

PAGES

MISSING

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JACK MINER AND HIS WILD FOWL



The Story of a Remarkable Experiment in Attracting the Birds of the Air.

(From Mr. Miner's Address given at the Annual Meeting of the Commission of Conservation)



I assure you it is a privilege for me to meet with so many bird lovers. We love out-of-door creatures, or we would not be here this morning.

Now, you will have to pardon my lack of education. I am one of those men who are born bare-footed and educated out-of-doors. However, I was my father's favorite. Perhaps it is not just the proper thing for fathers to show partiality, but mine did. He always called me in the morning to build the fires; possibly in that way I got out a little earlier than the rest to hear the birds singing.

Outside of unavoidable sadness, my life has been one continuous round of enjoyment; the failures and disappointments and the dark storm clouds have been wiped out of existence by success, by out-of-door life—a light which has brightened my path right up to the present and given me a faint glimpse of the beyond. I have heard people say that they have read that there was never a tribe of heathen discovered on earth who did not worship some kind of god. No intelligent man can live out-of-doors without being compelled to believe that there is an overruling power.

The Domain of Man.

God created the fowls of the air, and so on, before He created man, according to Genesis 1st chapter and 21st verse. Then in the 26th verse we find these words: "And God said, 'Let us make man in our image, and after our likeness, and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over the earth, and over every creeping thing that creepeth upon the earth.'" Does that mean that we are to have dominion over these big flocks of wild geese, so far away that you have to look twice to see them? You know how high they sometimes are; you can

hear them. That is what it says, gentlemen. Then we read further in Deuteronomy chapter 22, 6th and 7th verses: "If a bird's nest chance to be before thee in the way in any tree, or on the ground, whether they be young ones or eggs, and the dam sitting upon the young, or upon the eggs, thou shalt not take the dam with the young; but thou shalt in any wise let the dam go, and take the young to thee; that it may be well with thee, and that thou mayest prolong thy days". But, if a duck lit in one of the rivers here, all of us educated people would rush down—there would be ten guns out there to shoot it. Reading in the book of Job, we find these words:

"No doubt but ye are the people, and wisdom shall die with you. But I have understanding as well as you; I am not inferior to you: Yea, who knoweth not such things as these?"

"But ask now the beasts, and they shall teach thee; and the fowls of the air, and they shall teach thee."

His First Experiment.

When the first barn swallows came to our tile shed, on our little farm at Kingsville, Ont., they nested 300 feet away—as far away as they could get from where we were working. We protected the swallows from their deadly enemy, the sparrow that man brought to Canada—the English Sparrow; not the one that God put here, don't forget that. They destroyed the first brood, but we protected the swallows, and consequently the sparrows didn't destroy any more. Remember, the shed had stood there for ten years, equally as inviting. The second year there were two nests; the fifth year there are twenty nests in the tile shed, and, instead of being as far from us as they can get, fifteen out

of the twenty nests are within twenty feet of where we are working. They have come to us for protection, you have to believe that. They destroy large numbers of house flies. The ladies say—of course, the ladies never tell what is not true—that there is not more than one house fly now where there were five previous to the coming of these barn swallows, purple martins, and so on. Scientists tell us that the typhoid fly will carry that deathly disease, and if we preserve the swallow which destroys these flies, surely it will be well with us and we will prolong our days. We protected one nest; now one hundred swallows are raised in that shed every year.

Rescuing a Robin.

Now, what good is the robin? Everybody knows the robin. A boy came along the road with a .22 rifle, saw a robin sitting on the fence, and killed it. I went over and picked the robin up. Two cutworms were squirming on the ground; the robin had had them in his beak. I held the bird up, and two more fell out of his mouth. Remember, one cutworm will cut down five tomato plants in a night. This fellow does his work and then hides under the soil; Mr. Robin comes hopping along, picks in there and pulls him out—and turns him into a robin. If anyone tells you that a robin will destroy one hundred cutworms in a day, take it from me that it is true. The morning after this boy promised me that he wouldn't shoot another robin, at the fir-tree by our house were two little robins dead under the nest and two in the nest just alive. We took them into the house—it is wonderful what an effect a little bird can have on our family. One bird will stop a whole plantation; I have known a wild duck to stop the whole brickyard. However, we took these two robins in, warmed them up, and made some custard for them—one egg, half a cup of milk, no sugar. They couldn't open their mouths, they were so nearly gone. We took one of them, pried its beak open and dropped in some custard, and the first thing we knew he came to, and in a minute or so began to squeak for more custard. The other little fellow was supposed to be dead, but he, too, soon began to look around, and these two robins became the sweetest birds we ever had on the premises.

You know how a door will slam once in a while in the house. Well, there was a good slam one morning, when someone had left the screen door open and Jasper's pet robin—Jasper is our son—had come in and was resting in what we call the cold storage—a room in the

front of the house which is sometimes called the parlor. Here he was on his mother's picture, and the broom was going smartly after him. Jasper came with a tin, the robin flew into the tin, and the boy carried friend robin out to safety. That is how we get enjoyment out of these things.

Do Birds Come Back?

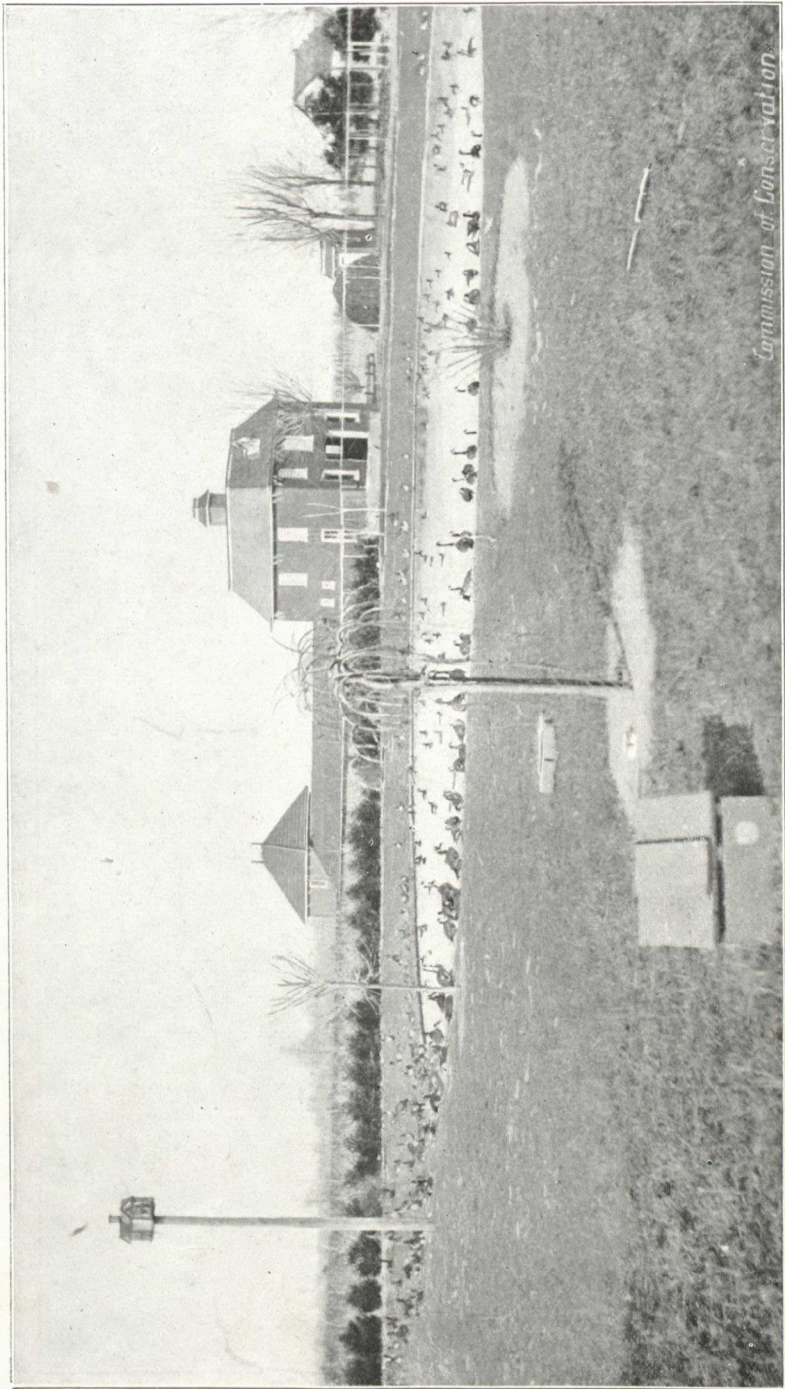
Do birds come back to their homes? How many times I have been asked that question. Oh, yes, they do come back. "Well, how do you know, Jack"? Then you would have to talk about the weather—switch the subject. But I will tell you the rest of the story.

I hatched four wild young mallards—well, I didn't hatch them; I stole the eggs. A domestic fowl eventually hatched out four little wild ducks, and there they were, under the old hen, wilder than park horses. However, the old hen's voice soon brought them out, and several little girls began to come out from under their step-mother and look around, and eventually they would take some of the custard right in my presence. These ducks soon were so tame that the tap of a tin would bring them to you. They got to be quite a size, and we named them, respectively, Polly, Delilah, Susan and Helen, and presented each one with an aluminum tag, on which was printed the words, "Box 48, Kingsville, Ont." When autumn came the four ducks migrated—that is, on or about Dec. 10th, 1912. Dr. Rutherford, of Chatham, shot one, Helen, at Mitchell's Bay, Lake St. Clair. How they got to the east of us I don't know, for they started south. I guess they had taken such a liking for me, that they started for Ohio, where I was born. On March 14, 1913, Polly came home. On March 18, Delilah came home, and on March 30, Susan, although wounded in the wing and foot, returned home. Is that not an answer to the question, do birds return to the place from whence they migrated? Well, I wanted to go down, hitch up the self-starter, and go to town, so that someone would ask me, "Do birds return home"?

Delilah and Polly.

