant, Halifax County, N.S.

New Brunswick,—

1st, \$25, Adelaide S. MacLauchlan, Perth Junction, Victoria County, N.B.

2nd, \$15, Miss Frances E. Colpitts, Petecodiae Superior School, Petecodiae, N.B.

3rd, \$10, Stanley Chapman, Grand Falls Superior, New Brunswick.

Quebec (French essays),—

1st, \$25, Germaine Virolle, Académie Jeanne LeBer, 770 rue Wellington, Montreal.

2nd, \$15, Marie Desneiges Fortin, Ecole Modèle St. Urbain, Charlevoix, P.Q.

3rd, \$10, Arthur Dion, Collège St. Joseph, St. Raymond, P.Q.

Quebec (English essays),—

1st, \$25, Bertha M. Pratt, Box No. 2, Metapedia, P.Q.

2nd, \$15, Miss Violet L. Murdock, R. R. No. 1, Brownsburg, P.Q.

3rd, \$10, B. Mason, Laurentide School, Grand'Mère, P.Q.

Ontario,—

1st, \$25, Mildred Gibbon, Sundridge, Ont.

2nd, \$15, Helen Kelly, Form III, Convent of Mary Immaculate, Pembroke, Ont.

3rd, \$10, Marie Bélanger, 157 Augusta St., Ottawa.

Manitoba (English Essays)

1st, \$25, Agnes McGreevy, Fannystelle, Man.

2nd, \$15, Jessie Fletcher, C/o High School, Manitou, Man.

3rd, \$10, Elizabeth Fundt, C/o Miss V. U. Lang, School Teacher, Camper, Man.

Manitoba (French essays),—

1st, \$25, Annette Dumouchelle, Académie St. Joseph, St. Boniface, Man.

2nd, \$15, Madeleine Painchaud, Académie St. Joseph, St. Boniface, Man.

3rd, \$10, Marie A. Turenne, Académie St. Joseph, St. Boniface, Man.

Saskatchewan,—

1st, \$25, Marjorie G. Sagen, Gagenvale School, Biggar, Sask.

2nd, \$15, Margaret Griffith, Academy of Zion, Prince Albert, Sask.

3rd, \$10, Grace Kennigan, P. A. Collegiate Institute, Prince Albert, Sask.

Alberta,—

1st, \$25, Margaret I. Jackson, Crescent Heights High School, Calgary, Alta.

2nd, \$15, W. K. McIntosh, C/o W. M. McIntosh, High River, R. R. 1, Alta.

3rd, \$10, Joseph Bugnet, Grade 8, Public School, Rich Valley P. O., Alta.

British Columbia,—

1st, \$25, Miss Lila Perry, High School, Prince George, B.C.

2nd, \$15, Humphrey Madden, Waldo Superior School, Waldo, B.C.

3rd, \$10, Howard Benedict, C/o Principal, Public School, IV, Arrowhead, B.C.

EDITORIAL

ILLUSTRATED CANADIAN FORESTRY MAGAZINE

Published and Owned by

The Canadian Forestry Association
Jackson Building, Ottawa, Canada

ROBSON BLACK Editor
GEORGE A. MACKIE Publication Manager

SUBSCRIPTION RATES

With Membership in Canadian Forestry Association	\$2.00 a year
Contributing Membership	\$5.00 a year
Life Membership	\$25.00

SINGLE COPIES, 20 CENTS.

What About this Levy on Capital ?

IF TREES were trees and nothing more we could leave them to the poets. If the mark fell by itself and dragged only Prussian colonels with it, if the Near East boiled over and scalded only Turks, we could call these things a nine-days wonder and go on about our business. But there does not seem any way in our complex society to enforce a limited liability clause. Just now, we Canadians are paying an incredibly large percentage of our income into a Blunder Fund—past blunders, present blunders and *renewals*.

The biggest of all the blunder funds carries the placard of "Forest Neglect." We may misapply money for a public canal or wrongly locate a government railway branch but the error is financial and is wholly repaired in a relatively short period. The wrecking of

Canada's forests, however, spreads its consequences to the fifth and sixth generation of citizens, the error compounding its seriousness as the national timber supply grows weaker and the market price leaps to new levels.

What Canadians must face right away is the ugly fact that the continued prosperity of the Dominion is being undermined by the annual record of ruined forests. If the forests go, nothing remains of our industrial structure. Two thirds of the original forest assets have already disappeared. The fire hazard instead of disappearing is growing worse every year. What is the remedy? And who is responsible for applying it?

Briefly, the Governments rightly assume responsibility for the thoroughness of forest fire prevention. The forest lands are in the name of the Governments and no other authority is so equipped to guard the trust for future generations. Guarding forests

is not done by gestures. It is a matter of carefully selected personnel and ample cash. While forest protection is only half complete, and while the timber assets are swept into smoke and ashes by millions of dollars a year, has any Government the right to extract revenues from forest properties and spend them on roads and other public works? This money is not revenue. It is a levy on capital. It is taken from a dwindling resource and sooner or later will be cut off by the disappearance of the source of the tax. Forest protection can be had. It costs much money. If four millions annually are taken by any province from its forest taxation is it not good business that not one dollar should be spent on anything else than forest protection and forest restoration until the capital stock of timber is at least holding its own?

Government Responsibility

Odd Pieces from School Child Essays

AMONG the many scores of essays recently submitted in the Canadian Forestry Association's School Essay Competition, were many which included gems of thought and expression which could not be found elsewhere than in the minds of their youthful originators. Some examples of these original sayings are published herewith, while others are withheld for future issues. Needless to say, the publication of these "sentence sermons" is not intended to hold up to ridicule the childish minds which gave them birth. The desire is to let our more mature readers see how the "young idea" along forestry lines is inclined "to shoot." Here is the first instalment:—

"Fire prevention should be included in our daily reading of the gospels."

* * * * *
"The Government employs every year fire rangers but so far in Canada they do little or no good."

* * * * *
"The early pioneers cut down and burnt the majestic trees or if in a hurry they would blast them."

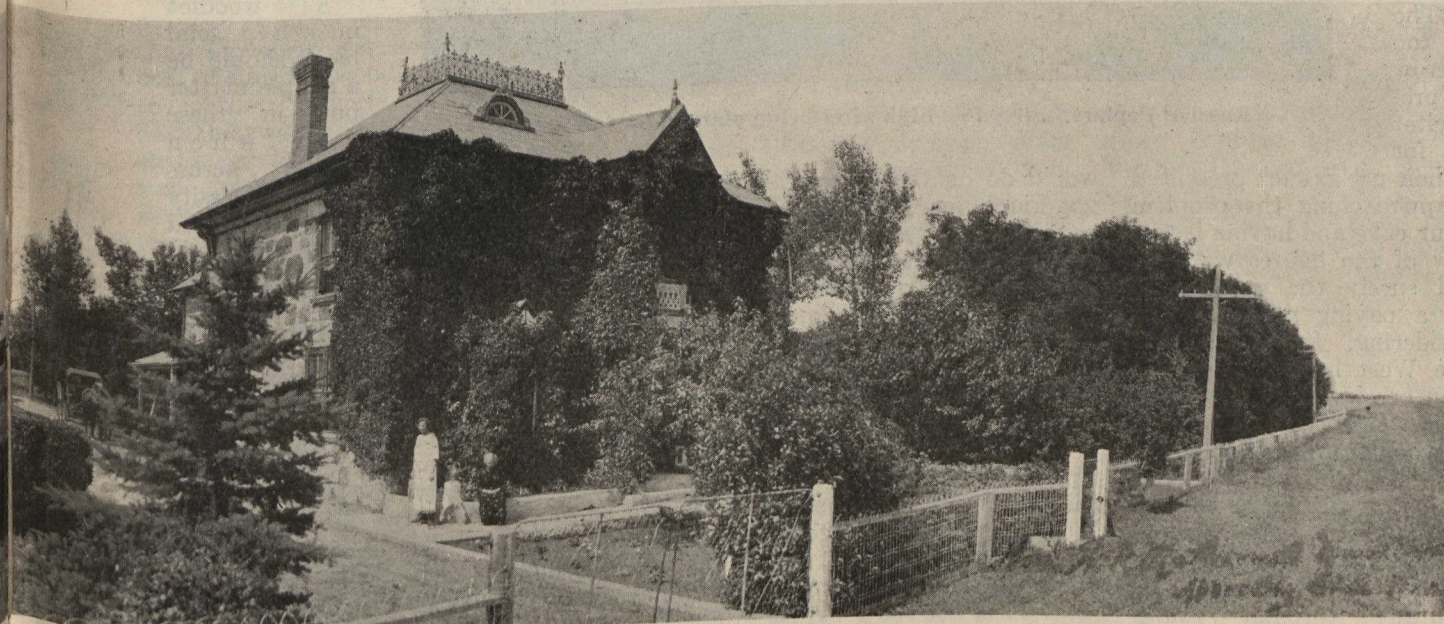
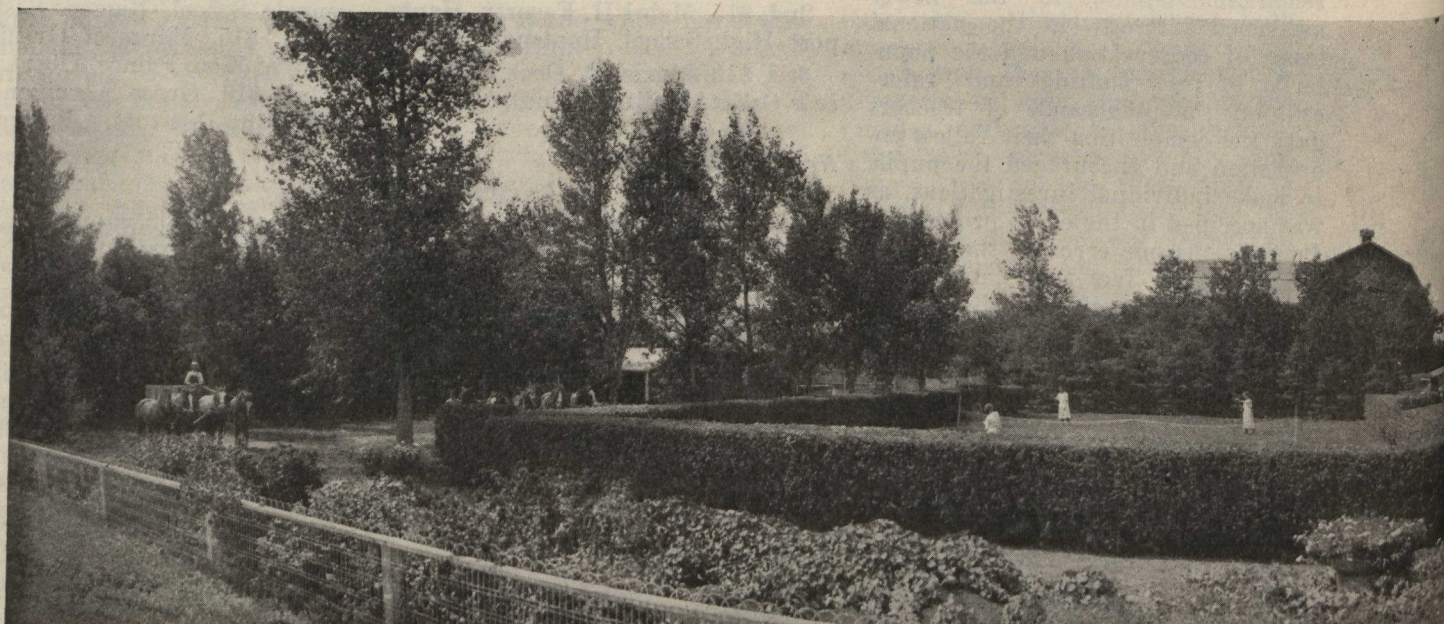
* * * * *
"If it were not for forests we would have no sawmills, camps or wood factories and the men therein employed would maybe become murders or burglars and be a great hindrance to Canada."

* * * * *
"As the long purple shadows cross the sky this sentinel maple shakes its leaves gently and broadcasts its good night message across the Dominion: Oh Canada, we stand on guard for thee."

Lauds The Canadian Forestry Association

SYD. J. SMITH, Esq., Mayor of Gull Lake, Sask., sends the following appreciation concerning the Canadian Forestry Association staff to Mr. Robson Black, manager of the C. F. A.

"I wish to convey to yourself and associates my heartiest congratulations on what the Association has accomplished during the few years that I have been a member. I wish to thank the Association particularly for the work being carried on in the prairie provinces by the Tree Car. When the Car visited Gull Lake last summer Messrs. Mitchell and Cooch were good enough to assist us in a plan for the beautification of our Cemetery grounds by the use of trees and shrubs. After fifteen years' life on the prairies, I firmly believe that if there is one need greater than another in this wonderful country it is the need for permanent homes. And until people become resigned to making this prairie country their home instead of a stop-over point where they can rob the rich soil of some easy money to be spent elsewhere this country is not going to be at its best. And one of the chief things responsible for the unsettled feeling here is the fear that people have of dying here and being buried in one of our unsightly cemeteries on the bald prairie. And the Canadian Forestry Association with its Tree-planting Car in assisting to convert these wind-swept, soil drifted burying grounds into places of beauty is doing a work of inestimable value. Both your Mr. Mitchell and Mr. Cooch went to no end of trouble to give us a plan and instructions for parking our cemetery which when completed will make it a place that will not be looked on with awe. I enjoy the "Forestry Journal" immensely. It is one of the most interesting and educational magazines in Canada. I wish the Association every success.



EXCELLENT TREE PLANTING RESULTS ACHIEVED on the property of Hon. W. R. MOTHERWELL (Dominion Minister of Agriculture) at Abernethy, Saskatchewan.

Wood Crops on Prairie Acres

Growth of Firewood Earns More Than \$11.00 per Acre per Annum—Solving the Rotation Problem of the Farmer's Wood-Lot

By Archibald Mitchell, Western Lecturer of the Canadian Forestry Association

EIGHTEEN cords of firewood from an acre of Russian Poplar in eight years on a prairie farm.

That has been the finding of the Forestry Branch at Indian Head, Sask. This at five dollars a cord is worth looking into, for it works out at eleven dollars and twenty-five cents per acre for every year the trees were growing. Last year through Central Saskatchewan we found farmers were buying cordwood—saw-mill slabs—at from eight to fourteen dollars. Surely in these days of readjustment of the difference between the cost of growing a bushel of wheat and the price obtained for it, this is worth looking into.

For twenty years, ever since trees began to be grown on the prairie, indeed, we have talked of the Farmer's Shelterbelt and Woodlot, but rarely if ever has the planting become other than just the shelter. The trees are too costly to grow and too precious as shelter to be cut for firewood. Their use as such presented something approaching the problem of eating your cake and having it too. But in view of the figures we have just quoted surely the growing of firewood as a paying proposition is worth considering, for not many acres in the West have produced a return of ten or eleven dollars every year in the last eight years.

The ideal woodlot is one from which an annual yield can be taken in perpetuity, just the same as in any other Forest Rotation, and the ideal would be a selective system, one in which the trees would renew themselves naturally through young growth coming up to take the place of the mature sizeable stuff as it was thinned out. This presupposes a

variety or mixture of trees that would do this, but unfortunately we have not got it on the prairie.

Another arrangement would be to have what foresters term a clear cutting system. In this, the planted area is divided into as many equal portions as is considered right for the rotation, one portion being cut entirely over every year and allowed to reproduce itself, so providing for an annual crop in perpetuity. This is the system for the North country where the aspen poplar lends itself very well to this treatment. How it

Meantime Russian poplar presents a good many points in its favor in our search for material for the farmer's woodlot. We know about how much to expect from it in a given time; eighteen cords in eight years. It is easily propagated from cuttings and they in turn are easily produced so that they are cheap. The farmer can grow his own with little trouble if he cares to. They are easily planted—at least one thousand per day per man. A good strike can usually be expected, up to eighty-five per cent. or over. They grow fast—about three

feet a year for the first ten years. In the event of their being broken down by snow, they soon recover. Fencing is an important item in all plantings and they offer this advantage that in three or four years they are stout enough for wire to be hung on the outside row.