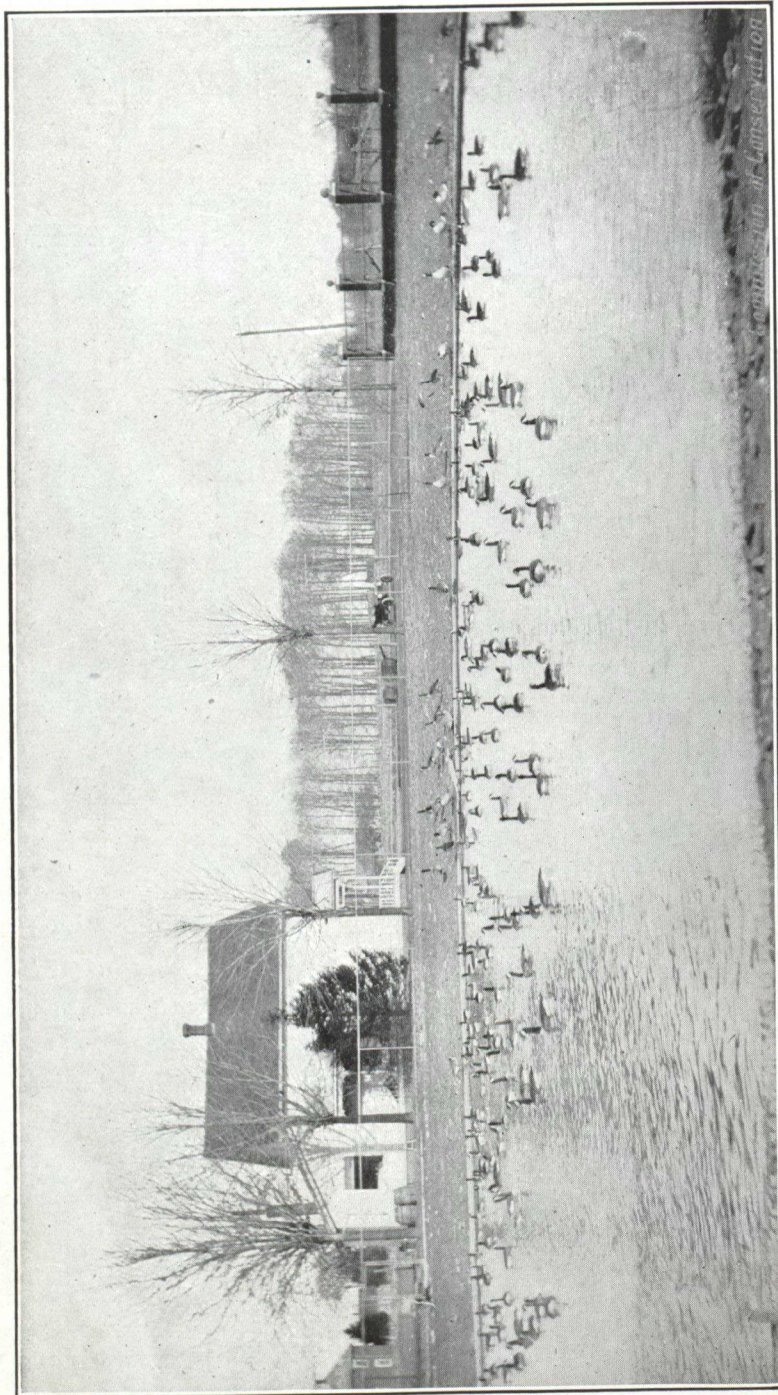
They migrated that autumn, and on March 14, 1914, Polly came home. On March 21 Delilah came home for the second time. The two girls raised families the next year—and, by the way, they brought a Yankee sweetheart with them; and it is interesting, when they are arriving, to see the ducks come down and try to coax their new mates down too.

Well, they migrated again for the third time. In the spring of 1915 Delilah got home first; she



Commission of Conservation

So famous has Mr. Miner's enterprise become that as many as 1,000 people visit the bird sanctuary in one day.



Wild Geese quite contented to accept human hospitality. Photograph taken at Jack Miner's home, Essex County, Ontario.

arrived on March 13, and Polly came home on March 16. Polly had got her beak a little too far ahead and a shot had grazed right across it and cut the side off, leaving it hanging. She would just stand around with her mouth open. I got some porridge and mixed custard with it and the second day I had Polly in my right hand. In a week or so I took these ducks to a photographer, stood them on the table, brushed them down and talked to them quietly and got a photo of them.

Back the Fifth Time.

We often make remarks about silly old geese and silly old ducks; sometimes I wonder what the ducks and geese are saying about us. These ducks have shied around to keep clear of people hiding in ambush for them; then they come home and in a few days are eating out of our hands. Isn't it worth thinking about? Talk about loving these birds; you simply can't help it, if you are human. Polly said: "I am going to stay with you, Jack, from now on", and she stayed in the hen house with my birds in the winters of 1915 and 1916. However, in the spring of 1916 she got shot, but Delilah migrated and got back March 5, for the fifth time; migrated again, and got back in 1917 on March 25, and last spring she came back for the sixth time on March 19. Do birds return to their homes? I know that it was the same tag she had on, because my wife and I took it off her leg after it had been on five years, and we presented her with a new tag. I am now making my tag system a little more interesting, by putting on the blank side a verse of Scripture. Everybody who brings down a goose with my tag on it gets a verse of Scripture, whether he needs it or not. Mack Stewart, of Tennessee, writes: "Send me the history of this bird or any other Canadian bird". Corporal John R. Smith writes: "White, age 23, still unclaimed, can you help me out"? So I took the two letters and handed them over to the ladies in our Sunday school, and the same day one of them came back. There are ten of us in one class, and we went and stamped this on our tag: "Let us consider one another"—Hebrews 10: 24.

Now, where do these ducks go?

"Ask now the beasts; and they shall teach thee; and the fowls of the air and they shall tell thee".

Tagging the Ducks.

I have caught and tagged 287 wild ducks. My home is on the north shore of Lake Erie, due north of Pelee Island, twenty-six miles south-east of Detroit, at Kingsville, Ontario—

well, I am a little way out of the town. Kingsville is the place where more fowls go than anywhere else in North America, I believe: the fowls of the air, it is their choice. I have twelve tags from Ohio, due south of me; nine from Kentucky, nine from Tennessee, leading right on to the Gulf of Mexico, and seven from Alabama. I have one from Saskatchewan, one from Alberta and several from Manitoba. I have only four or five tags from west of the Mississippi. I have them as far east as Long Island, New York, as far west as Alberta, as far south as Louisiana, and as far north as Sault Ste. Marie. I haven't a tag for a wild duck north of Sault Ste. Marie, although I know that they go further up there.

I have nine tags off the wild geese from Chesapeake Bay, seven from North Carolina, one from Maryland and one from New Jersey, but none between my home and that southeast coast of Chesapeake Bay. Do these wild geese come clear over to that Kingsville pond without a stop?

Returns From Hudson's Bay.

Now, they stay with me about two months. They come about the first of March—in fact, the earliest we have had them is Feb. 20, and the latest, March 16—and stay until the last week in April or the first of May. We have 25 tags returned from James Bay and Hudson Bay, and only one from the west side of James Bay, which is Albany, and 24 have come right along the east coast. Those 25 tags, ladies and gentlemen, are in my possession and I am sorry that I didn't bring them along. The Indians shoot them and take the tags to the Hudson's Bay Company agent, I suppose through curiosity, mostly, and the agents eventually return the tags. I have 25 out of the 102 that I put on; 25 have been returned from there and only nine from the south.

How did we find out about these wild geese? I have gone five miles from home before the stars closed their eyes in the morning. Wild geese are quite scarce; I went four mornings in succession and never saw one. There I lay under a blanket, just as the stars were closing their eyes, with three or four wild goose decoys out. Suddenly, at daylight, I see friend wild goose coming, bringing his family with him. I can just see the tip of the wings begin to move—a faint hum, coming closer. Everything is pretty quiet—but my heart sinks; here are two men coming out there in the next field. It's all off; those fellows will secure the geese. But, no;

(Continued on page 138)



Planting forest trees by private initiative in Simcoe County, Ontario. Photo taken on the day of planting, five years ago. See top of page 106.



After the ground had been worked the first time to kill the weeds.



The plantations at the end of one year. Snow covers most of the trees.



There are over 2,500 Scotch pine in this block, averaging over 11 feet high, grown from sets six inches high, in about 5 years. Many of the trees are 15 feet high.
Plantation of Reeve Holden, of Collingwood.

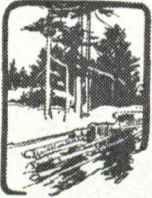
MAKING THE EARTH TO BRING FORTH FRUITS

Reeve William J. Holden, of Collingwood, Ontario, is one of hundreds of Canadians who puts his forestry gospel into practice. Mr. Holden was asked by the Ontario Minister of Agriculture over five years ago to make a trial of reforestation in Nottawasaga. The ground was prepared and in the following spring with the aid of students from the Agricultural College, 16,000 seedlings were planted. An exceptional drought the next year reduced the plants to 12,000. There are about 8,000 pines, the remainder being walnuts, chestnuts, locusts and cedars.

Mr. Holden has been doing valuable missionary work in Simcoe County, Ontario. Under his inspiration the County Council appointed a Committee which recently advised the purchase of four plots of 50 acres each for purposes of tree planting. As with Simcoe County, so with every other county in Eastern Ontario: at least 25 per cent should have been "cultivated" for tree crops. The farmer's woodlot, however, has been the poor relation of the agricultural family. Soils have not been properly classified, with the result that millions of acres have been mistakenly deprived of their natural forest cover with no chance whatever of raising any crop other than timber. The vast areas of drifting sand dunes in Ontario and Quebec are just two of the logical consequences.

A CIVIC PLAN FOR STREET TREES

By B. R. Morton, B.Sc.F., Dominion Forestry Branch;
Author of "Native Trees of Canada".



Every-Man-for-Himself Means a Hodge-Podge
of Tree Planting.—Expert Oversight
Essential.



It is unfortunate that in so many of our Canadian towns and cities the work of caring for and planting of street trees is not systematically carried out. Instead of having a properly organized municipal shade tree department the work is too often left to the individual property owner with results which are far from satisfactory. The individual is perhaps not to blame for the results. He is spending time and money from which the public as a whole will benefit, but he is working without instructions.

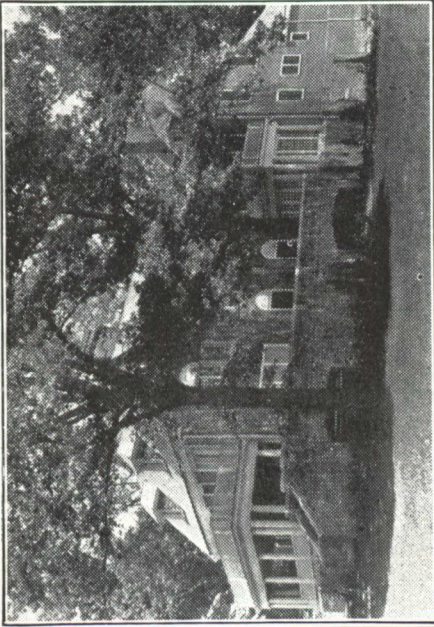
A Treeless Town!

The value of shade trees to a town or city is inestimable. Well cared-for trees in the street and parks contribute immensely to civic pride and patriotism. They are one of the greatest aids to the attractiveness of a community. A treeless town cannot be beautiful although it

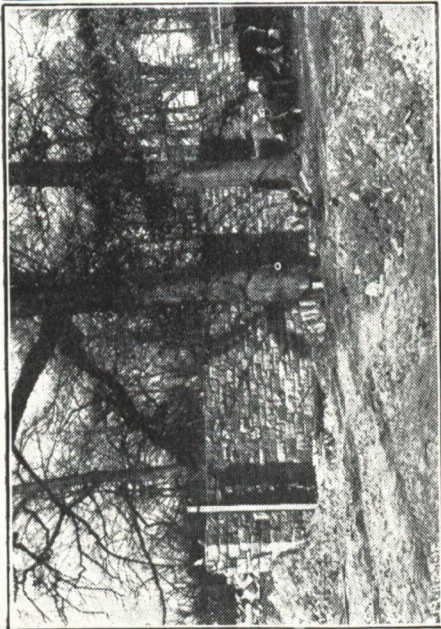
possess many fine buildings. A street of plain tenement houses can be made attractive by the uniform planting of trees to break the harshness of the bare rows. Visitors to a city are impressed as much by the city's trees as by its buildings, and are influenced by them in deciding if the city is a desirable one in which to live. Trees are an asset, adding value to property. From the standpoint of health and comfort well shaded streets are desirable, for they modify the temperature on the hottest days by cutting off the direct rays of the sun.

A Street Tree Department.

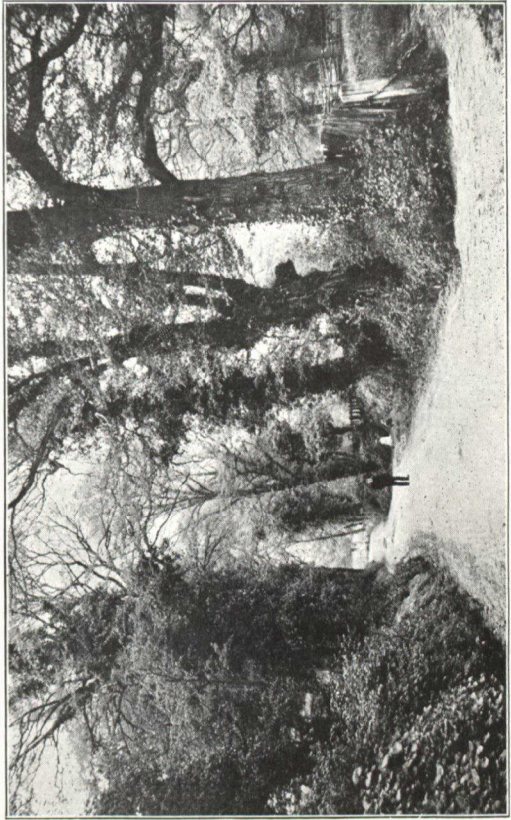
To obtain the best results the work of planting and caring for the trees should be entrusted to a special department. This department should be responsible for the selection of suitable species and proper spacing as well as the protection and



This home owner built part of his house round a tree rather than destroy it.



Instead of slaughtering these trees to convenience a stone wall, archways were constructed over the roots and the trees thereby carefully preserved.



(Courtesy, Commission of Conservation)
A public highway in which the natural features have been carefully preserved.

any necessary trimming and repairing that may be required. It is only where a street tree department exists and has control of all tree work along the public highway that stately, impressive, uniform results can be expected.

Where street planting is to be done the appearance of the street as a whole should be taken into consideration. This is not done when the work is left to the individual citizens. The average owner consults only his own taste in regard to species and spacing and concerns himself only with the section immediately in front of his property without regard to his neighbor's plans. An error that many owners fall into is the planting of too many trees on their frontage. They overlook the fact that trees which appear widely enough spaced when young may be much too crowded when grown to full size. Frequently property owners will space their trees closely when planting, with the intention of removing certain ones before they begin to crowd. When the time comes for cutting, however, the ownership of the property may have changed and the new owner either

lacks courage to do any cutting or does not feel himself under any obligation to do so. As a result, the trees grow up much too crowded and spoil the appearance of the street.

Helter-Skelter Planting.

Looking along a street on which the planting and care of its trees has been left to the individual property owner one finds within the distance of a few blocks a dozen or more species, all sizes and shapes. Desirable species are mixed with undesirable, some sections planted too close and others too far apart. Long stretches will not be planted at all. Many trees will be thinned too high and others branching so low that they interfere with pedestrians and vehicles passing beneath. Flourishing trees will be found intermingling with those in need of repair and rapidly dying for lack of attention. The whole street has an untidy appearance and lacks the impressive beauty produced only by well-cared for trees, well selected and planted.

Look along some of your own streets and decide whether the attractiveness of your town cannot be improved.

SOME FACTS ON THE WHITE PINE MENACE

By *W. A. McCubbin.*

A survey of pine infection (Blister Rust) areas was made in order to obtain evidence as to the actual damage which has been brought about by the disease. This survey covered 35 plantations in three districts, and involved the examination of 14,428 young pine trees, 10 feet in height and under. In the Niagara district the disease was most prevalent. In the 22 woodlots examined here the disease was found in 19. Out of the 11,579 pines examined 270 were found to be diseased. This gives an average of 2.3 per cent infected trees, and is apparently very small. It is to be noted, however, that the highest record percentage of infection was 33.54 and in at least two other cases where the percentage is 20 or under, the estimate was made in woodlots from which a very large number of young trees had been removed.

From our knowledge of the disease here in past years which gives a fair idea of the time the disease has been present in each locality it would seem that under average conditions the disease attacks about 1 per cent of pines

per year. This is extremely low when one considers the Ribes situation in the Niagara Peninsula, and from it one may obtain cheering prospects for future control measures. In the 10 plantations examined at Oakville, where the disease has been present since 1915 at least, only one diseased pine was found out of 2,249 examined, and in Simcoe County where a centre of infection had existed since 1912 at least, no diseased pines could be found in the three plantations examined, covering 600 pines.

It is apparent from the results of this survey that three factors are concerned in infection of pines:

- (a) The nearness of cultivated Ribes, particularly black currants.
- (b) The number of wild Ribes present.
- (c) The moistness of the situation.

It has been found that on swampy land wild Ribes are plentiful, luxuriant and become infected very completely, while on higher and drier situations, they are less plentiful and the infection is often negligible.



"Trees"

By Harold Munro.

They follow us and haunt us. We must
build
Houses of wood. Our evening rooms are
filled
With fragments of the forest: . . .

We sit, move, sleep among the limbs of
trees,
Rejoicing to be near them. How men saw,
Chisel and hammer, carve and tease
All timber to their purpose, modelling
The forest in their chambers! And the raw,
Wild stuff . . .
Will crack and shiver in the night, and
sing

Reminding everybody of itself;
Out of decayed old centuries will bring
A sudden memory of growing tree.

So they are felled. The hatchet swings:
They pass their way. . . . Some learn
to sail
Seaward on white enormous wings,
Scattering blossom along their trail;

And some, some trees, before they die,
Carved and moulded small,
Suddenly begin,—
Oh, what a wild and windy woodland call
Out of the lips of the violin!

So trees are felled. . . . But tree
Lingers immovable where it has stood,
Living its tranquil immortality
Impassive to the death of wood.
And you—be certain that you keep
Some memory of trees for sleep.

ALBERTA HAS FIRST HONORS.

One experiment in aeroplane work, and only one, has been authorized thus far by the Dominion Government. Some time during the summer the Dominion Forestry Branch will test a machine in Alberta. It is understood that the ordinary military plane as it stands is regarded as unsatisfactory for forest guarding, and that a stock machine of slow speed will be considerably altered under the direction of Canadian aviators who understand fire protection work. This is an interesting and commendable move on the part of the Dominion Forestry Branch and will be eagerly watched.

FIVE MILLION SEEDLINGS A YEAR.

The Provincial Forester of Quebec, Mr. G. C. Piche, announces that the capacity of the tree nursery at Berthierville, is to be increased to an annual production of 5,000,000 young trees, partly in contemplation of the Provincial Government adopting a programme of forest planting on denuded Crown timber lands.

If it pays the big pulp and paper companies to reforest their waste lands, planting three-year-old seedlings at a cost of from \$9 to \$10 an acre, why should it not pay the provinces which have large areas of waste land to pursue the same policy? asks the St. John, N.B., Telegraph.

OIL FROM BEECH NUTS.

The nut of the beech tree yields a valuable oil, used in soap-making, and as an illuminant. At the present time, when the scarcity of oil is a serious matter, these nuts become still more valuable. In the Danish forest the work of clearing the ground of withered leaves, under and around the beeches, has now been started, in order that the work of gathering the nuts, in the autumn may be more easy, and the result more satisfactory. The nuts will be collected (in Denmark) in October and November, and transported to the oil mills.

B. C.'S FIRST AIR PATROL.

The first aerial forest patrol in British Columbia will probably have to do with a tract of valuable timber, situated south of Victoria, and running for 125 miles along the coast.

IN SOUTH AFRICA.