A woodlot in a solid block should be a simple matter but in these days when shelter across

SOME RAPID TREE GROWTH ON THE PRAIRIES



Russian Poplars, thirty feet high after being planted for ten years.

would do on the open prairie we do not know, for, curiously enough, the growing of an acre or two of aspen poplar from cuttings has never been tried at the Experimental Farms or anywhere else. Aspen poplars are beginning to appear naturally in many localities, but they are seedlings. If they do well from cuttings—as they may—the rotation problem of the farmer's woodlot is solved. Transplanted suckers do well but their use must obviously be limited. It might be difficult getting a sufficient supply to plant any extended area. Russian poplar may do if the rotation is not too long, for Russians at twenty years may not have much vigour left in them or not reproduced.

the fields is such a crying necessity a great advantage would be gained if the two were combined. This could be done by arranging the woodlot in a series of strips across the farm. One of these or a part of it would be cut over every year and allowed to reproduce itself, and so on in rotation over a period suitable.

As efficient shelter as early as possible is of paramount importance, the distance between the strips would be determined by the distance a given height of tree—say thirty feet—would afford shelter from the wind. This would depend on the locality, for the amount of shelter afforded is by no means constant all over the prairie. For instance, the ancient belief that has prevailed so

PHOTOS ILLUSTRATING HOW PRAIRIE SHELTER BELTS AID GARDEN AND GRAIN CROPS



Above—Section of a half mile tree belt across the farm of J. Hupka. The grain for 43 yards east of this was twice as good as in the rest of the field this being undoubtedly due to the shelter afforded.

Below—Vegetable garden on the farm of J. Hupka, Burdetta, Alta., showing how fruits and vegetables thrive under protection of trees.



long that one foot in height of trees protects fifty feet of field, the finding at Indian Head, does not serve very far west. At Swift Current this year we found the shelter was more like one to thirty than one to fifty, and at Lethbridge it was about one to twenty, in a thirty mile wind or over. That is, at the latter place a belt of cottonwoods two or three rows wide along an irrigation ditch protected two hundred yards of field. The farther west we go the winds seem to have a more downward tendency, so, since that kind of country is more in need of shelter than anywhere else, we will discuss our shelterbelt-woodlot in relation to southern Alberta and southwest Saskatchewan. Further east, two strips per half mile or even one in some places, may be enough, or some other arrangement, but there we require three to have a fair amount of shelter in a reasonable time. This brings us to something definite, and we arrange our belts in three strips two hundred and seventy-five yards apart, running them north and south across the line of the prevailing wind.

Putting In The Wood Crop

Taking a quarter section as the unit, we begin on the west side and there we prepare by summer-fallowing a two acre strip, i.e., two rods wide and half a mile long. This we plant with Russian poplar cuttings the year following. We will call this the first year, and the plantation Number One. That same year, we prepare another two rods alongside the

first, planting it (Number Two) the second year. In that year (the second), the two-rod strip we prepare is two hundred and seventy-five yards east of Number Two, and it, Number Three, is planted the third year. The fourth year follows close alongside and so on it goes to Numbers Five and Six in the fifth and sixth years which are again two hundred and seventy-five yards east of Three and Four. The sixth planting is about two hundred and seventy-five yards from the eastern boundary of the quarter section and we now have our one hundred and sixty acre farm divided into three fields of approximately fifty acres each by three strips of trees each of which is four rods wide and half a mile long.

This has all been done in six years and at a cost of some three days planting by two men every year, not a great deal of the most important of a busy farmer's assets, his time. Of course there is the summer-fallowing, but two rods wide of a summer-fallow is a mere bagatelle for a farmer who wants to do it. Three days' cultivation work each year in the first three years will be all of that kind of work that is necessary for each planting. The cuttings are easily grown and can be made in the Fall or the early Spring when there is little else to do. The time taken to plant is the important matter for it comes in the seeding time and as we have seen, for the benefits secured, it is negligible. It is possible that Fall planting may be resorted to in some districts.

At the end of the sixth year the first year trees will be about eighteen feet high and already affording close to one hundred and twenty yards of field shelter. Suppose we leave Number One till it is ten years old. By that time it will be about thirty feet high and sheltering pretty nearly the whole fifty acre field. That year, we begin our firewood harvest by cutting completely over the first or western half of Number One; that is, one rod wide extending the whole half mile. We should get at least eighteen cords out of that for it is ten years old.

Next year we take the first half of Number Two, the following year, the first half of Number Three, and so on, taking the first half of each planting, until Number Six is reached. From Number Six, we return to Number One, where we begin on the second half.

Every year, we cut we replant the last piece cut over so that by the time we return to Number One to take the second half, the new growth in the first half is six years old, and about eighteen feet high again. When we finish the series of second halves, our first replanting will be twelve years old and we begin our cutting rotation again, the trees being thirty feet high.

So on it will go, giving a rotation of twelve years cutting and replanting; every year a crop of firewood worth something around one hundred dollars, and a system of shelter belts from eighteen to thirty feet high, maintained at the same time in perpetuity.

Whether the cut over areas will re-establish themselves from suckers or not, we do not know. We have no data. Probably there will require to be some assistance given by the planting of cuttings where necessary. But even if the roots have to be grubbed out and all replanted to cuttings again, the job will not be costly and it will be more than met by the value received from the wood whether it is sold or used on the farm. The short life of the Russian poplar has no bearing on the case for the trees are cut long before the apparent limit of their life on the prairie.

The use of the poplar trees as posts for fencing the plantations would overcome what has always been looked upon as an almost insuperable objection to any system of shelter strip planting. The trees at four feet apart in the row hung with two or three wires would give a stout fence in a very short time that would be getting stronger and stronger every year as the tree posts grew older and increased in diameter. The cost would be little more than the price of the wire and the labor. In the cutting operations

these outside "fence" rows would of course be left standing or cut over above the wire.

Where there is a good deal of stock carried on the farm, doubtless it would be necessary to fence the plantation as it is planted, but in the districts where shelter is most needed, at the present time cattle are not plentiful, and if they could be kept reasonably well out of the trees for the first three years by running them in another field or in some other way, there should not be much trouble. The land next the trees would be in crop anyway during the Summer and in the Winter the few head of stock on the average farm would not do a great deal of damage. And the Russian poplar recovers very rapidly from a little damage by cattle.

This, very briefly, is an outline of one way how the prairie farm may be sheltered rapidly and cheaply. It seems a long rotation but the forester's business is always one of long rotations and this is Farm Forestry. Too much trouble for the farmer planting a little every year? Doubtless a little trouble, but many a man would be much better off today if he

had put himself to just some such trouble years ago.

Look at the advantages; besides the conservation of snow there is the protection of the soil, the Summer rainfall, the crop in all its stages, shelter for stock and the revenue from the annual crop of wood. And the improvement to the appearance of the Country. This alone is worth while in these days of Immigrant getting. Systematic planting like this would put an end to the weed pest in great measure, for the Russia Thistle and other tumbling weeds would leave no man's field to trouble his neighbors.

Many minds in the west are looking for a solution of the farmer's troubles, through tree-growing. We have met many of them, each with his own pet scheme, more or less unworkable. Trees will not solve all the farmer's problems, but they will go a long way towards helping. Surely some such combination where we can get all the advantage of using a rapid growing tree like the Russian poplar for shelter, cropped for revenue in perpetuity, is well worth a trial.



ABOVE—

Jack and
Scotch
Pine
planted in
1915 on the
farm of Mrs.
Frew,
Pense, Sask.
Photograph
taken in
June, 1922.



Shelter Belt of Russian Poplar with a growth of 30 feet after ten years growth on the farm of John Ingram, Retlaw, Sask.

ABOVE—

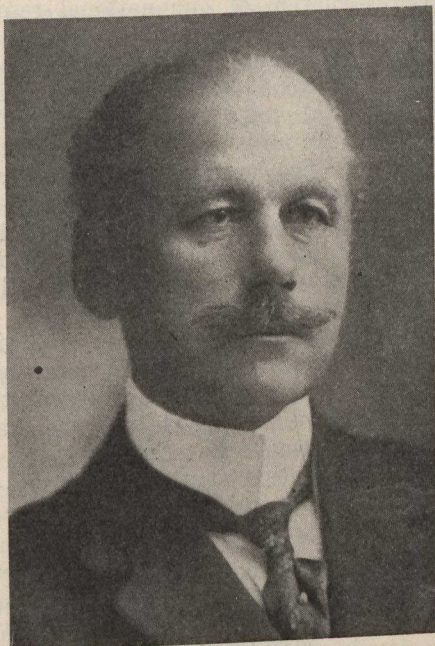
Lodge Pole
Pine,
planted in
1915 on the
farm of
Mrs. Frew,
Pense, Sask.
Photograph
taken in
October,
1922.

Annual Meeting Canadian Forestry Association

IN an association identified with a public cause and drawing its strength from public confidence and goodwill it is particularly desirable that once a year there should be held an open meeting of the members and directors and officers to review the work done and make plans for the future. The Canadian Forestry Association through its monthly magazine has always published full details of its enterprises issue by issue, keeping the members posted as to current happenings.

addresses. Mr. Dan. McLachlin, 1922 President, occupied the chair, and called on Mr. Robson Black, Manager of the Association, to present the Manager's annual report. (This document is printed elsewhere in this issue.) The Treasurer's Report as audited was also read, and will be found immediately after the Manager's statement.

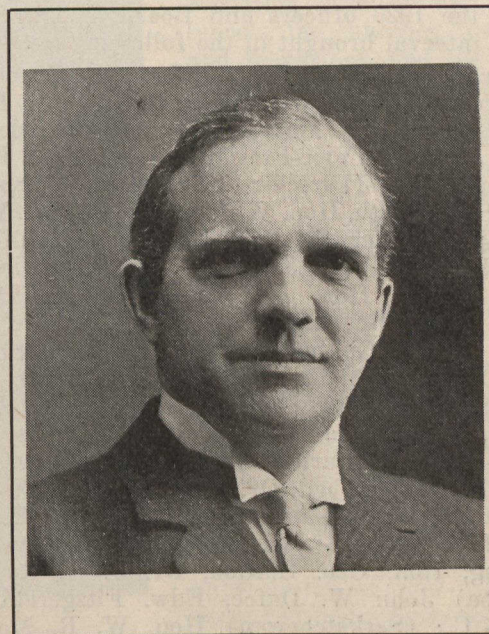
At the conclusion of the reading of these documents, Hon. Mr. Justice E. Edwin Howard of the Court of



HON. ADELARD TURGEON

Président du Conseil Législatif, Québec.

(President of the Legislative Council of the Province of Quebec.)
President-elect of the Canadian Forestry Association.



DR. CLIFTON D. HOWE

Dean of the Faculty of Forestry, University of Toronto.

Vice-President-elect of the Canadian Forestry Association.

Similarly, once a year the members are invited to assemble and discuss the report of the staff, elect officers and directors and otherwise participate actively in the Association's management.

At the Mount Royal Hotel, Montreal, on Monday, January 22nd, the Canadian Forestry Association held an annual meeting in order to sum up the work of 1922 and prepare for a new year. At no previous meeting have the members played such an important role or manifested such a keen personal interest in the proceedings. It was the good fortune of the Association to have present more than fifteen members of the Montreal Women's Club and other influential organizations and the effect of their witty and thoughtful contributions to the general discussion was such as to convince every one that the women of Canada must play a stronger part in the future work of the Canadian Forestry Association.

In point of attendance, the meeting was the most successful yet held by the Association. The morning session was chiefly for the review of the 1922 programme and it is noteworthy that the audience almost equalled in size the fine gathering that came for the afternoon King's Bench, Montreal, made a few observations as a

member of the Association, stating that he was amazed at the amount of work done by the Association, of which he did not think the majority of the members were fully aware. The record of undertakings had surprised him, and the healthy and progressive condition of all the enterprises merited the heartiest praise. The Canadian Forestry Magazine, said Mr. Justice Howard, was one of the few magazines he consistently read. It was a creditable and informing document. A few helpful comments were devoted by the speaker to the work with the younger generation. The future, he emphasized, is in the hands of the boys and if they could be brought to realize the value of Canada's forests, a great service would be done to the Dominion.

Mr. W. J. Camp, of Montreal, added some apt comments on the value of young people's participation in forest conservation. Mr. Camp gave the meeting a pleasant surprise by walking forward to the Association Manager with his personal cheque for twenty-five dollars to help his suggestions bear fruit. The episode was heartily applauded.

Mrs. John Scott of the Montreal Women's Club when asked to speak on behalf of her delegation referred de-

lightly to the competence of Canadian women to give strong support to a national movement of the high importance of forest conservation; and remarked in telling language upon "the folly of drawing on the natural resources until we get an 'n.s.f.' from the bank". Mrs. H. B. Pope gave the meeting some interesting facts concerning the Conservation Committee of the Montreal Women's Club, their excellent work in planting a Road of Remembrance, and expressed complete willingness to join hands with the national forestry movement.

Mr. Justice Howard moved the adoption of the Manager's and Treasurer's Report, which was seconded by Mr. Cyril T. Young and carried.

A Nominating Committee consisting of General J. B. White, Messrs. Champoux, Leavitt, Ussher, Zavitz, Golding and Ellwood Wilson was asked to prepare a slate of the 1923 officers and Board of Directors and after an interval brought in the following:

Patron, His Excellency, the Governor-General; Honorary President, Hon. W. L. Mackenzie King; Honorary Vice-President, Hon. Charles Stewart; President, Hon. Adelard Turgeon; Vice-President, Dr. Clifton D. Howe; Past Presidents—(Directors ex-officio) William Little, Thomas Southworth, Hon. W. A. Charlton, F. C. Whitman, Lt.-Col. J. B. Miller, Col. J. S. Dennis, J. S. Gillies, C. E. E. Ussher, D. McLachlin. Elected Directors:—(Nova Scotia) Hon. N. Curry, F. J. D. Barnjum; (New Brunswick) G. H. Prince, Angus McLean, W. E. Golding; (Quebec) Hon. Sir Lomer Gouin, David Champoux, Sir Geo. Garneau, G. C. Piché, Sir William Price, Brig.-Gen. J. B. White, D.S.O., Geo. Chahoon, Jr., Ellwood Wilson, R. O. Sweezey, Arthur H. Campbell; (Ontario) Gordon C. Edwards, Clyde Leavitt, R. H. Campbell, Dr. B. E. Fernow; C. J. Booth, E. J. Zavitz, W. C. Cain, Percy B. Wilson, E. H. Finlayson, J. A. Gillies, J. W. Black, W. E. Bigwood, Cyril T. Young, Hon. Geo. Gordon, Dr. J. G. Rutherford; (Manitoba) John W. Dafeo, Edw. Fitzgerald, G. W. Allan, K.C.; (Saskatchewan) Hon. W. R. Motherwell, Hon. C. M. Hamilton, Jos. Glenn; (Alberta) William Pearce, G. R. Marnoch, Hon. J. E. Brownlee; (British Columbia) Hon. H. Bostock, Hon. A. C. Flumerfelt, R. D. Prettie, P. Z. Caverhill, Chas. D. McNab, H. R. MacMillan.

The new President, Hon. Mr. Turgeon, is President of the Legislative Council of the Province of Quebec and gained an intimate acquaintance with forestry problems during his term as Minister of Lands and Forests of his province. He has exhibited a deep interest in the Canadian Forestry Association, is an excellent public speaker, and the present year under his Presidency should be a most productive period.