South Africa has spent some 2,500,000 pounds sterling on organizing the wild forest, and the work is only about half done. It is now spending about one-seventh of a million pounds yearly.



An indication of what the aeroplane camera might do in mapping the forests of Canada. There is a lamentable lack of forest maps in the Dominion. Some aviators claim they can distinguish tree species by examining stereoscopic photographs and by other methods. This, of course, would be only of general value and the ground cruise would always be necessary. Note the remarkable boldness of outline at 15,000 feet. (A photograph taken on the French front.)

PHOTOGRAPHING FORESTS FROM THE AIR

By *Lieut. Lewis, R. A. F.*



Use of Stereoscope in Reading Results—Dis-
covering Burned-Over Areas.—Can
Species be Identified?



So far as I know, air photographs have not been used up to the present, for other than war work, and my experience with them has been entirely in that sphere. Such marvellous results were obtained from them during the course of the war, particularly during the latter part, when planes, cameras and operators were more efficient and ground interpreters became more familiar with their work, that I think it is the duty of those of us, who became experienced in

their use, to pass that experience on to those in commercial life, who are most likely to find it of value. The timber industry seems to me to be one in which their use has great possibilities.

Interpreting Photographs.

For about a year of my stay in France, I was employed in the Intelligence Department, and among my duties was the interpretation of aerial photographs and the transferring of information thus gained, to our maps. Of course we already



How wooded areas are defined by camera from 15,000 feet in the air. The strips of white and grey in blocks represent cultivated land, the difference in shading being accounted for by various crops, hay, grain, stooked and uncut fields, meadow, etc.

Photos by kindness of Major MacLaurin, R.N.A.S.

had maps on the country as it was before the war, but the defensive works constructed on both sides would have necessitated elaborate surveys which, of course, it would have been rather dangerous to attempt in the vicinity of the front line trenches. By experience we learned to know the appearance on a photograph of the numerous defensive works in the enemy lines, trench systems, machine gun emplacements, trench mortar emplacements, gun pits, dug outs, wire entanglements, telephone lines, buried cable lines, and many other constructions became known to us, and the result was that our artillery could deal with these things, and the Canadian artillery have a decidedly efficient way of dealing with things that are bothering their brothers-in-arms, the infantry.

The average height from which these photos were taken was from 6,000 to 8,000 feet. Now, if such accurate results could be obtained at these heights how much more could be done with photographs taken, say from 1,500 feet, with nothing to ruffle the nerves of the operators?

I understand that the Government may establish an aeroplane or hydroplane forest patrol for fire ranging purposes. Why not have these planes fitted with photographic outfits for the purpose of mapping that part of the country of which so little is known, the importance of it to the lumber industry seems to me, although not a lumberman, to be too great to be overlooked. I have found an idea of how this work might be done for the lumber companies.

How to "Snap" Forests.

They might make arrangements with the Government to have their own limits photographed, merely paying rent for the machine while on their work, and the cost of the photographs, approximately \$4.00 per dozen. This would cut out the necessity for having machines, operators, and cameras of their own.

First of all, take the timbered area which carries a variety of trees, it need only be a small area. Have it accurately cruised, or better still, have a survey made of this one small area and have species of trees given and also condition of ground as to rock, outcropping, etc.

Then have this area photographed at two seasons of the year, preferably in the spring before the leaves come out on the deciduous trees, and then again when they are in full leaf. These photographs will be taken from a known altitude in order to arrive at a scale. Have them carefully analysed in every detail and records made. They could then be used as standards in analysing photographs of any tract of timber land, and I am quite sure that an accurate estimate could be made of standing timber, burnt over areas, areas fit for forestation and reforestation and also the water in the vicinity. If photographs were taken with a stereoscopic camera they could be viewed through a stereoscope and undulations of the ground which would tell the direction of the flow of streams observed. I should imagine, however, that the map would be sufficient to show this.

If a stated altitude is maintained in taking all the photographs they will naturally be of the same scale and a continuous photographic map of any area can be obtained. Each company could have a natural photograph of its own limits hanging on the wall, could see exactly where logging is going on, and if they wish to do so, could keep track of the progress of the work.

I do not for a moment suggest that photography would be a means of dispensing with cruising in the woods, but I think that it would be of great assistance to cruisers and eventually they will all want to become enthusiastic interpreters of air photos.

AIR PATROL IN QUEBEC.

The Province of Quebec does not intend to have airplanes of their own to patrol its vast forest area, but this session the St. Maurice Forest Protective Association will be given a subsidy to aid in its task of guarding the forests on the St. Maurice with airplanes. The association which comprises big companies with timber concessions is now in communication with the Hon. C. C. Ballantyne, Minister of Marine and Fisheries, with a view to securing some aeroplanes, and the work of patrolling by this method will commence next summer, according to reports to Hon. Jules Allard, Minister of Lands and Forests. Hon. Mr. Allard's bill respecting the protection of forests against fire was introduced in the Legislative Assembly by Hon. L. A. Taschereau.

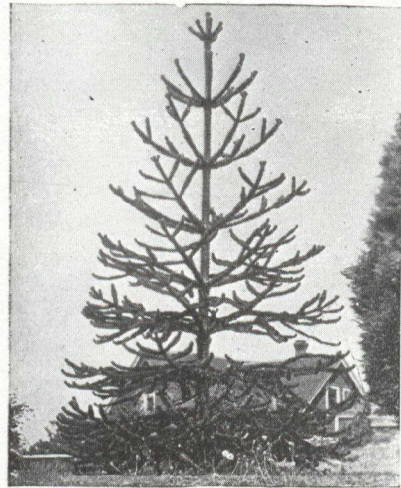


Photo by B. R. Morton
BORROWED FROM CHILE.

One of the oddest trees found in Canada: The Auracarian Pine, or "Monkey Puzzle" (so called because of the saw-edge formation of needles and the difficulty of climbing through them). This tree grows in Stanley Park, Vancouver. Its native habitat is Chile where it ranks as one of the great timber producers.

Two Minutes to Spare.

So interested were twenty-seven of our members in the January and February issues of the Forestry Journal that they sent in letters to this effect:

"I want my friend — to read the Forestry Journal every month. I am enclosing one dollar to cover his fee. Kindly notify him."

Have you a friend in the same situation?

Why not bring a neighbor or two into line with the forest conservation movement in Canada? Membership is the Open Door.

Address, Canadian Forestry Association,
206 Booth Building, Ottawa.

WORLD'S FOREST SUPPLY.

With the exception of the United Kingdom, Algeria, and Cape Colony, Australia has less forest area, in proportion to total area, than any other settled country. It is but 5.35 per cent, compared with European Russia 43.04 per cent, New Zealand 25.65 per cent, Canada 22.33 per cent, Norway 21.50 per cent, Sweden 52.20 per cent, and the United States 24.08 per cent.

CANADA LAGS IN TRIAL OF AIR PATROLS



Generous Offer of Quebec Government to
Employ Idle Machines This Summer
Gets No Encouragement.



Why should Canada wait any longer to test the efficiency of the aeroplane in forest fire protection? The question has been threshed out for nearly three years, and while responsibility for the initial experiments has been passed along from one authority to another, the opinion of most of those who have made a close study of the subject is that the Dominion Government, with a ready supply of idle machines, and willing pilots, ought to take the first steps to secure reliable data in this most important enterprise.

According to The Forestry Journal's information, the Minister of Lands and Forests of Quebec recently proposed to the Dominion Minister of Marine and Fisheries that two of the idle hydro-aeroplanes now at Halifax or other Atlantic ports should be loaned to the Quebec Government for the summer season of 1919, the provincial authorities to foot the bill for upkeep of machines and pay of pilots. Hon. Mr. Allard, on behalf of the Quebec Government, intended to establish an experimental patrol over the St. Maurice Valley. It would appear that his co-operative offer was of a most generous and progressive character. It has not been favorably received by the Acting Minister of Marine and Fisheries, nor does there seem any prospect of having a start made in aerial forest patrol in Quebec even though public-owned hydro-aeroplanes are lying useless in their hangars in Nova Scotia and skilled pilots are kicking their heels and aching for some form of active service. The Canadian Forestry Association has addressed the Acting Minister of Marine and Fisheries on this subject and a deputation from the Association and allied bodies will bring the matter to the Government's attention during the present month.

If Canada is content to wait several years until the trail is cut by other more aggressive nations it will offer a poor comment on the ability of Canadians to initiate new lines of effort. The Forestry Journal is in receipt of communications from many senior aviators who look upon an aerial forest patrol as a simple, ef-

fective and inexpensive proceeding. Apparently, however, the idle machines and aviators at the disposal of the Dominion Government are to be denied an opportunity for splendid public service.

Not only is action called for by the imperative need of timber conservation, but other fields in which the Government is directly interested demand a bolder policy. It is understood that the Topographical Survey, the Geodetic Survey, Royal North West Mounted Police, and the Post Office Department are thoroughly convinced of the advantage of aeroplane service in increasing their efficiency and in certain instances reducing their cost of operation. These departments, however, are directly controlled by the Dominion Government and no matter how deeply convinced the executive officers may feel on the urgency of aerial experimentation, a refusal on the part of a Cabinet Minister to take action gives an instant quietus to the departmental agitation.

Those bodies, however, which have taken a constructive interest in Canadian forest policy are not as sensitive to this official denial and may be depended upon to intensify their request until proper consideration is given.

THE ASPEN POPLAR.

The Aspen is one of these fore-runners, which, thanks to its prolific production of light, feathery seed, readily wafted by the winds over hundreds of miles, readily germinating and rapidly growing under exposure to full sunlight, even now everywhere quickly takes possession of the areas on which man has ruthlessly destroyed all vegetation by fire. This humble and ubiquitous tree is nature's restorative, covering the sores and scalds of the burnt mountain-side. Though short-lived, with its light summer foliage turning into brilliant golden autumn hues, it gives grateful shade and preserves from the thirsty sun and wind some moisture for the better kinds, which creep in and take its place, when it has fulfilled its mission.—Dr. B. E. Fernow, Toronto.

THE MAKING OF A SPRUCE TREE

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

ARTICLE No. 2.

From the time the yellow powder described in the former article dusts the female flower to the actual beginning of the new tree a month or more may elapse and after that it is at least another month before the growing substance actually resembles a tree in form. At this time very tiny leaves appear and there are structures that later develop into stem and root. The little tree is completely enclosed in a very delicate membrane on the outside of which accumulates a white pulpy mass of food material for the young plant to live upon, during the germination period, until it can establish itself in the soil. The moist food substance is in its turn entirely surrounded by a heavy thick membrane impregnated with oily or waxy waterproof material, so that neither the stored food or the little treelet is in danger of drying out.

The structure we have been describing may now be called a seed. It consists of three principal parts: (1) an outside protective coat, varying from light brown to nearly black in color according to the kind of spruce tree; (2) stored food material occupying most of the space, and (3) embedded in the middle of the latter a miniature tree which has already developed root, stem and leaves, although it is not much more than one-sixteenth of an inch long.

Cone Development.

In the meantime the structures on which the seeds are borne have undergone growth changes: the scales have enlarged and become woody. In August the cones are the size of the little finger to the first joint and they are no longer erect, but bend over and hang downward. From the middle of September to the middle of October, according to the kind of spruce and its location, the cones reach their final size, usually between one and two inches long; the seeds undergo the finishing touches of the ripening process; their coats dry and glaze; the little channels through which they received nourishing fluids from the mother-tree are cut off. Future spruce trees are about to be separated from all parental trees and to be thrown out into what may prove for most of them a very cold and hostile world. However,

before we follow a little spruce imbedded in the seed farther in its career, let us turn aside to some general considerations of seed production.

When Trees Bear Seed.

The age at which a spruce tree begins to bear seed varies with the conditions in which it grows. In open pastures and old fields fully exposed to light and in good soil a tree may produce seed when only fifteen or twenty years old; in plantations and pure stands of second growth, cones may appear when the trees are thirty years old, but full production begins at about forty years of age. Under ordinary forest conditions a tree does not bear seed until it frees itself from the shade of its neighbors and receives full light exposure in its higher branches, that is, until it gets into the upper forest crown cover. This happens in a virgin forest where the spruce is associated with hardwoods, usually not before the tree is five or six inches in diameter. According to growth studies made in Quebec in a mixed forest (hardwoods and softwoods) a red spruce tree at that diameter would be close to one hundred years old.

When a tree breaks through the forest crown cover and gets up into the light, under the stimulus of additional exposure to the sun, it develops an increased number of branches, especially the small side branches on the main limbs. As foresters express it: "The crown thickens". When the crown is thickest, there is the largest number of small branches. The cones are borne on these small branches and, therefore, this is the time of greatest seed production. This comes in the mixed forest when the spruce tree is about one foot to one and a half feet in diameter, or in other words, when the tree is between 150 and 200 years old. From this time on the vigor of the tree usually declines and with it seed production, but it is maintained to an advanced age. In the summer of 1917 I cut a red spruce over 300 years old and it had a peck of plump cones on its branches. If we assume, as above, that this tree began bearing at 100 years of age, then it has had over 200

years of seed production! It is probable that the average spruce tree in the forest bears seed for at least 100 years.

How many bearing trees there are per acre or square mile under average conditions and how much seed they produce in a fruiting sea-

son, we don't know. This is a very interesting, not difficult, subject for investigation, and is of direct economic importance.

Thus far, however, no definite study of seed production of spruce, or of any other commercial timber tree, has been made in Canada.

LUMBERMEN AND THE TREE SUPPLY

By *W. Gerard Power.*



President of Canadian Lumbermen's Association Champions Progressive Policy in Forest Perpetuation.



To ask a practical lumberman to speak on Conservation is putting a difficult task indeed before him. His every energy is as a rule bent on felling more and more trees, on bringing more and more logs to his mill, on sawing more and more lumber, so that he may give satisfaction to his employers and shareholders, and be deemed a success in the opinion of his fellow-members of the profession.

His basic idea is the more production the more dividends, the more dividends the more honor, not to speak of material advantages.

It is difficult indeed to blame him. In years gone by when the trade was young in this country, it was generally believed that our forest supplies were illimitable and inexhaustible. The idea that the day would ever come when the United States would find itself with its stores on the verge of exhaustion, and the words of a celebrated British authority, Mr. M. C. Duchesne, F.S.S., "Canada contains the only vast resources of timber within the limits of the British Empire," never entered the heads of these pioneers who with their sturdy bushwackers roamed the forests heedless of waste, and extravagant in method, driven thereto by the one principle, "To get the logs to the mill, and to get the best."

It is not for us in this generation to criticize the methods of our forefathers, and to suggest that their management of the woods was not on the right lines, or their system of forestry unsound.

The Debt to the Lumberman.

Other times, other manners. Who in those days could guess that Canada would one day be called upon to supply timber to the entire world, and, moreover, if the methods of the old

times were not so scientific as ours, justice forces us to admit but for them a great portion of the country would still be undeveloped, roads unopened, and towns and villages as yet unfounded.

A number of the provinces without their activity and industry would have with great difficulty found means of increasing year by year grants for education, social work, and general development. (Since 1867 the Province of Quebec has derived from the forests the sum of \$42,000,000.00).

Millions of dollars spent in wages and construction would never have been attracted to the country, and further it is hardly likely that this Canada of ours would have been so well known to the world as it is to-day.

So much for the past. The trade and its members have been great factors in the upbuilding of our nation, and we have reason to be proud of it and grateful to them.

The Call of the Future.

We must look at the present and to the future. To-day the business of production of wood material is the second greatest industry in Canada. What will it be to-morrow? We belong to an age of optimists, and though the bloody carnage in Europe and its consequences have necessarily oppressed us during the past four years, now that the high sun of Victory is shining in the Heavens and the Angel of Peace has descended over the world, we feel ourselves warmed and invigorated, ready to face the future with hope and confidence.

Every nation on earth freed from the horrid nightmare which has oppressed it, is taking stock and preparing to face the future. The national resources are being carefully investi-

gated in order that every available asset may be put to the utmost practical use.

We in Canada have our Re-construction committees, our Scientific Research Commission, and other bodies established for the purpose of directing the nation's most efficient efforts in the best channels.

What of Replacement?

And so it should be with the forests. What have we got and what are we going to do with it? Are we to look upon our forest as the miner looks upon his underground treasure, or as the prudent husbandman looks upon his farm? Are we to keep on taking out without any hope of replacement, or are we by a wise and systematic cultivation to perpetuate one of the country's greatest assets?

In one direction we have made remarkable strides since the foundation of the "Canadian Forestry Association", by Sir Henri Joli de Lotbiniere and certain other kindred spirits in 1900. Since that time it can be safely said that the Government and lumbermen have vied with each other in spending their time and money for protection against fire to such an extent that we can see the day, when in the not far distant future, the forest fire losses will be reduced to a negligible minimum.

There is no doubt but that the hand of man has in recent years rapidly decreased our available supply of forest products. This has been brought about partly by the greatly increased demand for lumber from all over the world, and in particular from the United States, and by the immense strides made in the pulp and paper business which must, in order to feed its grinders, and eventually by means of newsprint paper spread knowledge and education abroad, have at its disposal thousands of cords of spruce and balsam.

Gold and Timber.

The words of John Evelyn are as true to-day as they were in bye-gone ages: "We had better be without gold than without timber," and if it is useful in every art and trade then surely a nation as a whole must interest itself in the welfare of its citizens.

The objection has often been raised that in this country as well as in the United States we are too fond of saying, "Let the Government do it". So it is in this case. On the state, of course, devolves the supreme responsibility for its own sake, as well as owing to the fact that annually \$7,000,000 are collected from the limit-holders of Canada. But there must be co-opera-

tion and assistance even to the point of pecuniary sacrifice on the part of all classes, and in particular on the part of that class which is deriving a material benefit from the exploitation of the forests.

The Task of Governments.

Speaking as a Quebec limit-holder, I may say that the help which the individual lumberman can give to this work is not very great. The fact that the settler may within a short time clear the land completely of all timber is scarcely encouraging, even if one had the means to systematically carry on a programme of forestry. So that the work must be undertaken by joint effort and co-operation with the governmental authorities, and the first step is, I think, incorporated in the resolution which I am about to propose to you.

Would it not be well, before going into this matter any further and taking any steps which we might afterwards have reason to regret, to find out exactly what we have. How much timber is there in this Canada of ours? We have figures given by various provinces, but they are at best only approximate. As nearly as can be made out, the area given as forest area includes everything which is not town lots, mining leases, or cultivated land, and with the exception of the largest lakes no account is taken for water, and further, the barren lands to the north would seem to be included. Such a condition of affairs can hardly surprise anyone. With one exception no Government has as yet undertaken a thorough and systematic survey of the forest lands under its control.

What's in the North?

Who knows, for instance, the quantity, the quality of the different species which lie in Ungava, or in the great north land of Ontario? What are the means of transportation therefrom? Is the timber accessible? Is the exploitation of that country a commercial possibility?

The Province of New Brunswick has already undertaken such a survey, and in the words of Mr. G. H. Prince, "It will give definite information of the quantity, quality and value of the timber on any area, from which the stumpage value may be determined. It will show the quantity and quality of species now of little commercial importance because of lack of market demand, and possibly it may show that these species can be marketed profitably, or where quantity justifies it, to induce industries

utilizing these inferior species to operate within the province, thus profitably utilizing material which is at present going to waste.

"Second: The estimate of the annual growth will determine whether or not the annual cut can be increased, or whether to perpetuate the industry, restrictions should be placed on certain species to regulate the cut.

"Third: The information on soils will permit of directing settlement to districts offering the greatest prospect of success, and withholding non-agricultural land from settlement, thus protecting both the future settler and the licensee."

Besides all classes are interested in such a proceeding. The lumberman in order that he may know whether or not he has somewhere else to turn when he has exhausted his present holdings; the state because it is to its interest to know exactly what are its assets; the investor in public securities to know what guarantees his bonds; and, finally the people of the country in order that having the figures before them they may be enabled to check with a jealous eye the means being taken to preserve to posterity their national heritage.

From an address given before the Canadian Forestry Association at Montreal, January 29, 1919.