Dr. Clifton D. Howe, the new Vice-President, is Dean of the Faculty of Forestry of the University of Toronto and is known to all who have any contact with the forest conservation movement.

Of the new directors for Quebec, Sir George Garneau and Mr. Arthur H. Campbell, no introduction to many of our readers will be required. Mr. E. H. Finlayson who becomes a director for Ontario is Acting-Director of Forestry for the Dominion Government, has had extensive field experience and possesses administrative abilities of a high order.

During the period when the Nominating Committee was in session, the meeting listened to an announcement of the winners of the School Essay Competition on Forestry, for which the Canadian Forestry Association offered prizes of \$25, \$15 and \$10 for each of the nine provinces. Several of the prize winning essays were read.

Mr. W. E. Golding, Managing Director of the New Brunswick Railway Company, and a Director of the Canadian Forestry Association, rose to express the deep appreciation of the people of New Brunswick for what had been accomplished by the Association in that province. Provincial Government support was far from adequate but at the same time the Association's public service was greatly valued.

The retiring President, Mr. Dan McLachlin, delivered his address in part as follows:—

"To preserve our heritage in nature and to conquer the fire fiend whose ruthless toll of our forest lands is fast yielding to the strength and resourcefulness of man has been our object, and the growth and strength of this association is direct evidence of the will to conquer this annual destruction of our national resources. We may never be able to close a year without a bush fire, but thanks to the continued efforts of the forestry association and the awakened interest of the various governments, both Federal and Provincial, the efforts of the lumbermen and pulp mills are now more adequately supplemented and the fire hazard is being better controlled, for in the last analysis, unless the efforts of the men in the field, the timber operators, are supported with legislation changing as the conditions vary from period to period, the efforts of this association would be largely wasted. But happily, that condition does not obtain, as today we have the most cordial co-operation between this association, the law makers concerned and the operators in the woods. This happy condition is most complete in the Province of Quebec, where an able and enlightened forest service have placed on the statute books forestry legislation that is a shining example of foresight and a model to be followed by the rest of the Dominion.

"The detailed methods that we have used during the year just closed has been laid before you in the manager's report. In this connection, I wish to acknowledge my deep appreciation of the untiring and energetic manner in which he has carried on the field and office work of the association and also to express my sincere thanks to the directors, the officers and staff for their unremitting endeavors in the interests of the Canadian Forestry Association."

Toward the close of the morning session, General White voiced the thanks of the Directors and Members for the devoted service of the retiring president, Mr. McLachlin, during an especially trying year. Mr. Ellwood Wilson, in seconding the motion, said that Mr. McLachlin had made a most excellent President. The meeting agreed with the remarks of the speakers by a round of hearty applause. Mr. Ussher moved a vote of thanks to the ladies, emphasizing their power in moulding individual opinion and conduct. Mr. David Champoux proved a happy seconder, and Mrs. Pope responded for the Montreal Women's Club.

The afternoon session again drew a large crowd and all must have felt thoroughly well repaid by the addresses of Professor Toumey of Yale, Dr. Howe of Toronto University and Hon. W. R. Motherwell, Dominion Minister of Agriculture. The addresses are partly reproduced in this issue and will be completed in the March number.

Dean Frank D. Adams of McGill University presided during Dr. Howe's address as Chairman, and the latter, as vice-president, took the chair for the remainder of the afternoon. Motion picture and stereopticon illustrations were used at the close of the papers.

Annual Report of Manager of the Canadian Forestry Association for the Year 1922

At the annual Meeting of the Canadian Forestry Association held at the Mount Royal Hotel, Montreal, on Monday, January 22nd, the Annual Report of the Manager, Mr. Robson Black, was presented as follows:—

THE effectiveness of the Canadian Forestry Association with its limited revenues and staff may best be measured by the degree of confidence reposed in its motives and methods by the people of this Dominion. Our task is to disseminate in a persuasive manner sound information relating to the forest resources, as a priceless national possession, and to arouse public opinion, to counteract the forest fire menace and ultimately establish a program of constructive forest management. To achieve these ends an informed and determined public opinion is a first essential and it is the Canadian Forestry Association's privilege, as a citizen's institution, to steadily extend its educational propaganda each year into new fields and to consolidate the ground gained in previous campaigns. A companion enterprise to our forestry propaganda is the Tree Planting Campaign devoted to the prairie provinces, and while this branch does not deal with economic timber production, it serves one of the most vital needs of the Western settler and contributes to more stable and prosperous agricultural conditions.

It is noteworthy that in the year under review, 1922, we received an unprecedented response and co-operation from those agencies which influence public opinion most actively. The schools, churches, newspapers, now stand ready to multiply a thousand fold the force of any forestry propaganda which we care to place in their hands. In no year has newspaper and magazine discussion of forests, forest fires, reforestation, the timber industries, forest employment and kindred subjects been so abundant or so intelligently handled. County councils, with reforestation committees, are now quite commonly met with. Tree planting and conservation committees of Rotary and Kiwanis Clubs and women's organizations are increasingly active. As to the vigorous and accurate opinion



Mr. ROBSON BLACK
Manager Canadian Forestry Association

of the Canadian school child of today, an obvious product of educational propaganda, no better proof need be sought than the thousand selected essays received by the Canadian Forestry Association from hundreds of schools all over the Dominion, during our recent prize competition. The intelligence of the Canadian school child's outlook on the forest resources, and his clear determination to play his part in forest conservation, is apparent in all but a very few of the compositions. These indications are mentioned here to substantiate the soundness and practicability of the Association's plan first to build a broad foundation of public belief as the great essential of constructive forest policies.

The Plan of Propaganda.

As a national association with limited financial support we have been obliged to confine our activities to those channels reaching the

maximum number of people at minimum cash outlay, such as the schools, the churches, the newspapers and magazines, and the employment of our two railway cars, with hundreds of public meetings. This of course will sooner or later develop more intensive and localized propaganda but the more general method appears to have been called for at this state of the Association's development.

During 1922 the Association made substantial development both in respect to amount and quality of the forest protection propaganda reaching the people of Canada, and in the revenues for the support of such work. The special campaigns in the prairie provinces for the advancement of tree planting were also maintained at full vigor and popular appreciation of this phase of our work has never been so outspoken.

Newspaper Publicity.

First in effectiveness must be rated our distribution of material to the newspapers and magazines. As the use of free publicity, as it is called, is coming more and more under a ban, our Association has had to use more ingenuity and care in preparing material that would be acceptable to editors. The result was that for many months during the height of the fire season of 1922 we were given an average of 100 to 150 columns of newspaper space weekly. This decreased somewhat in the later Fall months, but even then a high average was maintained. To secure this publicity four men outside the Association's staff contributed articles which were broadcasted in the provinces to which they were particularly adapted. A weekly column of questions and answers on forestry went out from the Association's office to 400 newspapers and a similar feature dealing with prairie forestry was used liberally in the western provinces. Special interviews secured from public men were despatched

over the wires of Canadian Press. Bulletin services of news items were freely employed. Our articles were also accepted and published by magazines and house organs, the latter having individual circulations as high as 30,000. Indeed the measure of co-operation between Canadian editors and the Canadian Forestry Association is the measure of our facilities for preparing new articles. The financial investment on our part is trifling when compared with the donated space which at the height of our season equals more than \$5,000.00 a week. The outside writers for the Association are remunerated at a rate varying from six to ten dollars a thousand words, and they perform valuable service in developing much original matter of public interest and importance.

During 1922 Association officers held 584 public meetings, in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and New Brunswick. In addition, we supplied material, such as lecture sets, special information, manuscripts, etc., to a number of volunteer speakers who appeared on our behalf before public and high schools and adult societies.

Forest Exhibits Car.

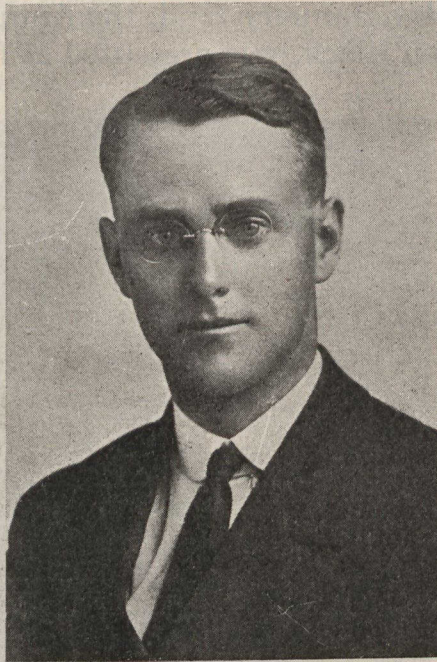
Our Forest Exhibits Car, which has now become more or less a fixed institution on the railway lines of Canada, was rebuilt last winter at a cost of approximately \$2,300.00,

with new models and an entirely new layout. We were donated services and exhibits by Dominion Government branches and others which we value at about \$2,000 more. With changes and improvements being made this winter at practically no cost to us, we will enter on the 1923 touring season with an excellent educational asset in the Forest Ex-

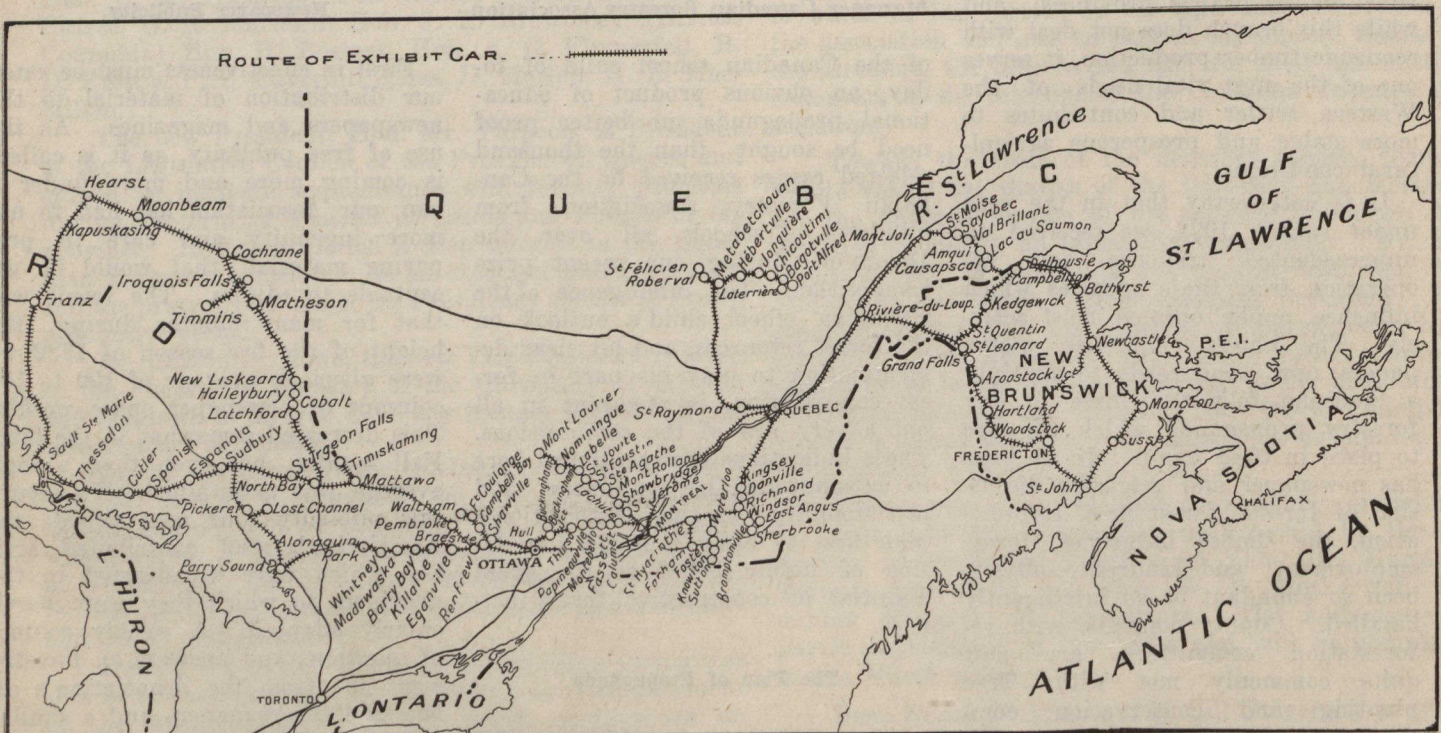
hibits Car and with no further expense beyond perhaps two hundred dollars.

The Forest Exhibits Car is a sure device for attracting crowds and focusing their interest on graphic arguments for forest protection. Where crowds of people are met in a single day — as many as seven thousand on one occasion — a striking appeal to the vision is the only recourse. Visual education is effected by working models, process displays, slogans, contrasted scenes explaining at a glance what columns of print could not interpret to the casual visitor. In the season under review, the Exhibits Car, by courtesy of the Railway managements, travelled 12,623 miles as compared with 8,630 miles the previous year. It confined its itinerary mostly to small communities in forested country and in such parts secured a total attendance of 219,555 as compared with 135,000 in 1921. The officer in charge, Mr. G. Gerald Blyth, was also responsible for 121 evening meetings with a total attendance estimated at 70,000. That the educational value of the Exhibits Car is positive and permanent is attested by the statements of several of the Provincial Forest Services and by wood-using industries and chief rangers who have had reason to note local results. The help given by Mr. Piché in Quebec and Mr. Caverhill in British Columbia was greatly appreciated.

The 1922 tour of the Exhibits Car

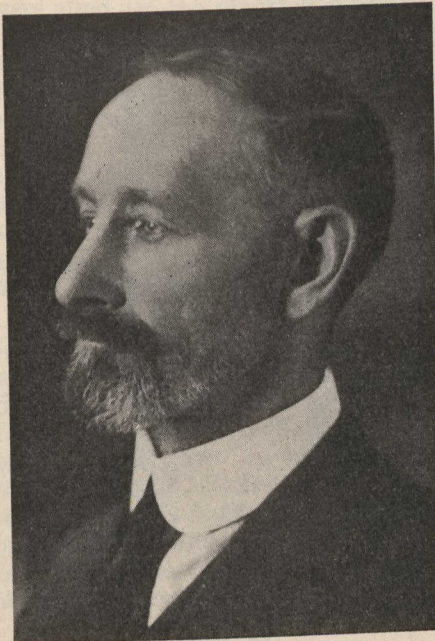


Mr. G. GERALD BLYTH
Asst.-Sec. of the Canadian Forestry Association. Official in charge of the Forest Exhibits Car.



Prepared in National Resources Intelligence Service, Dept. of Interior.

Map showing route followed by Canadian Forestry Association's Exhibits Car during 1922 tour of Ontario, Quebec and New Brunswick.



Mr. ARCHIBALD MITCHELL
Western Lecturer, Canadian Forestry Association

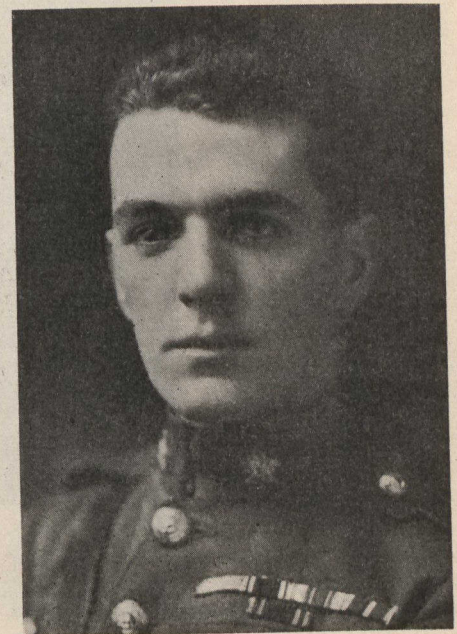
commenced on April fourth when it left Ottawa for Vancouver. On Vancouver Island an attendance of 11,200 persons were secured. Subsequently it travelled until June 8th within the boundaries of British Columbia, constantly aided by the B. C. Forest Service. Seventy-eight thousand represented the attendance for the British Columbia journey. The Ontario travels covered the lines from Ottawa to Sault Ste. Marie, the T. and N. O., National Transcontinental, etc. The Quebec tour covered such districts as Ottawa-Waltham; Montreal-Mont Laurier; Ottawa-Montreal via North Shore; the Eastern Townships; Quebec and Lake St. John to Port Alfred; Quebec to Metapedia. The New Bruns-

wick tour circled over the province, with large public gatherings at such centres as Campbellton, Moncton, Sussex, St. John, Fredericton, Woodstock, Hartland, Grand Falls, and over the old International road.

The Tree-Planting Car.

The Tree-Planting Car, our second railway coach, on loan from the Canadian Pacific Railway, is a lecture car devoting its services wholly to the treeless areas of the prairie provinces. With our two officers, Mr. Archibald Mitchell and Mr. Angus Cooch in charge, this enterprise is now a well established and most popular form of community service. Begun in 1921, the first short season resulted in a public attendance of ten thousand persons. It is well to note that the visits of the Car are made to very small communities usually of a few hundred persons. The 1921 attendance increased to 48,000 and last year our men reached a total of 51,975, in about 300 fewer miles of travel. The approximate cost of the prairie provinces tour in 1922 was \$5,223.90. The ground covered by the Tree-Planting Car may be indicated by the following:—

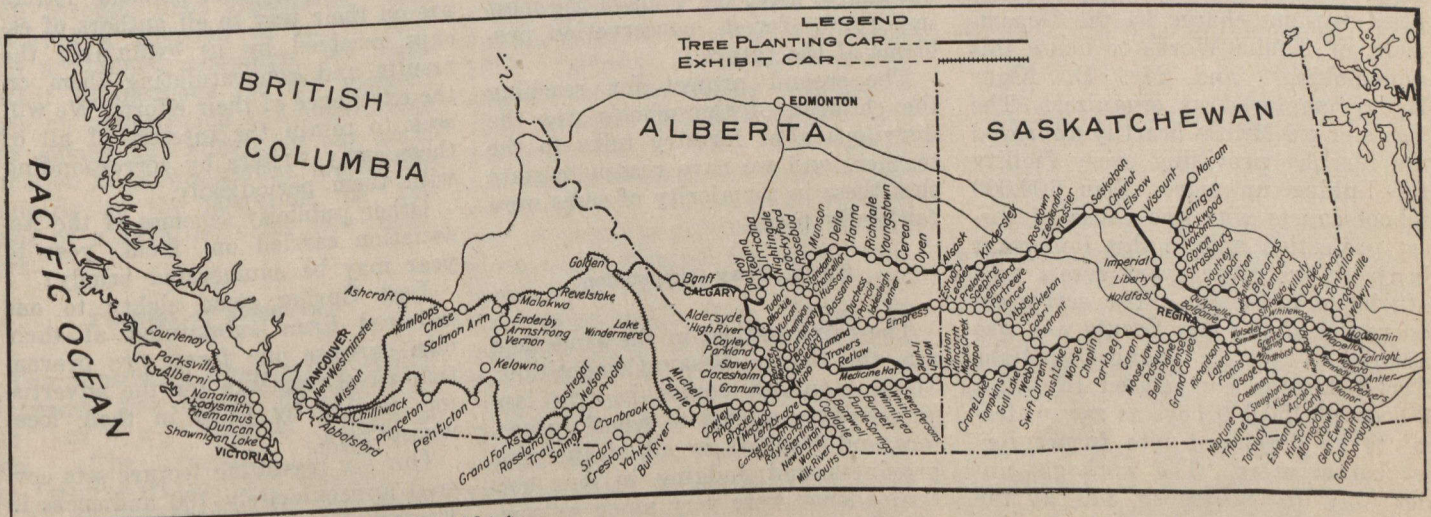
Calgary to Dalroy, Landon-Bassano branch; Empress-Bassano branch to Swift Current, to Moose Jaw, to Regina, taking in communities en route, northward along the Colonsay Branch to Saskatoon; thence with the Better Farming Train of the Saskatchewan Government and the Provincial University through the Brandon, Virden, Saskatoon section, thence to Kirkella, Manitoba, back to the main line of the C. P. R. from Moosomin to Pasqua and return to Regina. Next came the Souris-Ar-



ANGUS G. COOCH
Assistant in charge of the Tree-Planting Car.

cola section and on to Estevan. There followed the Neptune Branch, the Reston section to Wolseley and Saskatoon. Alberta again received attention from Moose Jaw to Medicine Hat, the Suffield Branch and the Lethbridge-Crows Nest section, the Stirling-Cardston and Stirling-Coutts branches, Lethbridge to Cowley, Macleod to Aldersyde and a second visit to the Calgary-Saskatoon branch of the Canadian National.

The willing helpfulness of the prairie province governments was everywhere apparent, Saskatchewan and Alberta making grants of \$1,000.00 and \$800.00 respectively and supplying other forms of aid quite indispensable to our campaign. It is worthy of mention that the course



Prepared in National Resources Intelligence Service, Dept. of Interior.

Map showing route followed by Canadian Forestry Association's Tree Planting Car during 1922 tour of Saskatchewan and Alberta and Route followed by Exhibits Car in British Columbia.



HONORABLE CHARLES STEWART

Minister of the Interior in the Canadian Government

Re-elected Honorary Vice-President of the Canadian Forestry Association at the recent annual meeting in Montreal.

of the Tree Planting enterprise on the southern prairies is accompanied by a steady output of newspaper and magazine material from our staff, thus strengthening and extending the campaign's influence.

Young Canadians Forest League.

Two new undertakings aiming to stimulate the interest of the youth of Canada in forest conservation and tree planting as a national cause were set in motion and each well maintained our earlier hopes. The Young Canadians Forest League was initiated at the end of September to supply a junior branch of the Canadian Forestry Association, to be used as a rallying point for Canadian boys and girls. Adequate office space was supplied without charge by the Department of Public Works to house this undertaking and Mr. D. Algar Bailey employed as organizer. The Minister of Militia heartily approved the idea by providing every facility for linking up more than 100,000 school cadets with the cause of forest protection and to this important body we are given every access with official endorsement. The active co-operation of the Boy Scouts was also assured so that the Young Canadians Forest League commenced life with a body of 150,000 boys as raw material to be developed into future forest conservators. The work got under way in November and at the close of the year 10,000 boys with hundreds of scout masters had been

told of the new League and supplied with booklets dealing with some of the phases of forestry in which a boy would be interested. To earn membership in the League and help the parent association, a graduated offer of radio sets based on securing paid memberships was made. In the short period before the close of the year 208 members were secured by the boys for the Canadian Forestry Association and the outlook for really substantial returns appears very bright for 1923. In any event, the opportunity presented to us to enlist the Boy Scouts and School Cadets of Canada under the flag of forest protection is worthy of the best educational effort we can call forth. Success with the youth of today cannot fail to solve for Canada the most important forest conservation problems of the future.

The second project for reaching the children of the schools was the distribution of forestry talks to the teachers and we have reason to state that these in a majority of cases were faithfully used.

School Essay Competition.

The third project in the same field was the School Essay Competition. Sixty thousand copies in two languages were mailed to school inspectors and teachers in all of the nine provinces and judging by our correspondence were very much welcomed. In November and early December about 1,300 essays selected by

the teachers as the most worthy were received by the Association. The Director of Forestry, Mr. Campbell, kindly permitted Messrs. Craig, Wright, Morton, and later Messrs. Dickson, Robertson and Veness to take hold of the work of examination. Mr. D. T. Robichaud culled out these were sent for final decision to Mr. G. C. Piché, Chief Forester of Quebec. Painstaking thoroughness distinguished the service of these gentlemen, the final comparisons being conducted with utmost care. Awards of prizes of \$25, \$15 and \$10 have been sent out to the three winners in each of the provinces except Prince Edward Island which did not qualify, and personal letters are on their way to all authors of essays received by us explaining the results and congratulating them on the excellence of their efforts. We will seek to retain the interest of all of these essay writers by corresponding with them periodically.

Other publicity schemes of the Association carried on from year to year may be enumerated briefly:

Last Spring some eighty to one hundred firms substituted at their own expense our forest fire prevention advertisements for the advertising carried by them in their local newspapers.

Our six travelling lecture sets covered approximately 100 audiences in Eastern Canada and British Columbia.

Thirty thousand forest fire talks

were used by the railways and coast steamships attached to menu cards. Such pieces of printed literature as 25 thousand blotters for use in Quebec, 10 thousand printed warnings, 10 thousand badges for School Cadets and Scouts, 15 thousand membership badges for boys of the Young Canadian Forest League — these and other lines of literature were issued by us and usefully distributed.

Another step taken in 1922 was to apply for incorporation of an association to more exactly define and limit the financial responsibility of Directors, members and officers. The papers were drawn up by our solicitor, Mr. F. H. Chrysler, K. C., of Ottawa, who generously contributed to our work the usual solicitor's charge for such undertaking, amounting to about one hundred dollars

Membership.

The membership of the Association neither lost nor gained in 1922. It is true we secured 1,300 new members but this only overcame the normal shrinkage through deaths, removals, resignations and cut-offs for non-payment. Our experience in obtaining new members was in line with that of nearly all other voluntary associations, which found that disturbed business conditions made the average Canadian cautious of even small expenditures and took off the edge of an appeal to join a public welfare organization. Furthermore, we discovered along with other similar organizations, that the appeal by letter to prospective members has temporarily, at least, exhausted itself and that the only effective and economical method of increasing membership is by direct personal solicitation through paid organizers. This involved a question of larger staff and a planned campaign. We chose rather to postpone for the moment such an undertaking and concentrate our money and efforts on our main function as propagandists, meanwhile building up the magazine as the basis of a 1923 drive for new members.

Progress of Magazine.

The Illustrated Canadian Forestry Magazine has taken on the status of a national publication. The regular issues in the latter part of 1922 reached 68 pages as compared with 52 pages prevailing in 1921. With this improvement and with more attractive typography, the more liberal use of

illustrations and higher standard of editorial matter, we managed to reduce our printing contract and paper bills so that the monthly outlay under these heads is little greater than for the more modest publication of the previous year. The acceptability of the new magazine to our members is abundantly evident from our daily mail and its value as a propagandist organ has been proportionately enhanced.

A new policy was entered into early in the year whereby Mr. George A. Mackie was secured as Publication



GEORGE A MACKIE

Publication Manager, Canadian Forestry Association.

Manager and his services not only in the developing of new advertising but in preparing and supervising each issue have been exceedingly valuable. Mr. Mackie has been with us only nine months of the 1922 period and the net advertising revenues for the year were increased to \$8,203.05 as compared with \$3,661.44 for the previous year, an advance of \$4,641.61 or 210 per cent. However, an additional \$1,402.23 was earned in the latter part of the year from advertising, all of it on good accounts but the payment of which will fall in 1923. Inclusive of the latter unpaid amount our advertising earnings in 1922 totalled \$9,605.28, or over 264 per cent. above 1921. The aim of the staff is to make the magazine advertising carry the entire publication cost as nearly as possible and thereby place at our disposal for other educational work the whole of the receipts from membership fees. Those acquainted with magazine publishing will realize that a good part of our 1922 endeavors with the Forestry Magazine were in the nature of promotion work with national advertisers, the effect of which is often not reflected immediately but which must be done to make sure of future business. As a financial proposition our

Forestry Magazine is in an uncommon position of a growing publication which must be developed from current revenues with no investment of capital.

Financial Experience.

As to the financial statement of the Association for 1922, the Treasurer's audited accounts show a total income of \$59,320.39 as against \$47,836.57 for 1921, which with our balance from the previous year made available \$61,333.82, the increase in revenues representing 24 per cent. or \$11,483.82. Government grants increased from \$15,050.00 to \$17,150.00 or 13.9 per cent. Special subscriptions secured from private sources were \$18,782.00 as compared with \$14,188.00, an increase of \$4,594.00 or 32 per cent. (Appendix A with list of subscribers.)

In regard to these company and individual subscriptions, the list represents many new subscribers and, as well, the falling off of a number of old supporters although the latter will for the greater part be with us again when business conditions improve. We have to thank the Executive Committee of the Canadian Pulp and Paper Association for the unqualified endorsement of our work and the accompanying recommendation that their members rally to our support. This proved to be a substantial aid. Our balance on hand at the end of the year was \$3,966.11 as compared with \$2,013.43 the previous year. This total of \$59,320.39 does not cover fully the 1922 resources of the Association for the value of contributed material and services forms an additional \$12,000.00 available for our enterprises.

It has been the custom in our annual reports to give the chronology of our growing income. This, for alternate years, is as follows:—

1915.....	\$ 5,279.00
1917.....	11,192.00
1919.....	20,067.00
1921.....	47,836.57
1922.....	59,320.39

The staff of the Association are more and more convinced of the positive patriotism and high economic value of the educational tasks entrusted to us. What has been done represents only the beginnings of the Association's usefulness to this Dominion. With what we have learned from our past experience and with the stimulus of increased public confidence the year 1923 holds out opportunities which will challenge our utmost efforts.

Audited Statement of Treasurer of Canadian Forestry Association for 1922

RECEIPTS.

Balance on hand from 1921		\$ 2,013 43
Government Grants: Dominion	8,000 00	
Ontario	5,000 00	
Quebec	1,000 00	
Saskatchewan	1,000 00	
British Columbia	1,000 00	
Alberta	800 00	
New Brunswick	350 00	
	17,150 00	
Special Subscriptions		18,782 00
Membership Fees		14,654 36
Advertising in Forestry Magazine		8,203 05
Exchange allowed on cheques		10 81
Sale of Magazine		113 03
Refund on cost of tour in New Brunswick		407 14
		61,333 82,

EXPENDITURE

Salaries as per details attached		16,977 83
Clerical Assistance		1,840 90
Salaries of lecturers		2,232 50
Forestry Magazine		15,355 74
Stationery and supplies		2,238 21
Printing circulars etc.		2,599 10
Travelling expenses of officers other than Secretary		6,135 72
Commission and salary to agents obtaining members, etc.		1,048 17
Advanced to Secretary for expenses		1,100 00
Office expenses as per details attached		2,271 40
General expenses as per details attached		936 59
<i>Miscellaneous—</i>		
Auditor's fee 1921	100 00	
Postage	1,075 00	
Bank exchange	368 24	
		1,543 24
Expenses in connection with car as per details attached		3,088 31
Balance in Bank \$4,283.09, less outstanding cheques \$316.98		3,966 11
		61,333 82

Details of Expenditures

Salaries.	Advanced to Secretary for expenses.	Office expenses
R. Black, Manager, 12 m. 6,000 00	Hotel and meals. 329 35	Rent 12 m. 840 00
Geo. A. Mackie—	Railway fares 107 97	Electric light, 12 m. ... 24 00
3 m. at \$250.00 750.00	Sleepers, chairs and tips 177 20	Petty Cash 332 74
4 m. at 280.00 1,120.00	Telephone and telegrams 24 52	Cleaning office, 12 m. ... 60 00
4 m. at 310.00 1,240.00	Baggage, cabs and car-fares 114 13	Insurance 39 75
3,110 00	Express and freight. .. 16 78	Telephone 132 15
G. G. Blyth, 12 m. 2,000 00	Postage 30 00	Furniture and supplies ... 532 42
M. Robinson, Treasurer, honorarium 1922 500 00	Wages to assistants... 124 75	Telegrams 178 91
H. G. Brown, 12 m. 1,200 00	Incidentals 35 80	Express 46 43
M. Darragh, 10 m. at \$100. 1,000 00	Sundries 74 32	Miscellaneous 85 00
P. Burbidge, 12 m. 780 00	Official luncheon ... 46 00	2,271 40
A. G. Cooch, 9 m. at \$130. 1,170 00		
M. Mooney, 7 m. at \$65. — 1 m. at \$62.83 — 1 m. at \$50. 567 83		
D. Algar-Bailey, 2 m. at \$250. 1 at \$150. 650 00	Balance on hand Dec. 31, 1922. (since accounted for) 19 18	
\$16,977 83	1,100 00	
<i>General Expenses</i>		<i>Expenses in connection with car</i>
Slides for lectures... 468 40		Salaries 375 00
Rental of rooms for meetings 62 00		Insurance 145 00
Advertising 154 69		Cartage 31 50
Signs 101 55		Typewriter 25 00
Radio Set 101 85		Models 1,021 85
Miscellaneous 48 10		Labour on car 612 96
936 59		Materials and supplies ... 877 00
		3,088 31

Audited and found correct and in accordance with the books of the Canadian Forestry Association and the written report attached hereto.