WASTING THE PRAIRIE PROVINCE FORESTS

For years, the Canadian Forestry Association and the Commission of Conservation have strongly urged that the prairie provinces of this Dominion deserved better treatment than to have their forest possessions rapidly depreciated by unregulated exploitation.

The time has now arrived when in the midst of a national programme for organizing the country's wealth-producing powers, the continued sacrifice of the West's own timber supply can hardly be permitted to continue.

When the Dominion Forestry Branch was first organized, the Dominion Government's obvious intention was to give the then "Superintendent of Forestry" supervision of licensed timber berths. This has become a dead letter. The timber berths are operated by the "Timber and Grazing Branch" of the Department of Interior, and on these large areas (approximately 6,680 square miles*) there is little, if any, attempt to impose those forestry regulations which alone can maintain these areas as sources of timber supply.

THE DOMINION FORESTRY BRANCH IS A FOREST CONSERVATION DEPARTMENT, by which the Dominion Government, as controller of the timber resources in the prairie provinces and the "railway belt" of British Columbia, seeks to protect and improve the Forest Reserves amounting to 25,000,000 acres. Note the anomaly! While the Forestry Branch institutes measures of conservation on its own limited domain, creates forest nurseries and plants millions of trees, the most valuable bodies of public-owned timber in the West are without any regulation whatever. The principles of conservative lumbering are not observed, because the commercial operator has no need to observe them.

In other words, the Dominion Forestry Branch with its field staff of technical men, is debarred from the forest where it should operate. It practices Forestry on the least valuable areas. The really valuable part of the timber resources of Manitoba, Saskatchewan and Alberta is outside its jurisdiction.

What is the remedy?

Give the Dominion Forestry Branch supervision of logging operations on the licensed timber berths now handled by the Timber and Grazing Branch. It is a simple formula, easily filled by the Minister of the Interior in whose progressive spirit the Forestry Journal has full confidence.

*Timber licenses in

Manitoba	1,241 square miles
Saskatchewan	1,672 square miles
Alberta	2,027 square miles

Also 651 square miles under permit to portable sawmills, cordwood operators, etc.

DOES THE WEST NEED FORESTS?

Destructive Policy on Timber Berths Can Easily be Corrected by Dominion Government.

There has been generally in the public mind in Canada an impression that forestry included mainly or almost entirely protection of the forests from fire and the planting of trees. But this is no more the case than to say that farming is protection of the crop from fire and the seeding of the farm. Farming involves a careful consideration of the area the farmer has available for his farming operations, the quality of the soil, the climatic, moisture and other conditions, facilities for reaching markets, rotation of crops and many other things too numerous to mention. The protection of the crop from fire and the seeding of the ground are two essential points in farming, but no person who knows anything about farming would attempt to reduce it to such simple elements. The time when the scientific farmer was the laughing stock of his neighbors has long gone by, and every farmer who makes a success of the business now recognizes that farming is a science and the returns are the result of thoroughly acquired knowledge applied to a variety of conditions and operations.

What is Meant by Forestry?

That forestry is a science, that its operations are complicated, that they are based on accurate knowledge of the conditions of growth of a forest, its relation to the climatic, soil and moisture conditions, the interrelations of the various species of trees and a thousand other things that are not considered in ordinary lumbering operations is a well-established fact in European forest administration, and the public fully second all the efforts of the forest services to improve the condition and productiveness of the forests. The success of forestry in Europe is largely due to the general and intelligent support of public opinion, and until public opinion in Canada has reached a similar condition the development of forestry proper can never be put on a thorough, first class basis.

In every country in Europe the value and production of the forests have been increased by intensive management, the greatest progress being made in Germany, where the average yield of wood per acre was raised from 20 cubic feet in 1830, to 65 cubic feet in 1904. During the same period of time it trebled the production of

saw timber got from the average cut, which means that the timber lands of Germany are three times better in quality on account of the forestry methods followed.

Results in Switzerland.

In Switzerland also the development in forest management has been marked. A good example among the Swiss forests is found in the Commune of Couvet, canton of Neuchatel, where the forests have for 30 years been in charge of a trained forester. From 1883 to 1913 the annual cut increased from 3 to 9 cubic meters per hectare; that is, it trebled. And this result was obtained without any decrease in the standing timber which in fact slightly increased during this period. Moreover, the proportion of large timber—the most valuable—which in 1883 was only 18 per cent is now 30 per cent, and the proportion of large timber cut annually has increased from 56 per cent to 69 per cent.

If the policy is adopted that was followed for some time in German forest administration, particularly in some districts, of allowing a planted forest to grow to maturity and then making a clean cut of everything, providing for re-establishment of the forest by replanting the area with young stock grown in a forest nursery, the process is comparatively simple, but foresters generally and even German foresters have been looking around for a more general adoption of less artificial methods.

The Method of France.

The forest service of France is as good an example as any of a service which has consistently tried to favor natural methods. The forests of France, once established, are generally reproduced by natural methods. This involves further considerations in timber operations than how much can be obtained from the forest. It involves a knowledge of the year and time of the seed crop, the carrying out of operations so as to get the forest floor in best condition for the reception and germination of the seed, the provision of shelter for young plants easily subject to frost damage, the thinning of the stand to assist clear and upright growth and prevent crowding, and many other considerations affecting the growth of the forest.



Note this fine tangle of debris left on Saskatchewan lands adjacent to the Porcupine Forest Reserve, but completely beyond control of those responsible for the Reserves. (See accompanying articles.)



In contrast to the picture at top of page, this shows how the forests inside the Reserves, under the Dominion Forestry officers, are administered. The dangerous brush has been disposed of. Photograph taken on Porcupine Forest Reserve, Saskatchewan.

It will be seen therefore that the protection of forests from fire and the planting of trees, while essential parts of a forestry programme are only preliminaries to the real work and are the simpler and less intricate parts of the problem.

Faults of Present System.

As a matter of fact, so far as Canada is concerned, there has not yet been a thorough effort made to practise real forestry. The Governments have been concerned chiefly with the collection of public revenue and the prevention of forest fire, and the regulations intended to ensure the perpetuation of reproduction of the forest are frequently based on erroneous or incomplete information and generally they are not enforced or only partially so. Such regulations as a rule consist in the fixing of a diameter limit below which trees are not allowed to be cut. The effect of such regulations, when observed, has been to change white pine limits to spruce and balsam fir, and it is now changing spruce and balsam fir limits to limits of hardwoods and faulty balsam fir. This is clearly shown by the investigation made recently in the St. Maurice Valley by Professor C. D. Howe, of the Forest School of the University of Toronto.

The lumbermen have ideas of their own as to how cutting should be done to ensure the perpetuation of the forest. These views, however, are generally not the result of thorough investigation on the ground, but from some example which may have occurred in different conditions and the results of which may not be generally applicable.

Good Intentions Thwarted.

When the Forestry Branch of the Canadian Department of Interior was organized in 1899 the protection of forests against fire and tree planting on farms on the prairies were two matters that were specially emphasized, but the Order in Council dated July 29, 1899, provides that the duties of the Superintendent of Forestry shall be: to inspect the timber reserves in Manitoba and the North-West Territories already defined by the Department of the Interior, to visit the timbered portions of Dominion lands with the view of setting apart further reserves, to look into the report upon the cause and effect of fires and suggest the means whereby the destruction of the forests may be lessened, and also any other duties in connection with the timber resources of Dominion Lands and Indian Reserves he may be called upon by the Department of the Interior to perform.

It was evidently understood from the first that the Forestry Branch would so direct the administration of the forests of the Dominion that

in time they would be thoroughly protected and would be so administered as to reach the highest figure in production.

Canada the Loser.

As things have worked out, however, the administration of the best timber areas on Dominion Lands has been left under the administration of the old timber office which has in view mainly the collection of revenue and the timber operation and with almost no regard for the conditions have been carried on with little or no super-conditions that will follow the operations or for the production of a new crop. This means that the present crop of mature timber which does not cover more than thirty per cent of the area usually shown as timbered is being steadily reduced every year without any careful consideration of what is to follow or how the crop is to be perpetuated.

This Rule a Failure.

The diameter limit for cutting trees is intended as a step toward perpetuating the forest but even if enforced is found to be an utter failure in most conditions. Its success depends a great deal on the original composition of the forest and on how the selection of trees for cutting is made. In many cases where there is much strong wind a selection system of this kind is an utter failure for the trees left usually go down with the first wind storm. In such cases a system where small compact blocks of forest are left has to be substituted.

First Considerations.

Before any tract or forest is put up for sale or operations authorized on it thorough information should be obtained on the following points: (1) The probability of a market for the products; (2) the conditions of climate, wind and soil; and (3) the composition of the forest as to tree species and the relations they serve toward one another. It is only after information of this kind, which will vary considerably on every tract of forest, has been obtained that the formulating of a proper working plan designed to perpetuate the forest and increase its production is possible. Operations under the Forestry Branch in timber on the forest reserves which was not disposed of prior to the establishment of the reserves are now being carried on on the principle last outlined and the sooner such methods are adopted generally for forests on Dominion lands everywhere the greater hope there will be for the future of the timber business on such lands in Canada and the nearer we will come to a proper administration of this great natural resource.

"AN ETERNAL SOURCE OF WEALTH"

London, 29th January, 1919.

To Canadian Forestry Journal:

The forests of Canada represent one of the mighty factors in the wealth and in the character of our Canadian countrymen. Scientifically renewed, our forests are and will be an eternal source of wealth. No country in the world has greater possibilities in this respect than the great Dominion, and, whether the future of the world be peace or war, the timbers of our country have destined us to be one of the great decisive factors in the progress and development of the world.

Yours sincerely,

HAMAR GREENWOOD, Col.: Bart: M.P.

THE WASTE OF CHRISTMAS TREE EXPORT

By J. A. Bothwell, President Canadian Pulp and Paper Association, in Official Address.