(Signed) T. E. CLENDINNEN,
Auditor.

Ottawa, January 18, 1923.

The Result=

---of Putting Fire Rangers on a business basis in 1922

Read the opinions of four Quebec Associations who used HARDINGE 28-DAY TIME CHECKING SYSTEMS for their Rangers last year.

Three Rivers, Que.

"We are entirely satisfied with the Ranger's Clocks, in fact, the Directors have decided to extend this system throughout our territory next season."

The ST. MAURICE FOREST PROTECTIVE ASS'N LTD.

**Fire
Prevention
Is Cheaper
Than
Fire "Cure"**

Val Brilliant, Que.

"We are glad to say the clocks have given us full satisfaction during the time we have used them. We believe it is a very good outfit to check up our Patrolmen when they are supposed to be on duty, and shows very well if our men have covered their 'beats' as they are instructed to do."

SOUTHERN ST. LAWRENCE FOREST PROTECTIVE ASS'N LTD.

Chicoutimi, Que.

"We are pleased to say that the service was entirely satisfactory. We have no suggestions to make for its improvement "

PRICE BROTHERS & CO. LIMITED.

Quebec, P.Q.

"We have had almost complete satisfaction with the Ranger's Clocks."

LAURENTIAN FOREST PROTECTIVE ASS'N LTD.

Hardinge systems are fair to both Employer and Ranger. They enable the Ranger to present an indisputable record of territory covered and assure the Employer that his instructions are followed.

If you prevent but one fire by using a Hardinge system, you have made a good investment.

Orders now being placed for 1923 requirements. Send for illustrated booklet showing equipment.

HARDINGE BROS. OF CANADA, Limited

50 FRONT STREET E. TORONTO

EVINRUDE HIGH PRESSURE FORESTRY PUMP

Improved 1923 Model - Highest Efficiency

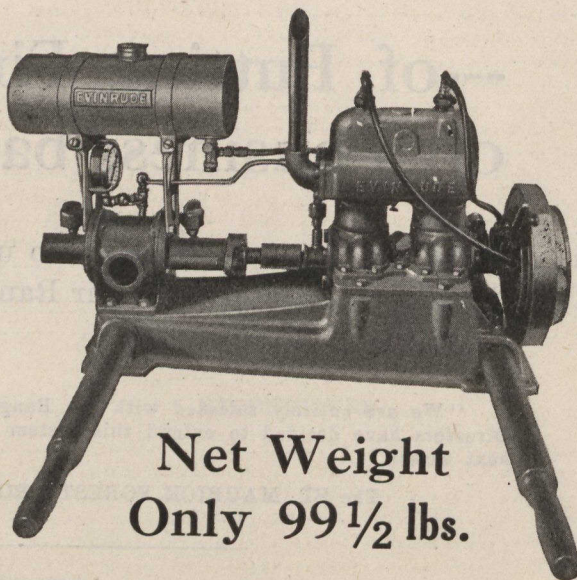
Aluminum base.

Oval gasoline tank,
with oil measuring
device.

Flexible hose for gaso-
line supply line.

Built-in-fly-wheel
magneto.

Easy starting device.



Net Weight
Only 99½ lbs.

Write us for reports
on recent tests where
Evinrudes developed
up to 185 lbs. pressure.

We also stock special
Unlined Linen Fire
Hose guaranteed for
200 lbs. working
pressure.

Stock Carried in Montreal and Vancouver

CANADIAN
DISTRIBUTORS

WATSON JACK & COMPANY, LIMITED

POWER BLDG.
MONTREAL

VICKERS "VIKING" AMPHIBIAN

Brief Specification:

"VIKING" MARK IV, Six passengers and baggage or 1,360 lbs.
Freight RANGE: 340 miles, SPAN: 50ft. HEIGHT: 15ft. 1 in.
LENGTH: 35 ft.

The 'Viking' was the winner of the First Prize of £10,000 for the Amphibian Class of Aircraft entered for the British Air Ministry Competition, Sept., 1920.

VICKERS LIMITED HEAD OFFICE: Vickers House, Broadway, London, S.W.1.
Canadian Representative: R. S. Griffith, 225 Beaver Hall Hill, Montreal.



Vickers "Viking" Amphibian on the Thames.

RADIO

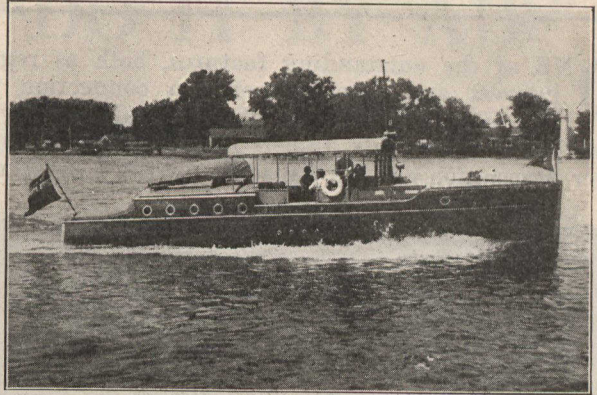
One frequently hears that time-worn adage—"The best is the cheapest in the long run." But what is the best?—What is the cheapest?—On what grounds does one form an opinion?—Is it the most expensive?—not necessarily. Is it the largest, the most imposing?—again, not necessarily, for one frequently finds that these features have been embodied in an article to increase its selling points. Then how is one to form an opinion?—what should one primarily look for?—the experience and reputation of the producer.

Marconi Services

Trans-Atlantic and Shore to Ship Telegraphs, Marine, Direction-Finding, Aerial, Railroad, Forestry, Mining, Broadcasting, Telephone and Telegraph Installations—sold outright or on a maintenance basis. Amateur apparatus of every description.

Canadian Craftsmanship backed by Twenty Years' Radio Engineering Experience and Two Hundred-odd Exclusive Patents, are behind Each and Every Marconi Product.

THE
Marconi
WIRELESS TELEGRAPH COMPANY OF
Canada
LIMITED



Pictured above is an example of the skilled workmanship executed in our plant.

WE are qualified and equipped to undertake original or standardized designs and carry them out in detail. On our staff we include a Naval Architect who will act in an advisory capacity in the preparation of plans and specifications.

No work is too large and none too small to receive our most careful attention.

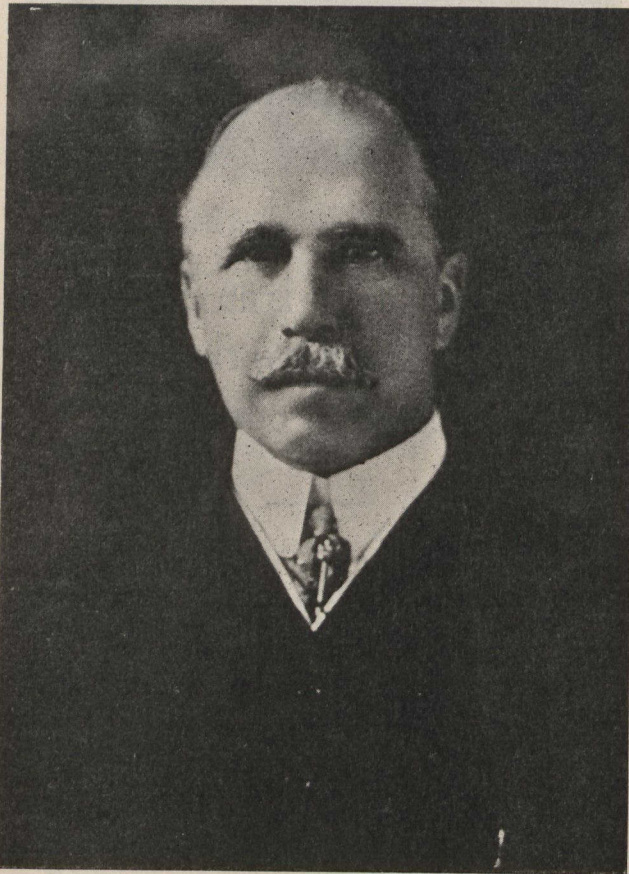
We solicit enquiries regarding the construction of all types of motor driven and sailing craft.

MONTREAL BOAT BUILDERS
LIMITED

371 St. Joseph St. Lachine, Que.

Linn Tractors Made Display

ONE of the outstanding features, both as regards interest and entertainment, in connection with the recent conventions at Montreal, held by the Canadian Lumbermen's Association, Canadian Pulp and Paper Association and the Canadian Forestry Association,



MR. W. H. C. MUSSEN

President Mussen Limited, Montreal.

was that provided by the Canadian representatives of the Linn Manufacturing Corporation, whose plant is at Morris, N.Y., and head office in New York city. Mr. W. H. C. Mussen, President of Mussen Limited, and Mr. J. S. Innes of the same company, who handle the Linn business affairs in the Canadian territory, were in charge of the various arrangements, and from their headquarters in the Mount Royal Hotel they conducted an educative and instructive campaign amongst the many scores of limit holders and woods operators in attendance at these various conventions. By means of exclusive film demonstrations they showed the Linn Tractors at work under actual woods conditions in various parts of the United States. Demonstrations were made at the Mount Royal Hotel, the Ritz-Carlton and the Ecole Polytechnique. Large and interested audiences in each case profited by the opportunity of enlarging their vision concerning woods methods.

A very remarkable feature of these various demonstrations was that in at least two cases the films were taken by companies with no financial or business interest in the tractor operations, but merely as evidence of the very remarkable results obtained by this most modern

adjunct to log hauling activities; also it was a most noteworthy feature of the various film demonstrations that several lumbermen and pulp and paper men in the audiences took it upon themselves to voluntarily testify as to the efficacy of this particular make of tractors in their own woods experience. Many interested enquiries were received by the officials of the company in charge, and they were especially fortunate in having with them for the purpose of first hand information some of the executive heads of the New York Corporation. Among these were Mr. G. R. Hanks, President of the company; Mr. Robt G. Thach, New York, Treasurer; Mr. Geo. Whitman, N.Y., Secretary, as well as several other members of the Mussen Limited organization.

On Wednesday, evening, January 24th, between 50 and 60 leading executives and owners of pulp and paper and lumber corporations were entertained by Mr. W. H. C. Mussen and Mr. J. S. Innes at a very enjoyable banquet in the newly opened banquet hall of the Mount Royal Hotel. The evening's entertainment was not in any sense a business one. A very enjoyable programme of musical, dramatic and recitative numbers provided an evening of rare and rapid fire enjoyment.

Not the least enjoyable feature of the evening was the screening of some new and exclusive films showing the use of tractors in heavy hauling operations. These showed the Linn engaged under various trying conditions which demonstrated its dependability and great hauling power. Among other things, the Linn was shown hauling immense compressor castings weighing 65,000 lbs. each for the Hope Natural Gas Co., of Clarksburg, W. Va., where a compressor station was being erected. The distance was 19 miles and the roads were impassable for other means of transport owing to the depth of snow and slush, and the grades which were very steep and the curves exceedingly sharp.

The effectiveness of the Linn tractor on snow and ice and the flexibility of the traction, working overground without use of mud-hooks, etc., were shown in connection with hardwood operations with the Oval Wood Dish Co., at Tupper Lake, N.Y., and the Gould Paper Co., in its activities at North Lake, N.Y. The latter company has twelve Linn machines engaged in its pulpwood operations. Several loads of hardwood logs were pulled by the Linn tractor at Tupper Lake, each containing 9,000 ft., Doyle rale.

Mr. W. H. C. Mussen who presided at the affair, in a very graceful speech, expressed his appreciation of the interest shown by his guests. He displayed a very keen understanding of the part which tractors are destined to play in future logging and showed how the tractor makes long haul operations not only feasible but profitable. A number of Linn tractors are now in operation in various parts of Ontario, Quebec and New Brunswick, and those interested were invited to witness a demonstration of what the machine can do—an invitation which has since been accepted by several operators.

A hearty vote of thanks was tendered Mr. Mussen, and Mr. Innes for their hospitality, by motion of Cyril T. Young, manager of the Eastern Lands Department of the Canadian National Railways, who voiced the sentiments of all present in a few appropriate remarks.

The entire week's conventions of the various associations were enhanced and enlivened by the efforts of this live tractor organization, who earned for themselves an enviable reputation as business entertainers of the highest order.

Air Board Statistics

THE Air Board announces Civil Aviation Certificates and Licenses issued, cancelled and renewed under the various classes as shown for the month ending December 31st, 1922, as follows:—

Commercial Air Pilots' Certificates.

Lapsed:

J. H. Tudhope, Lumby, Nr. Vernon, B.C.; O. H. Clearwater, Saskatoon; Edward L. McLeod, Edmonton; E. A. Alton, Winnipeg; R. J. Groome, Moose Jaw; G. M. Croil, Summerland; E. C. W. Dobbin, Toronto; Donald Brown, Yorkton, Sask.

Renewed:

L. R. Charron, Montreal; T. A. Lawrence, Cookstown; L. F. Stevenson, Winnipeg; W. R. Kenny, Ottawa; A. T. N. Cowley, Victoria; A. G. McLerie, Toronto; A. E. Godfrey, Vancouver.

Air Engineers' Certificates.

Issued:

Thos. Hayes, High River, Alta.

Cancelled:

M. S. Beal, Dayton, Ohio, U.S.A.

Certificates of Registration of Aircraft.

Cancelled:

The Laurentide Co. Ltd., Grand'Mere, P.Q., 2, H. S.2.L. Flying Boats.

The Village Smithy Up-to-date

UNDER a spreading chestnut tree the village smithy stands. But times have changed, and the village blacksmith may be called upon to repair an aeroplane.

This has recently happened in a village near Gloucester, Virginia.

A Vickers-Viking, of the amphibian type, which can alight equally on land or water, developed defects. The pilot, Lieut. Williams, of the U. S. Navy, came down in Mobjack Bay, and found a leak in one of the water-connecting pipes.

As he had no tools he taxied to the shore, asked for the nearest village, and found it to be a very small one.

Lieut. Williams carefully taxied the aeroplane up the street of the village. He drew up at the entrance to a blacksmith's forge, none being more astonished at the visitors and their mode of travel than the "smithy" himself.

The nature of the damage was explained, the blacksmith said he would be honored to repair the engine—for nothing—and the leak was stopped.

In a short time the machine was on its way back to the water, there to "take off," and successfully finish the interrupted journey.

"DO IT BY AIR"

Quality Counts--

in aircraft operation to a greater degree, probably than in any other phase of Canadian industry. Commercial flying is dependent for three-quarters of its efficiency upon ground organization, and operating experience. So quickly is the art of Aviation advancing that only specialist operators can hope to keep up to date and bring to the user of aircraft the full value of new developments.