"There is one other subject to which I should like to direct attention for a few moments and that has to do with the question of our raw material. I am not going into an abstruse discussion of the subject, although it is of sufficient importance to justify a great deal of attention and consideration, but I do want to allude to one or two facts in connection with it. We are all aware of what has befallen the paper-making industry in the States through a too prodigal use of their pulpwood. We are aware, too, that our own supply of pulpwood is being consumed at an alarmingly rapid rate. I do not refer solely to its employment for the legitimate purpose of conversion into marketable commodities, so much as to its export in its unmanufactured state and particularly to its wanton and unnecessary destruction for no good purpose whatever. Every year, thousands of young but valuable spruce trees, owned, it is true, by settlers and other private individuals, are chopped down, their tops cut off and sold for a few cents apiece and carted off to our towns and cities there to

serve for an hour or two's festival use. Not only is this an unnecessary waste of good material, but it also denotes short-sighted economy upon the part of the land owners who permit it to be done. These young trees potentially have a much greater value than is represented by the price paid for them when used in this way. In a few years' time, left to develop, they would have a market value many times greater than in their undeveloped state, while, at the same time, their use as raw manufacturing material would contribute to the welfare of all. We are continually being urged to employ scientific methods in tree-cutting and to replant as far as is practical in order that there may not be a complete exhaustion of the supply, but here is a case where young growing trees are needlessly and uselessly sacrificed by the thousands, apparently without any one raising the least objection. Our forestry departments could do no better service than in putting a stop to the practice."

PICTURES THAT TELL A HUMAN STORY

In the photograph at the top of the page may be seen the consequences of stripping timber from land that cannot possibly be utilized for farming. However, an innocent farmer has made the attempt. After expending time and labor and capital he has been driven away by poverty. The land lies bare and useless. It will remain part of Canada's vast "No Man's Land" until replanted with trees. (From a photograph taken in North Saskatchewan).

The lower picture, taken in New Brunswick, illustrates another kind of treatment for non-agricultural soils. It is practically the same character as that in the top picture, but note the contrast in the service it renders the community. Here we find part of a great army of busy lumbermen. They are helping to extract from such Canadian areas \$200,000,000 worth of forest products each twelvemonth. The land is useless for farming, but of splendid use for timber crops, a great power in employing men and meeting the daily needs of the nation.

The top picture need never have been made possible if classification of lands had preceded settlement. To the farmer belongs every acre that will produce crops. That leaves about two-thirds of the Dominion unfit for farms, a large portion of which truly belongs to forest production for all the centuries to come.

TAKE STOCK FIRST—THEN MAKE PLANS!

Dr. Howe, of the Faculty of Forestry, Toronto University, speaking at the Montreal meeting of the Canadian Forestry Association, said:

"The only way we can ever know just how much spruce we may have for pulpwood is by taking an actual survey of the forests, to find out what conditions really are, over a sufficient area, so that our conclusions may be as nearly accurate as possible. We know that at the present time all our figures are more or less guess work. They may be right, they may hit the mark, but some of us believe they are otherwise, and that the estimates are exaggerated; but as foresters we do not care to make estimates until we have seen, or until we have studied a sufficient amount of the country, so that we have the data to prove the same. All I can say is that my knowledge of the spruce coming in is limited to the St. Lawrence valley, and wherever we have the spruce mixed with hardwood, maple and birch, we will be very much disappointed thirty years from now when we go back there and expect to cut a large crop of spruce.

I do not believe that on the area which I have studied, that in thirty years there will be

enough spruce on those lands to pay for the lumbering. The great need at the present time in the Province of Quebec, and the whole of the Dominion of Canada is a forestry survey, an actual survey estimating as near as possible the standing timber we have here, so that we can make a reliable estimate of the future production."

THE ROAD OF DESTINY.

"Canada's commercial destiny is chained to the natural resources; the land, the forests, the mines, fisheries and water powers. Superficial activities (with the dice loaded against us from the outset) have cost us heavily in wasted time, wasted legislation, wasted public money. The forest, of course, is a poor advertiser; it cannot speak for itself. And many of those who did speak for it had far better have held their tongues. Nothing has damaged forest conservation so deeply as the circus-poster claim of 'inexhaustible resources'—a boast ironically illustrated by vast tracts of pillaged timberlands." —From "The Forests of Canada."



(See top of opposite page.)



VICTORIA LAUNCHES INTO STATE FORESTRY

By H. R. MacMillan, Former Timber Trade Commissioner
for Canada.



All Lumbering is Under Strict Supervision.
Government May Erect Mills or Buy
Ships.



Victoria which has been, up to the present, the most progressive Australian state in matters of forest policy, passed through both Houses Dec. 19, 1918, an important Forest Act.

Victoria is a state with great forest possibilities. The total area of the state, 56,000,000 acres, includes 12,000,000 acres of woodland, including much rough and mountainous land, unsuitable for agriculture, which nevertheless lies in a climatic belt where forest growth is varied, and rapid. The forests of Victoria have been the most valuable and extensive of Australia.

4,000,000 Acres in Reserves.

During the past five years, under the leadership of Conservator Hugh Mackay, the pioneer of Australian forestry, the forests of the state have been carefully examined and a start made toward training and building an organization for forest protection and administration. About 4,000,000 acres of forest have been set aside by Act of Legislature as permanent reserves for the protection of water supplies and production of timber; of this area, 2,500,000 acres are on high mountain slopes where protection of water supply is of chief importance; another 500,000 acres are cut-over lands in the populated sections of the state. Logging operations are confined chiefly to 500,000 acres, cutting on which is under strict state supervision, the areas being worked on the selection or coppice systems chiefly. A chief feature of the new act is the provision for the appointment of a state forest commission of three members, removable only by a resolution of both Houses of the Legislature, in whose hands will be placed the extension and administration of all state forests, plantations, and forest schools. In the true Australian spirit the Act authorizes the commission to undertake and operate any works necessary for the logging of the state forests or the further manufacture of forest produce, specific powers assigned to the commission being to "Convert any forest

produce into merchantable articles and sell the same"; "construct and maintain tramways . . . purchase, rent or charter vehicles or vessels"; "construct, purchase or rent and operate saw-mills, other mills, dry kilns"; "purchase cattle and pasture them".

The commission is allowed by statute five years in which to prepare working plans for the various state forests, these working plans to become operative when approved by the state cabinet, and not to be revised until they have been in effect at least four years.

Novel Financing Scheme.

A striking feature of this Act is the novel provision made for financing the forest policy outlined. It is enacted that beginning with 1919 there shall be made available each year \$200,000 for forest expenditure, and that further, when the forest revenue of the state exceeds \$400,000 annually, one-half of such revenue is set aside for the use of the Forest Commission.

The forest revenue of Victoria in 1913 was \$250,000, and the forest expenditure \$285,000.

Power to Expropriate.

Under powers granted by the Forest Act the Forest Commission may take compulsorily any land required for the proper working of state forests, the protection of state forests or plantations, or the prevention of erosion.

The many species of acacia and gum in Australia have been very loosely named and graded in the Australian lumber trade. The commission has power to establish legal names and grades and to enforce such in all transactions in Victorian timber.

A period of three years is placed by legislation, at the end of which the commission shall have examined the remaining forested mountain areas of Victoria and recommend whether or not they should be constituted state forests.

The importance of forestry in Victoria may be judged by the fact that this state, population 1,400,000, which could readily grow the greater part of the timber requirements, imports from other Australian states and other countries about 200,000,000 feet of lumber annually at a cost of about \$6,000,000.

Foresters in Canada will learn with interest that the chairman of the commission will receive \$5,000 annually, the other two members \$4,000 each.

FREE SERVICE TO RETURNED SOLDIERS

The Canadian Forestry Journal will be glad to publish, free of charge, advertisements of returned soldiers desiring employment in any branch of forestry work.

Employers are also invited to publish, free of charge, whatever vacancies exist. Government forestry departments may use the columns of the Journal to make announcements concerning vacancies.

All readers are asked to co-operate in this service by reporting new undertakings that may provide employment for returned men.

HALF OUR FORESTS GONE.

"Repeated forest fires are producing similar results on thousands of square miles throughout the Dominion. One-half of our commercial timber lands have been burned. Even if there were another forest fire, one-half of our future supply of timber should come from these burned areas. Every fire decreases that possibility by destroying the young commercial trees. We have not only killed the commercial, revenue-bearing trees on one-half the timber-producing area in Canada, but our forest policy has been such that we have virtually decreed their children shall not live."—Dr. C. D. Howe.

They are now using airplanes and wireless in forest fire patrol work, but have not yet been able to figure out any effective way for utilizing submarines.—American Lumberman.

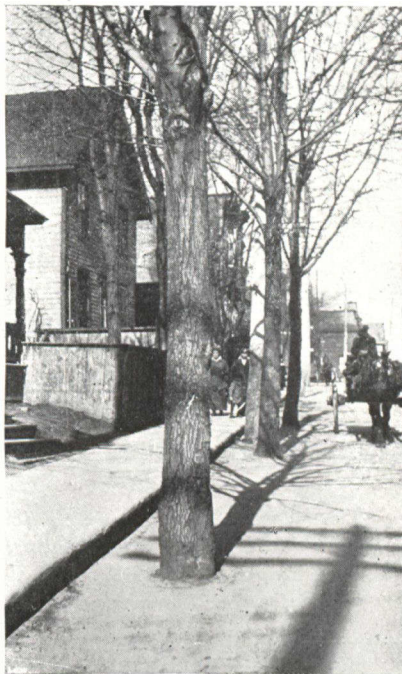


Photo by B. R. Morton
AN ARBORIST NEEDED HERE'

Shade trees in many Canadian municipalities are treated by the local works department as if they possessed the same characteristics as telegraph poles. In the above photograph, taken on an Ottawa street, the trees have been tightly cemented about the base, instead of being given a circle of clear soil. The inevitable usually happens. The growth of the tree bulges the pavement, or the tree dies.

THE DEATH KNELL OF PINE.

Dr. C. D. Howe examined 80,000 acres of cut-over and burned-over pine lands in the central portion of old Ontario and found 110 young pine trees on the average acre of areas burned over once; 14 pine trees per acre on areas burned over twice; 7 pine trees per acre on areas burned over three times, and only 3 pine trees on the average acre of areas burned over four or more times. It will take several hundred years for nature to restock these areas with pine.

NEW PUBLICATION FREE TO ALL READERS

The Canadian Forestry Association will be glad to send to its members and friends free copies of a 16-page brochure: "Canada's Forests as an Imperial Asset", by Robson Black. The article appeared in the last issue of the University Magazine.