Quality flying service usually costs less in the first case because operations are efficiently planned and thoroughly done. It always costs less in the end because results are certain and accurate.

Laurentide Air Service, Limited, places at your disposal four years of commercial experience as well as other years of flying training. Its machines last year flew more miles and hours than any other two companies in Canada—and did it without injury to a passenger or loss of a pound of goods.

Enquiries are solicited and entail no obligation.

LAURENTIDE AIR SERVICE Limited

407 Lake of the Woods Building

Montreal, Quebec.

Air Stations:

Quebec base:

Lac à la Tortue,

Ontario Base:

Remi Lake,

Associated with

FAIRCHILD AERIAL SURVEYS CO.,
(of Canada) Limited

Grand'Mere P. Q.

Great Meetings at Quebec Association

THE QUEBEC Forest Protective Association, largely through the vigorous executive work of Mr. Henry Sorgius, held the most successful meeting of their history at the Mount Royal Hotel, Montreal, on Tuesday, January 23rd. The attendance was never before equalled and the excellence of the addresses well repaid those who had in many instances travelled long distances to be present. It is the intention of the Canadian Forestry Magazine to publish in full and to distribute in other ways some of the papers presented at the meetings.

The programme covered addresses by Professor Stephen Leacock (which is reproduced elsewhere in this number); Dr. C. D. Howe, W. G. Power, R. P. Kernan, G. C. Piché, E. T. Allen, Forest Economist of the Western Forestry and Conservation Association, and Lt. R. B. Adams, of the U. S. Forest Service, whose radio address was greatly aided by a demonstration put on by the Northern Electric Company with Secretary J. Evans of the St. Maurice Forest Pro-

ective Association speaking from the other side of Montreal on the necessity for spending more money on education in prevention of fire.

The first paper of the afternoon was read by E. T. Allen, Forest Economist, of the Western Forestry and Conservation Commission, the subject being "Co-operative Forest Protection." Mr. Allen reviewed the experiences of seventeen years in the work, the troubles, the criticism and the advances made and laid down the dictum that the individual cannot successfully work alone. He stressed the necessity for educational publicity, saying that by fire preventive publicity tremendous changes had been effected in public sentiment. Mr. Allen declared that \$2,000,000 had been spent last year in fire-fighting in this area. Had but two per cent, of that amount, \$40,000, been allowed to him for advertising, the benefits would have been incalculable. He spoke of the method of approaching the public and said that the psychological appeal must be such as to

reach the unconscious perception and the reasoning perception.

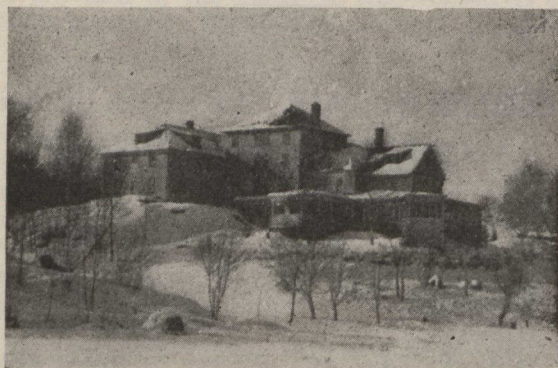
The discussion which followed covered a wide range. The first question was regarding the use of aeroplanes in patrolling. Mr. Allen said that considerable patrolling had been done by the army air service, but their methods of look-out patrols and telephones were regarded as more efficient. Regarding penalties for infractions of laws, Mr. Allen did not believe in placing them excessively high. As to rangers, efforts were made to interest the best men and to find work for them during the winter period that would interest them in studying matters concerned with the calling.

Lieut. Adams gave a review of the application of the air and signal services of the United States Army towards the observation and the reporting of forest fires. He also detailed the instruments used, and recorded the advances made in transmitting and receiving wireless telephone apparatus.

Winter in the Laurentians

Canada's national Winter sports—skating, tobogganing, skiing and snow-shoeing—with all their interesting and thrilling variations are nowhere more comfortably or readily attainable than in the confines of the Gray Rocks Inn estate.

We especially invite attention to the newest and most thrilling of Winter Sports—*Aero-Ski-Joring* which has its origin at this resort. This combines the speed of aviation with the thrills of rapid ski-running.



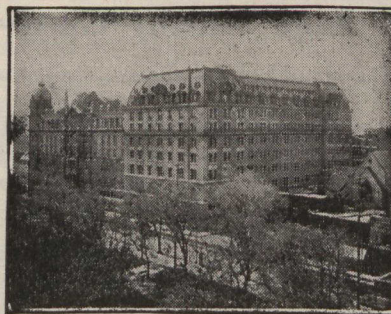
Gray Rocks Inn as it appears in Winter

Here are combined all the healthful, outdoor sports, with the comforts and conveniences of a first-class hotel. Our Winter Guests can be assured of every reasonable opportunity for outdoor recreation together with "old-time" hospitality.

Circular "F", illustrating the Winter attractions of this resort will be mailed on request

GRAY ROCKS INN, Limited P. O. ST. JOVITE STATION
Province of Quebec
(80 Miles N. W. of Montreal on the C. P. R.)

CANADA'S LEADING HOTEL



Dominion Square, Montreal
750 Rooms; 500 with Bath;

EUROPEAN PLAN EXCLUSIVELY

Rates from \$3.00 per day up.

Headquarters for
Conventions, Banquets and Social Events

Operated by

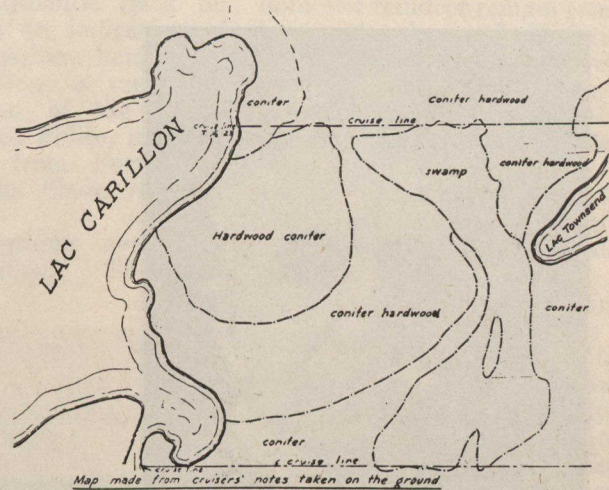
The Windsor Hotel Company

D. RAYMOND,
Managing Director.

J. DAVIDSON,
Sec'y.-Treasurer.

Comparative Results Secured from Ordinary and Aerial Methods of TIMBER CRUISING

The accompanying pictures show the fundamental errors which may easily occur from ordinary methods of cruising. Areas of types of timber burns, etc., are necessarily inaccurate because they are only sketched in. If these areas are parallel to cruise lines they may be missed altogether.



Aerial photographs such as the one on the left (which is a small scale reduction of the original) show areas correctly. This is most strikingly shown by the difference in the size of the hardwood-conifer area determined by these two methods of cruising.

Mapping and timber estimating can be carried out more quickly, more accurately and at lower cost by aerial photography than by ordinary means. Depending on the kind of work required and the location, distance from base, etc., the cost is for reconnaissances \$15 to \$25 per square mile; closer work with more accurate control, from \$30 to \$37.50 per square mile and complete map showing timber types, burns, drainage, etc., with timber estimate of 100 per cent. of area, controlled by sufficient ground survey work \$45 to \$65 per square mile. In all cases, size and quality of timber and amount per acre checked on the ground.

In asking for estimate, please give general location, distance from railroad and send rough map if possible.

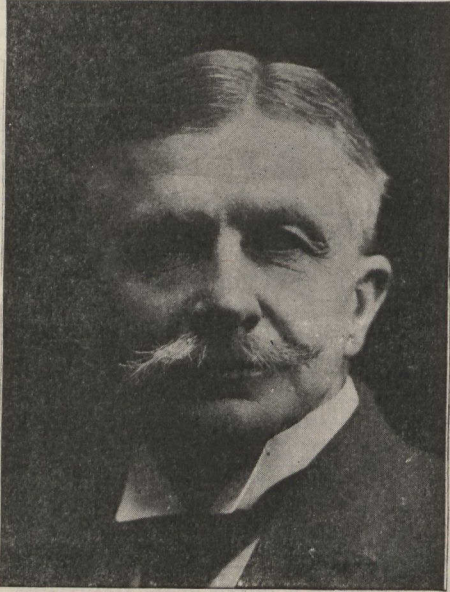
FAIRCHILD AERIAL SURVEYS CO. (of Canada) LIMITED

Associated with the Laurentide Air Service Ltd.

Grand'Mère, Québec.

Dr. Fernow Passes On

As this issue of the Canadian Forestry Magazine goes to press, word comes of the death of Dr. Bernhard E. Fernow, formerly Dean of the Faculty of Forestry, University of Toronto, whose name carries to all Foresters in America, and to a multitude of conservationists, a weight of affection, admiration and gratitude. More



THE LATE DR. BERNHARD E. FERNOW

extended reference will be made to Dr. Fernow in the March issue of this publication.

Dr. Fernow came to America under romantic circumstances, sacrificing a title and a fortune and for long years raised his isolated protest against the public forest policies which then knew only the doctrine of unbridled exploitation. Forced to work as a bookkeeper in New York City while awaiting employment as a trained Forester, Dr. Fernow's remarkable tenacity of purpose finally won through — won through only incidentally for Dr. Fernow personally for he achieved a victory in mammoth public service the fruits of which will be gathered by the people of this continent to the end of time.

Trees, Shrubs, Roses, Perennials.

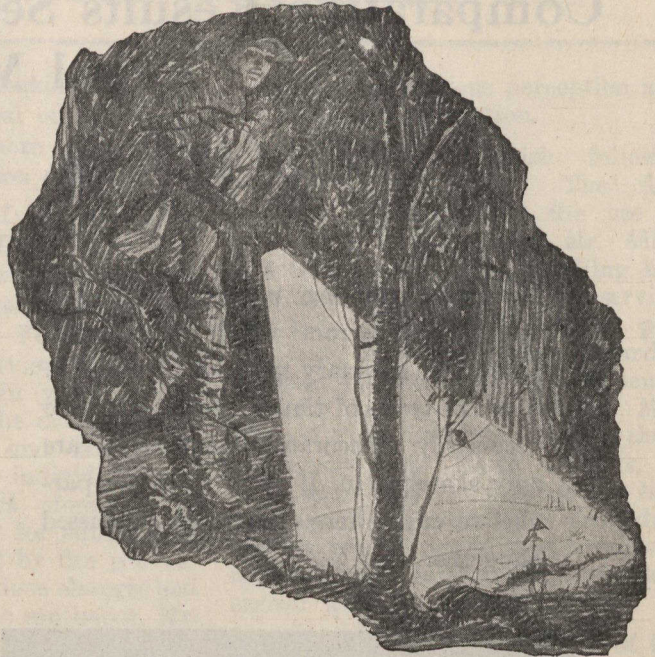
To hide ugly views is one use for Connon's shrubbery. Another is to soften sharp lines of house foundations. Still another is a grouping to give a succession of bloom.

For your garden of enjoyment Connon's Roses and hardy plants will give continual satisfaction.

Write us a letter telling of the planting you have in mind that we may give you our personal letter-aid, or a personal interview if necessary.

Our catalogue is yours for the asking.

JOHN CONNON CO., LIMITED
Nurserymen and Florists
HAMILTON ONTARIO



The Best Light for Use in the Woods

AN Eveready Flashlight is just as important as your axe, knife or drinking cup. Scores of times in the night you will find it almost indispensable. When darkness overtakes you away from camp, there is no safer guide along the trail, around stones, logs and pitfalls, than an Eveready. Pack an Eveready Flashlight in your kit bag, and take along a supply of the long-lived Eveready Unit Cells—the Batteries that fit and improve all tubular flashlights.

For sale at Electrical, Hardware, Drug and Sporting Goods Stores, and Garages.

**CANADIAN NATIONAL CARBON
CO., LIMITED**

Montreal Toronto Winnipeg

**EVEREADY
FLASHLIGHTS
& BATTERIES**

(Continued from page 100)

the trade about \$42,000. The carcasses are shipped with the hides on, the hides being valued at about \$5 each. These shipments were made by the Lomen Company which owns about 16,000 reindeer. The average value of reindeer in Alaska is about \$25 per head."

The skin of the reindeer which, when properly dressed, is very soft and pliable, is the principal clothing material in use among the Lapps of Northern Europe and their kinsmen in Siberia. It is almost solely used for clothing purposes by those natives of Alaska who have reindeer, as also largely by the white inhabitants of that territory. The Esquimaux of Northern Canada use instead the skin of the caribou which is, of course, practically identical. In Ungava, owing to the disappearance of the caribou, the natives have been forced to wear cotton clothing, and as a consequence, endure great physical suffering and are very liable to disease. Although the yield from the domestic reindeer is small the milk is richer than that of the cow, and among the Lapps reindeer milk and its various products form an important part of the diet.

Lapp Deer-Men Needed

In recommending that small experimental reindeer herds be established in a number of suitable localities throughout Northern Canada the Commission suggest among other things that at least one experienced Lapp deer-man should be detailed to each herd, this being necessary to ensure that proper methods be used in handling the deer. It is also proposed that a number of Lapp deer-men may be induced to come to Canada, bringing their deer-herds with them in order that their services may be utilized in the development of the reindeer industry in Canada.

Herds of Wild Caribou

All the evidence relating to the vast interior territory, beginning in the south at about township 60 in the Prairie Provinces, extending to within about thirty miles of the Arctic coast, and from a short distance west of the coast of Hudson bay on the east, to the Alaskan boundary on the west, indicates that this region is tenanted by vast numbers of wild caribou, principally of the Barren land variety, which migrate annually over practically the same routes.

In Newfoundland as well as in all parts of Canada which furnish a congenial habitat, caribou are also to be found.

In view of the lack of exact information, not only as to the numbers but the whereabouts from time to time of these large bands of caribou, the Commissioners strongly recommend that steps be taken, either by the use of aeroplanes or by such other means as may be considered best to secure authentic data on those points. As an indication of the size of these caribou herds quotation is made from a report of Inspector Anderson of the Royal Northwest Mounted Police, made in December, 1917, from Fort Fitzgerald, east of the Slave river, in which he said:—

"There is nothing new here except the caribou. They are



Photo by J. B. Tyrrell.

A Large Herd of Caribou near Carey Lake, N. W. T.

within forty miles of this place in tens of thousands, and the natives are getting numbers of animals and will therefore have plenty to eat this Winter. The deer (caribou) are passing north, coming from the southeast, most likely from Fond du Lac on Lake Athabaska. They could not cross there on account of late frosts, and swung around towards Great Slave lake. They say the animals are scattered over hundreds of miles and literally in millions; the further east one goes, so they say, the more there are, and the buffalo on the plains in the long ago is not a patch on this for numbers. Eventually they land in the barren grounds where nobody bothers them until they take another trek. I sent the sergeant out on a patrol to see, and he reports that the snow is tramped down for miles as close as ice by the animals' feet where they have passed in great numbers. It is most wonderful."

Domestication of Caribou

The Report states that there is no reason to doubt that given proper facilities for restraint, and with intelligent handling, young wild caribou would readily yield to domestication. It is, on the other hand, equally beyond question, that while the wild caribou is doubtless susceptible to domestication, he will not become tame, nor will the domestic reindeer remain tame, unless kept under close and effective control.

In this connection it is worthy of note that of the reindeer handed over by Dr. Grenfell in 1919 to the Department of Indian Affairs, and since maintained under fence at Lobster bay, on the north shore of the Gulf of St. Lawrence, a number have escaped, while the remainder, as a consequence of inefficient herding and lack of skilful handling, have largely reverted to a wild condition.

As in the case of the musk-ox, already referred to, the acquisition by the Indians and Esquimaux of fire arms instead of the bows and arrows which they formerly used, is responsible for the tremendous increase in the number of animals annually and in many cases, wastefully destroyed.

It is unfortunately beyond question that wolves and wolverines, especially the former, exact a constant heavy toll from the caribou herds.

Apparently wherever the caribou exists, wolves are also found, and the evidence of Mr. J. B. Tyrrell, who perhaps to a greater extent than any other witness has had opportunities of observing the wild life of the large central region, furnished most valuable information as to the manner in which the wolves secure their prey by establishing their dens in close proximity to the various river crossings used by the migrating caribou. He referred to the wolverine as a most dangerous, though perhaps not so general a menace to caribou.

Much conflicting evidence was given as to the likelihood of the Esquimaux or the Indians developing into efficient herders. Most of the witnesses who have had an opportunity of studying the Esquimaux at close range, appeared to think that if properly trained by Lapp experts, they would develop into excellent herders. This view is of course strongly supported by the experience for those in charge of the reindeer enterprise in Alaska where the Es-

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quimaux have clearly demonstrated their adaptability in this regard.

The Commission believes that the vast herds of wild caribou which undoubtedly still exist in the interior mainland area, constitute a valuable national asset; the importance of which, if properly dealt with, can be enormously enhanced and to this end, recommends:—

That an earnest effort be made to ascertain as soon and as closely as possible the numbers and movements of the Barren Land caribou, especially those on the mainland and on the islands adjacent thereto; as also the numbers and movements of the caribou of other varieties, particularly those in the Yukon Territory and in northern British Columbia.

That a comprehensive survey be made of the vegetation and other conditions having a bearing on the support of herbivorous animals in the interior area, with the object of securing information as to the comparative value of the various districts for grazing purposes; the extent to which these natural pasture lands are now being used by the caribou; the approximate numbers of additional caribou or reindeer which might reasonably be expected to find sustenance in the different districts. It will be obvious that in

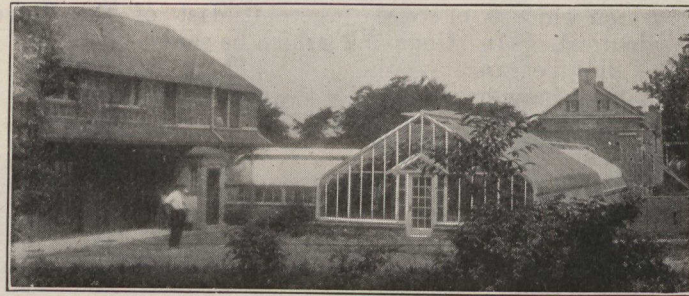
securing accurate and reliable data on these points, the migratory habits of the caribou and the length of time required to reproduce the reindeer moss after it has been eaten down, will have to be closely studied.

That special attention be given to the enforcement of such regulations as will effectively prevent the wasteful or useless slaughter of the wild caribou, either by natives or others.

That an intelligent and systematic

campaign be inaugurated, having for its object the extermination of wolves, wolverines and such other animals as prey upon the caribou.

That at each of the Reindeer Experimental Stations, the establishment of which is recommended herein, provision be made for the domestication, on intelligent lines, of such numbers of young wild caribou as may be conveniently handled with the reindeer herd.



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Foresters Club Banquet

ONE OF THE MOST pleasing functions in the history of the Forest School of the University of Toronto was held on Friday, January 19th, when the annual dinner of the Foresters Club was held at Hart House. The occasion was of a most interesting and helpful character. Sir Robert Falconer, President of the University, with Dean Howe and other members of the faculty were present and Col. Henry Solon Graves, Dean of the Yale Forest School, was the guest of honor. The address given by Colonel Graves was a serious and encouraging review of the progress of the forestry profession in America which launched into a broad and informing discussion of the relation of natural resources to national prosperity and world peace. The Forestry Magazine hopes to publish Colonel Graves address in full in the March or April number. A most pleasant personal episode was the ovation given to Dr. B. E. Fernow, whose name and service signify so much to all concerned with the advancement of forestry on this continent. Dr. Fernow, although in frail health, was able to be present to hear from the lips of Sir Robert Falconer, Dr. Howe, and Colonel Graves that his pioneer sacrifices to the cause of forestry and his tenacious loyalty to an ideal, which now is coming into its own, have not been dimmed by the passing of years.

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EMPIRE FORESTRY CONFERENCE

Announcement is made that the second session of the British Empire Forestry Conference will take place in Canada during the coming summer. The official meetings of the conference will be held in Ottawa but arrangements are under way whereby tours will be made to enable delegates to view forest conditions and forest industries in various parts of the Dominion. Delegates will be present from all British Dominions and the colonies, with a larger group representing the British Isles.

LEAD PENCILS

Where do all the lead pencils come from, and where do they go? Although almost everybody has one, many folk never buy one, but, even so, more than 750,000,000 are manufactured for use in the United States alone every year, requiring many thousands of cords of wood.

But, says an American paper, woods suitable for lead pencils are becoming scarcer, and many manufacturers are turning to paper. Red cedar and red jumper, are the woods chiefly used in making lead pencils. A hunt is on for other kinds of wood that will take the place of these. In East Africa a kind of cedar has been found with which experiments are being made. The production in the United States is about 80,000 cases of pencil slats per year. From each case 100 gross of pencils is made. This results in about 1,000,000,000 pencils of American-grown cedar.

As far back as history goes man has tried to make things to mark with and to set down his thoughts. The Aztecs and the Pharaohs had crude marking devices. As early as 1750 Kalm, a Swedish naturalist, made experiments with American cedar. In 1812 William Monroe made 500 pencils at Concord and sold them in Boston, but the war stopped his plans. In 1861 Eberhard Faber began making pencils on a large scale in the United States.

The graphite which makes the mark is, of course, the important part in the manufacture of the pencil. Ceylon has furnished much of the graphite used in America. Graphite is also found in Madagascar and in Mexico. Czecho-Slovakia contains deposit of both the amorphous and

crystalline graphite. In the United States the chief deposits are in Alabama, New York, and Pennsylvania.

DE-INKING OF OLD PAPERS

At the Superintendents Convention at Kalamazoo, Sidney D. Wells of the Forest Products Laboratory described what he classed as a successful test of a process of de-inking old newspapers in a Minnesota mill which used 1,500 tons of old newspapers in making newsprint which was sold and shipped as part of its regular product. This re-manufacture would mean elimination of heavy freight charges, and a great conservation of raw material.

Forest Engineers in Annual Meetings

The annual meeting of the Canadian Society of Forest Engineers held at Montreal on Wednesday, January 24th, was probably the most noteworthy in the history of this young organization. The dinner held at the Mount-Royal on the evening of the 23rd was addressed by Professor J. W. Toumey, of Yale Forest School, and the discussion of points afterwards drew other members into the arena. Dr. Clifton D. Howe presided. The Canadian Forestry Magazine hopes to publish at least a condensation of several of the papers presented at the meetings held on Wednesday, the 24th.

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it will demand that forest lands be viewed in a sense as public utilities and placed under sufficient public regulation to keep them in a reasonable state of productiveness.

Probably the greatest force of all, however, in bringing about the growing of timber crops will be the enlightened self-interest of the owner of the land, the steady pressure of business interest. The situation in which the growing of timber has no place in the plans of the forest owner is rapidly passing. In more cases than are often realized, reforestation presents today a business opportunity, offering tangible profits. Much small sized timber is now logged on a very precarious margin between cost and returns. Much of this class of material, if left on the ground, will earn from 10 to 15 per cent. a year in added growth and better quality, to say nothing of future enhancement in lumber values. Lumbermen who are skinning southern pine lands can often, at a small investment, start that land to producing from 300 to 400 feet of timber per acre yearly. Far-sighted business men will not ignore these considerations. Plan-wise reforestation may bring results in a dozen years in the added life given to a manufacturing enterprise, in the security of its credit, or the sale value of its cut over lands.

Any business undertaking looking to the future requires vision, faith, and courage. The growing of timber is no exception; but its requisites in these qualities are no more than were required of the pioneer lumbermen who struck out into each successive frontier of virgin timber and gave this industry its high standing in America. I have heard many lumbermen say that reforestation is not practicable because of the uncertainty of the tax burden during the period of growing a mercantile crop. It is an old saying that the world stands aside for men who know where they are going. And it is my strong conviction that timber land owners who strike out in the use of their land in line with the dictates of common sense and the economic needs of the times will, by their own leadership and sincerity, command public support at the points where it is needed and reasonable.

We have not delayed in the United States to build our railroads, establish new manufacturing industries, or develop our water powers until all of the uncertainties in the enterprise were removed. The most distinctive thing in the vitality of American business has been its courage and faith in entering fields of activity. The



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reforestation movement in the United States needs exactly this same kind of industrial leadership. And I for one am confident that it will be furnished.

FOREST ENGINEERS BUSY

Two forest engineering parties from the New York Office of James D. Lacey and Company have recently started important field work in the South. One party of twenty men is making an intensive forest survey of 127 square miles in Louisiana in advance of proposed manufacturing operations for which the timber estimates and type map will be the basis. Mr. S. J. Hall spent the week of December 10 with the Louisiana party. Another party is making a careful cruise of a smaller tract in South Carolina in connection with the acquirement of stumpage for an existing mill operation. Several preliminary examinations have also been made recently along the Atlantic seaboard and a reconnaissance of pulpwood resources in the central Gulf region was completed a short time ago. In addition to the actual and prospective improvement in business conditions reported practically throughout the South, there is a rapidly growing recognition of the re-growth possibilities on cut-over lands, and the future timber supplies of several companies are likely to be grown as crops under careful forest management.

A PEELED BIRCH TREE

Defaced it stands! I do not know your name,
Who peeled this birch-bark tree, but ah, the shame!
You wanted on a bit of bark to send A maudlin little message to a friend?
To make a napkin ring, or some such trash?
And so with pocketknife you needs must gash
A ghastly wound, and peel a birch-bark tree.
Out of my thoughts, Oh you, who e'er you be!

—Margaret Clarke Russell.

THE SMELL OF TREES

Surely of all smells in the world the smell of many trees is the sweetest and most fortifying. The sea has a rude, pistolling sort of odor that carries with it a fine sentiment of open water and tall ships; but the smell of a forest, which comes nearest to this in tonic quality surpasses it by many degrees in the quality of softness. Again, the smell of the sea has little variety, but the smell of a forest is infinitely changed; it varies with the hour of the day not in strength merely, but in character; and the different sorts of trees as you go from one zone of the wood to another seem to live among different kinds of atmosphere.—R. L. Stevenson.



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Growing Nut-Bearing Trees

Some Information About a Comparatively New Yet Interesting
Branch of Horticulture

In Two Parts—Part Two

By J. A. Neilson, B.S.A. Dept. of Horticulture, O.A.C.

Inasmuch as nut growing is a comparatively recent development our Ontario Nurserymen have not devoted much attention to the propagation of named varieties of nut trees. There is some interest being shown at present however, and it is hoped that before long there will be a fair supply of the best varieties of native and foreign nut trees available in Ontario. In the meantime those who desire to secure named varieties of nut trees will have to place their orders with nut nurserymen in the United States.

Should the prospective nut culturist not be able to obtain at a moderate figure budded or grafted stock of improved varieties of nuts then, of course, the only thing to do is to grow seedling trees. As previously stated some of these may produce very good nuts. If superior trees are found in any lot grown from seed or if an exceptionally fine native tree is known to exist such trees are useful as a source of scions for improving other trees which are not so desirable. It is a fact though not generally known that nut trees may be top grafted like fruit trees. This task is not as easy to accomplish as is the case in fruit trees, but if the proper methods are followed very good results may be obtained. In a future issue of this magazine we hope to write an article on top-working nut trees by budding and grafting.

How to Plant Nut Trees

Nut trees are rather difficult to transplant and, therefore, it is necessary to handle these trees carefully to get the best results. The roots should be kept moist and protected against the sun and wind. Wet sacking or moss, or similar material, makes an effective protection and should be applied immediately after the trees are dug or received from the nursery. This point cannot be stressed too much as the tiny feeding rootlets will dry out and die if exposed to the sun for only a few minutes. The hole for setting the tree in should be a few inches

wider and deeper than the greatest diameter of the root system. In digging the hole the richer surface soil should be put to one side in a separate pile and the sub-soil in another heap. When ready to plant take a shovelful of surface soil and make a small mound in the bottom of the hole, set the tree on this mound and put in enough soil to cover the lower roots. Pack this soil very firmly with a stick with a rounded end, taking care not to bruise the roots. When this has been done put in more soil and pack again, and continue until the hole is almost filled. A loose mulch of soil about two inches deep should be left at the surface. It is very important to have the soil firmly packed about the roots as many failures are due to loosely placing the soil around the roots. Trees should not be planted when the soil is very wet. Raw ground bone mixed with the soil about the roots is said to be beneficial. If the soil is dry the trees should be watered shortly after planting and if enough moisture is not supplied by rains it will be necessary to water a few times during the growing season. When watering it is a good practice to make a slight depression a foot or so from the trunk and put the water in this depression where it can soak in gradually to the roots and not run off on the surface.

Initial Pruning

Nut trees should be cut back from one-third to one-half at time of planting. This will help to restore the balance between the roots and top, and induces a stronger and more rapid growth. If not cut back as suggested above, the tree will take much longer to get established and, in some cases, it may die.

Care After Planting

While nut trees will grow on comparatively poor soil they will do much better on soil that is well supplied with plant food. For this purpose stable manure, leaf mould, or anything that furnishes humus is valuable. Such materials should be applied to

the ground and incorporated into the soil by digging in with a fork or spade. Weeds or grass of any kind should not be allowed to grow close to the trees as they will rob the tree of the food and moisture required for growth.

Spacing the Trees

Large growing trees like the Black walnut or Hickory should not be planted closer than 60 feet apart, but smaller trees such as the Japanese walnuts may be planted at 50 feet each way. The cultivated Chinese and European chestnuts do not generally grow to a large size and, therefore, may be planted about 35 feet apart.

NOTE—The Department of Horticulture would like to receive information on the occurrence and distribution of all kinds of native and introduced nut trees growing in Ontario, particularly those which yield large crops of thin shelled, high quality nuts.

Juglans Mandschurica

The general growth characteristics of these species are somewhat similar to the other two types but the nut, however, is quite different, being somewhat like a butternut. Because of this it is sometimes called the Japanese butternut. It is the least desirable of the Japanese group and should not be planted except where the cordiformis type will not grow.

Chinese Walnuts (*Juglans regia sinensis*)

The Chinese walnut is being grown experimentally in the northern part of the United States and has been tried at only one place in Canada, e.g., in the grounds of G. H. Corsan, Islington, Ont., The tree is fairly hardy at the Arnold Arboretum, Jamaica Plains, Mass., and should be sufficiently hardy for Southern Ontario. It is believed that the Chinese walnut will prove to be hardier than the English walnut and it may have an important place amongst nut trees in the northern part of the United States and in Southern Canada. The nuts ar

very large and have a shell which is thicker than the English walnut, but not nearly so thick or hard as the native Black walnut. The kernel generally has a fine flavor, being almost as good as the English walnut. Nuts of this species have been planted at the Ontario Agricultural College, Guelph, and at the Experimental Station, Vineland, and it is expected that trees from these plantings will produce nuts which will be as good as the Persian walnut and probably hardier.

Exotic Species of Chestnuts

Inasmuch as very few of the Chinese, Japanese, and European chestnuts have been planted in Ontario very little can be said regarding their behaviour. Dr. Sargeant reports the Chinese chestnut (*Castanea Mollissima*) as being hardy at the Arnold Arboretum. The Japanese chestnut is also quite hardy but is susceptible to chestnut bark disease. A few Japanese chestnut trees are growing near Fonthill, Ont., and have borne some good crops. The tree is a small, spreading grower, comes into bearing fairly early and bears quite heavily.

Why Nut Trees Should Be Planted

Most people who are interested in the welfare of the country realize that trees generally should be planted in much greater numbers and some believe that it would be desirable to plant trees that serve a three-fold purpose of food, shelter and beauty.

Nut trees yield a valuable food, provide shelter and beautify the landscape, and thus combine beauty with utility. Large quantities of nuts are imported into Ontario every year from foreign countries for which a great deal of money has to be sent out of the country. It is believed that a portion of this demand for nuts could be met by growing a greater number of the best types of native and introduced species.

Where Nut Trees Might Be Used to Advantage

1. AS ROADSIDE AND STREET TREES—Where the soil and the site are suitable, nut trees should form a part of the scheme of beautifying our highways and streets by tree planting.

2. TREES FOR THE HOME GROUNDS—The grounds surrounding many of our homes, both rural and urban, would be more beautiful and productive if planted with some of the

best types of native and exotic nut trees.

3. STEEP HILLSIDES OR OTHER PLACES—Areas not easily or profitably cultivated could be very well devoted to nut trees provided the soil was suitable.

4. AS PARK TREES—City and Rural Parks should certainly have a collection of native nut trees and likewise some of the hardiest and best exotic species.

5. AS A COMMERCIAL VENTURE—In the warmest part of the province it might pay to establish on a small scale, commercial plantations of the best varieties of Black walnut, Japanese walnuts, Hickories and blight resistant Chestnuts.

Kind of Nut Trees to Plant

Nut trees, like fruit trees, are difficult to grow true to type from seed

and hence have to be propagated by budding or grafting. While it is quite true that one may get a very good tree by planting nuts from a desirable tree it is also true that a considerable proportion of the trees so produced will not be any better or as good as their parent. Because of this uncertainty it is much better to plant budded or grafted trees of superior named varieties.

A QUESTION FOR ALL.

Forestry is not a question mainly for lumbermen. It is not even a question mainly for foresters. Because no one can get along without the forest, it is a question for every one of us. Our future supply of forest products is by far the greatest and most puzzling economic problem now before the people of Canada.

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The Tobacco of Quality

Forest Products Laboratories

RESearch and Technical Service in connection with wood and all articles or products manufactures therefrom is the business of the Forest Products Laboratories of Canada at Montreal.

The laboratories have adequate modern machinery and equipment for research into the mechanical, physical, chemical and other properties of woods as related to their uses—35 technologists and others are engaged in strength testing, preservative treatment, pulp and paper making and other branches of wood technology.) The laboratories have the finest reference library in Canada relating to the properties and utilization of woods; have made over 40,000 tests on the strength of Canadian woods by modern standardized methods; have investigated conditions at over 300 mills, factories and other buildings in Canada and the United States with respect to the decay of timber in such buildings; have published over 70 technical articles, bulletins, etc.; have dealt with thousands of technical inquiries, frequently involving special experimental investigations or tests; have investigated preservative treatments as applied to Canadian timbers for railway ties and other purposes; have conducted research into the chemistry and technology of Canadian woods in relation to pulp and paper making; offer information on the causes and prevention of decay of wood in buildings and on the preservative treatment of timbers; offer free technical services of various kinds to the public, such as the identification of woods, analysis of pulps, papers, etc.; offer courteous co-operation in the solution of any problem encountered in the use of wood.

Creosoted Post Outlasts Cedar

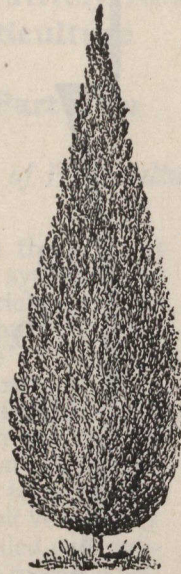
FOR many years it has been thought that the only timber that would give a reasonable period of service as fence-posts was cedar. The Forest Products Laboratories of the Department of the Interior, Canada, state, however, that by employing a comparatively simple method it is possible to treat posts of certain hardwoods in such a way that they will have a life at least twice as long as cedar posts. The preservative effect of this treatment is clearly shown in fencing erected at the Dominion Forestry Branch forest nursery at Indian Head in 1917. Here posts of Russian poplar were used, both treated and untreated, and it is interesting to note that all the untreated posts erected at this time have decayed and been removed while the treated posts are all still in service and appear as sound as the day they were placed in position.

Transplanting Shade Trees

Q.—What are the chief precautions to take in transplanting small shade trees?

A.—With such trees as maple, elm, ash, oak, etc., make sure to do your transplanting before the leaves commence to bud. Dig well around the roots and carefully avoid destroying any of the fine hair roots which are so vital to the growth of the tree in its new location. Dig the new hole plenty large enough to take the roots comfortably and plant your tree about six inches deeper than in its first location. Allow as little time as possible to elapse while the roots are lying exposed to sun and wind. Put the best earth closest to the roots and tamp it firmly.

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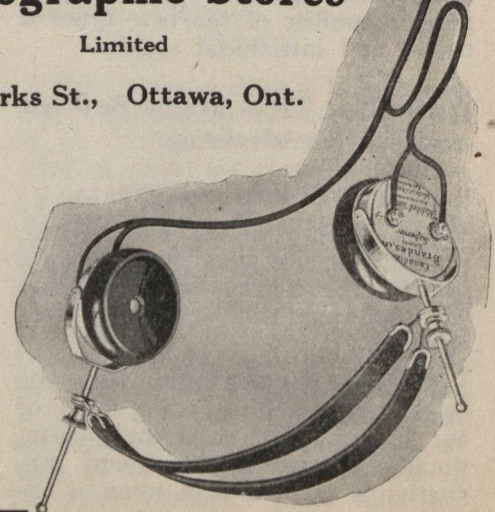
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What Forestry Means to You

By Owen Jones

(From Australian Forestry Journal.)

FORESTRY is not a mere fashionable fad, a harmless hobby pursued by a few amiable cranks. It is a practical, business "proposition," on a hard cash basis, and you cannot live without it. It is a primary producer on a grand scale. Neglect it, and it is not merely posterity that will suffer; you will suffer, directly and immediately. Your pocket will be lighter, and the cost of living will be raised for you. You are suffering already for past neglect on your own part, and on that of your fathers. It is no fanciful affair. It means the application of business principles to natural resources. If the forests cannot be made to pay, abandon them altogether.

Perhaps you think you have nothing to do with the forests, and they do not concern you. All you produce, whether in the raw or the manufactured state, comes to market only through the help of wood. It is packed in wooden containers—boxes, crates, casks, barrels—it is carried in wooden carts or waggons; it is loaded into wooden trucks, it runs over rails laid on wooden sleepers. Without wood the people in the cities would starve.

Look around you in any room; wood everywhere. Chairs, tables, floors, doors, window-frames, rafters, beams, the fire in the grate, all are wood.

Do you play games? Cricket bats, tennis racquets, golf clubs, billiard cues, and tables, gramophones, pianos, dancing floors—could you make any of them without wood?

Do you use coal directly or indirectly? Every mine is a large consumer of wood. Without wood no coal could be mined; if wood is scarce and dear the price of coal goes up, and every industry using coal is affected. All your manufacturers are directly dependent upon wood.

Think of ships, wharves, piers. Wood enters into the construction of all of them; not so much as formerly no doubt, but still to a great extent. But for wood none of you would be here to-day, for your fathers could not have crossed the seas.

Are you interested in agriculture? Farm buildings, outhouses, sheds, fences, farm implements, tool handles—all require wood. You cannot grow wheat or wool or meat without it.

Do you want the latest news? You cannot have it without wood. Telegraph poles, telephone poles, all are wood. This newspaper is made out of wood pulp. Do you realize how much wood is used up for newsprint? In the United States of America alone the amount of wood used every year for paper pulp is over six million cords—nine thousand million superficial feet of wood!

Are you a smoker? Your pipe is wood, and so is the match with which you light it.

Not only wood, but many other things also come from the forest. Eucalyptus oil, wattle bark, honey, charcoal, tar, creosote, formalin, acetic acid are all forest products.

Do you play football, ride a bicycle, or drive a motor-car? Rubber is obtained from trees.

Think again for a moment of the indirect benefits you owe to the forests. What gives you your supplies of pure drinking water? The forests. What prevents floods, silting, and erosion? The forests. What makes irrigation possible? The forests. Their value in this respect is of

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THE USE OF WASTE LAND

Q.—I have a brother a farmer in Western Ontario and his place contains much waste land which he would like to plant. Who can help me get such planting work under way?

A.—In the first instance write to the Provincial Forester, Parliament Buildings, Toronto, who will be glad to advise you as to procedure and he may be able to supply with sufficient tree stock from the Provincial Nursery. Keep also in touch with the Canadian Forestry Association, Ottawa. They will do everything possible to assist you.

particular importance here in Australia. We have no central mountain chains to feed perennial streams with melting snow, but are dependent mainly on local rainfall. The greater our necessity therefore to protect our watersheds with a forest sponge, which will absorb the rainfall gradually into the subsoil, and give it back again gradually in springs, and clear, gently-running streams.

What gives us shade and shelter for our stock? The forest and its trees. Where do we find restful, health-giving surroundings during our holidays? In the forests.

What makes human or animal life possible at all? Tree and plant growth. When we breathe we use up oxygen and give off a poisonous gas, carbon dioxide. The trees and plants take this up, absorb the carbon, and give us back the oxygen; and but for them we should soon die.

To our fathers the forest was an enemy. They had to strive and battle against it; sometimes it beat them. It was a curse, something to be wiped out, and we have largely inherited this idea. But there is a point at which this destruction must stop. Every country which has destroyed her forests to excess has suffered untold losses. China, North Africa, parts of France, Italy, and Switzerland are all suffering; floods, famine, and vast expenditure for reforestation has been the result. We are rapidly approaching this stage; in some districts we have already passed it.

We must have forest products; we cannot live without them. How are we to obtain them? Shall we buy them from abroad or grow them at home? Let us ask first, can we buy them from abroad? The world's timber supplies are being used up far faster than they are produced. Already a majority of countries are importing; the others are growing anxious about the future, and are considering their own supplies. What will be our chance in a few more years? If, on the other hand, we grow them here—and Victoria can produce the bulk at least of her own requirements—we shall keep our money at home, and shall create a deal of employment, thus encouraging immigration and population.

It is a vital question. It touches us to-day; it affects our lives and our pockets. It is not sentiment, but plain business. Are we prepared to face it?

BIG PAYROLL IN B. C. LUMBERING INDUSTRY

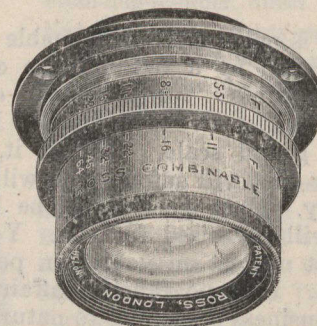
BRITISH COLUMBIA'S payroll for the lumber industry in 1922 will run over \$20,000,000, according to officials of the provincial government who have based their calculations on returns from 532 firms, whose statistics show that in 1921 the payroll amounted to \$18,180,962, with an average number of wage earners of 14,500.

The general resumption of building operations followed by an increasing demand for lumber, has had the result this year of speeding up the industry. Many plants that were idle have resumed operations, and even those which kept going all the time through 1921 have increased their staffs.

It is confidently expected that this year will show a big increase over 1921, and the \$20,000,000 mark is said to be on the conservative side.

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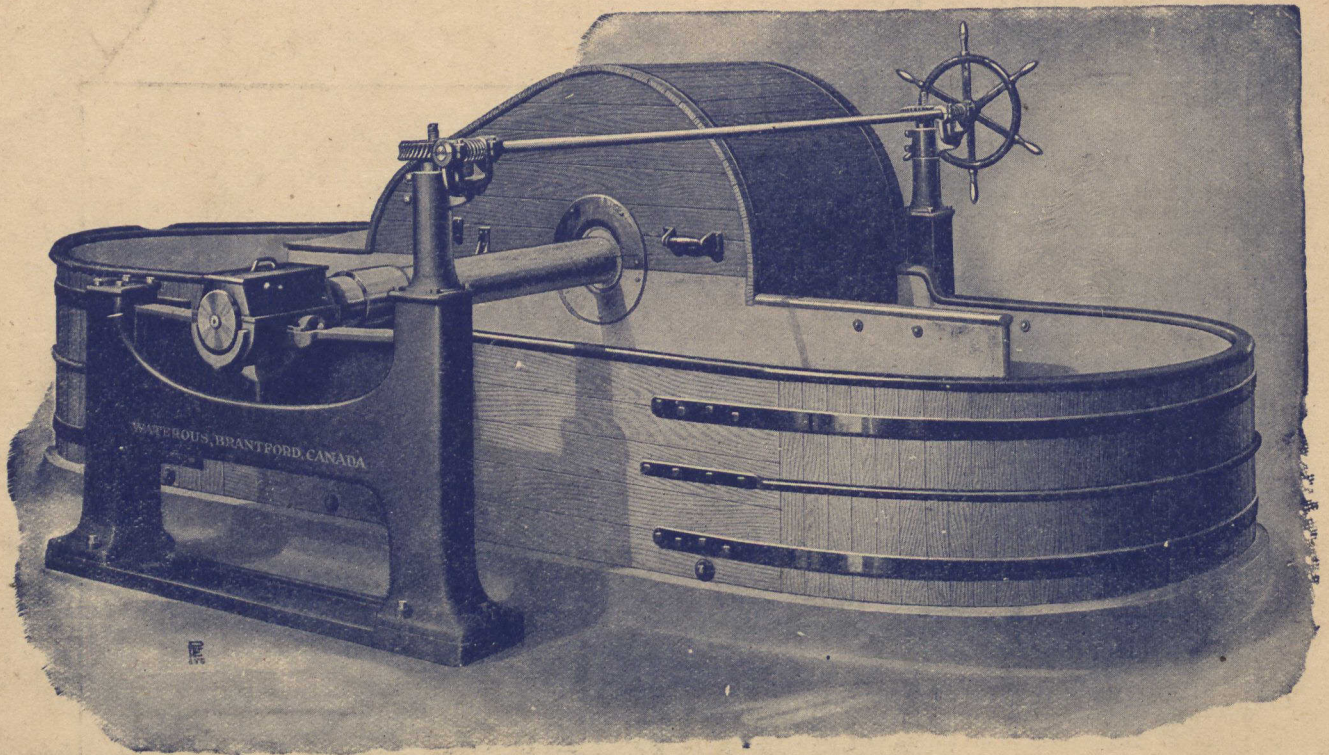


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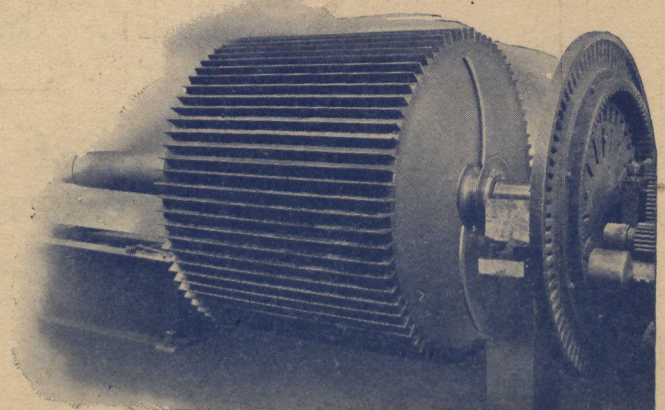
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