PAY NO DIVIDENDS OUT OF CAPITAL

“After the survey of our lands has been completed by the foresters, if it is shown we are lumbering to a greater extent than our annual increment, the Government will consider the curtailment of the present annual cut of lumber to correspond with the natural growth.”—A statement by Hon. E. A. Smith, Minister of Lands of New Brunswick.

THE PROBABLE COST OF AEROPLANE PATROL

The Forestry Journal prints the following as a purely military estimate of the cost of an aerial patrol in Ontario. The initial programme calls for an elaborate organization. Whatever is done in air patrol of forests will likely commence with one plane, sufficient to demonstrate a few facts before any Government is committed to huge expenditures.

Some time ago the Ontario Government asked the Canadian Air Force Headquarters at Argyle House, London, to outline a plan of aerial patrol for the forest regions of Ontario. A cabled account of the estimate claims that three times the area would be covered as under the present system. The cost is given as \$375,000 a year in addition to a large initial expenditure. This, it may be emphasized, takes no account of the maintenance of a very large “land force” of rangers, such as will always be necessary. The Ontario Forest Service has now over 1,000 men on duty and is costing the province about \$500,000 a year, including expenditure on permanent improvements.

The London despatch states:

The cost of such an air patrol would be about \$375,000 a year, and an initial expenditure of \$351,000.

The detailed estimates supplied by Argyle House are as follows:

Estimated cost aerial equipment...	\$351,312.00
Estimated annual cost of replacement and upkeep of equipment due to bad crashes, forced landings, etc., will not exceed	155,361.16
Annual charge for pay and allowances, estimating that the service will be maintained for a period of six months in the year	220,000.00

Total annual charge for upkeep,
pay and allowances 375,361.16

It is estimated that this service will be able to patrol an area of 150 to 200 miles in width, and 300 to 400 miles in length, or a total area of 30,000 square miles, with an annual charge of patrolling this area of 30,000 square miles of approximately \$12.50 per square mile.

Fight Flames From Air.

Not only can the fires be located by the aviator, but they can be fought as well. From dawn to dusk every day for the six months in the year when fires rage in the valuable Northern forests, a ceaseless watch could be kept by air.

Here is how it would work:

At two o'clock in the afternoon a patrolling seaplane, manned by a pilot and observer discovers a new fire commencing. After a quick, thorough reference to maps, the observer sends by wireless the map location of the fire, its magnitude and the necessary method of fighting it.

This message is picked up at once back at the aerodrome or base of the aeroplane or seaplane—whichever is in use. At this base is standing-by a crew of trained forest-fire fighters. Here takes place a rapid reference to maps, and in a few minutes the machine is off in the air with its pilot and six men to fight the fire.

At three o'clock the fire fighting squad is at the scene of the fire, and before darkness falls the fire is put out or is safely checked.

The present method of fighting fires is as primitive as travel by horse and buggy. A fire may get far beyond control before discovered, and by the time a crew of men to fight it has collected, it is of too great a magnitude for checking.

A complete and geological photograph of all this huge area can also be made, which would be of inestimable value to the Ontario Government.

Air Force to Operate.

The Canadian Air Force would take responsibility for the administration and operation of the service, and the supply of necessary training of personal and other ranks.

The organization would be as here outlined:

(1) One seaplane squadron with its headquarters at North Bay railhead; (2) Three detached flights of six aeroplanes, each located on one of the three railway lines emanating northwards and westwards from North Bay.

The patrolling seaplane would carry a pilot and observer for locating all fires, and the larger flying boats would carry the pilot and six passengers for fighting the fires. The organization of machines for one squadron would thus be: 16 seaplanes for patrolling, and two large flying boats for carrying fire-fighters and their equipment.

The whole of the organization would be in constant communication by wireless, and machines on patrol can be ordered to return or proceed to other points as the administration at North Bay considers necessary.

A great possibility of this, too, is the opening of rapid communication by mail between North Bay and James Bay, as there would be every day spare machines and pilots not on aerial patrol.

It would also serve as a means of giving quick assistance and supplies of food and clothing to devastated areas and districts in Northern Ontario, which are not served by any means of communication with the outside world except by canoe.

A BUSH TO EVERY FARM.

(V. A. Hart, in Toronto Globe.)

"I would like to see it made compulsory for every one hundred-acre farm to carry at least five acres of live bush. Outside of the value of the dead or old wood for fuel, the natural moisture would be conserved. Many of our old Ontario counties have practically no bush, and

creeks which were large forty years ago have a struggle to keep going throughout the summer. Then, again, almost every county in Ontario has hundreds of acres of dead or non-productive areas, which once produced a heavy crop of timber, and without timber they are useless (unless the Government wanted it for any purpose). They could be made to produce as they once did. Then in sections in Muskoka, Parry Sound District, Nipissing, and even in Algoma, thousands of acres could be reseeded or planted to timber again, and with our past experience it would not be so ruthlessly slaughtered as in the past. The farmers for a few years can get to market on the roads as they are being made from year to year, and the money spent to greater advantage for farmer, town and city chap in the building up of our resources. I would not know a million dollars if I should or could see that much, but one million dollars would do a lot of reforestation."



Photo by B. R. Morton

CANADA'S ONLY HARDWOOD-EVERGREEN.

The Madrona tree, photographed near Chemanius, Vancouver Island. Ordinarily our hardwoods shed their leaves on the approach of frost and the evergreens, with the exception of the tamarack, retain their leaves or needles.

The Madrona, however, is a genuine hardwood that is non-deciduous.

THE CREDIT OF STATES

By D. E. Hutchins in "Australian Forestry."

A state recklessly squandering its chief natural asset, its forests, burning yearly hundreds of thousands of pounds' worth of the most valuable timber in Australia—its durable softwoods and blackwoods—(as Tasmania is now doing) cannot, in the credit system of the world, stand beside a state like Victoria that is adopting modern methods of State Forestry and conserving its forests. It is easy for a recklessly governed state to disguise its sins for a time. Visitors come to the towns and see wonderful progress there; an unnatural and forced development, if you will. They are shown picked bits of prosperous rural districts, but there is something behind this, and sooner or later the other side of the picture gets known.

BELGIUM AND FORESTRY.

Belgium and England are the two most densely populated European states. The Belgian Government, before the war, had a Forest Department of 750 men, and provided winter employment for 32,000 men.

JAPAN'S GREAT EXPENDITURES.

Japan spent 250,000 pounds sterling (say 1,000,000 pounds on the Canadian wage scale) yearly for many years when the wild forests were being put in order.

STANDING BY THE FORESTRY CAUSE

There are in the membership of the Canadian Forestry Association thousands of forward-looking Canadians who are eager to assume their full obligation to the future of Canada. They regard their membership as a working force in good citizenship and are eager to keep it in effective condition.

Not content to have their annual fee cover only the cost of printing the Forestry Journal, many of them have chosen to accept a "Contributing Membership" costing five dollars. This provides the Association with funds for its national educational enterprises.

Our lecturers, motion picture films, lantern slides, railway demonstration car, travelling lecture sets, hundreds of thousands of educative issues, our campaigns with governments, etc., are wholly in the national interest and require a constant supply of money. Every dollar is spent with maximum economy, the Association securing thousands of dollars worth of free and valuable co-operation month after month.

On February 15th a number of our members were asked to take a Contributing Membership at five dollars. By March 11th (the day of going to press) the following had gladly responded to our proposal; the list will probably be doubled by the April issue of the Journal:

Sir James Aikins	John D. Flavelle
F. H. Anson	Thomas Fynes
Joseph Allison	Mrs. R. C. Fisher
W. B. W. Armstrong	E. J. Freyseng
Mark Bredin	Fassett Lumber Co.
A. W. Boswell	Thomas Flynn
John Beattie	A. B. Gordon

Walter A. Black	J. N. Greenshields, K.C.
P. Burns	John H. Garth
Hon. J. P. Burchill	Sir Charles Gordon
H. L. Bradbery	J. L. Goodhue & Co., Limited
E. R. Bremner	Robt. F. Grant.
Baird and Peters	C. S. Gzowski
John A. Bain	Peleg Howland
O. B. Brown	J. W. Harkom
W. G. M. Byers	A. C. Hardy
Theo. A. Burrows	Grant Hall
J. B. Beveridge	C. H. Johnson & Sons, Limited
Canadian Land and Immigration Co.	A. Jephcott
R. J. Christie	Keenan Bros., Ltd.
J. H. Connor & Son.	Keewatin Lumber Co.
Geo. A. Campbell	Louison Lumber Co.
W. G. Clarke	Col. T. G. Loggie
Alfred Collyer	Jose A. Machado
Hugh J. Chisholm	Prof. Iva E. Martin
A. E. Cross	A. D. MacTier
H. N. Chauvin	E. W. Mudge
E. M. Dechene	Montgomery & Sons Co.
G. Durnford	R. A. McInnes
Henry Detchon	F. W. Molson
R. J. Dale	D. McLeod
W. M. Dobell	Sir W. R. Meredith
Edward L. Drewry	Paul G. Owen
H. A. Downs	Albert F. Park
Joe M. Dalton	Hon. S. N. Parent
A. L. Eastcott	T. M. Partridge Lum- ber co.
Edward Hines Lumber Co.	Sir William Price
C. E. Edmonds	John Penman
Eddy Brothers & Co.	P. D. Ross
Hon. Sydney Fisher	Rideau Lumber Co.
Finch, Prunyn Lumber Co.	

FOR SALE—CHOICE TIMBER TRACTS

One or both; located on Columbia River and Tributaries north of Revelstoke, British Columbia; twice cruised by Marwick, Mitchell, Peat & Co., New York; surveyed by Christie, Hayward & Dawson, Vancouver, B.C.; near interior market; saving in freight over coast shipments two dollars thousand. Do you want high class timber property, if so write

S. A. HOLBROOK, Bradford, Pa., "Owner."

TIMBER IN M. FEET

TRACT	CEDAR	SPRUCE	FIR	PINE	HEMLOCK	TOTAL	CEDAR POLES
Downie Creek-----	204,143,000	47,228,000	18,186,000	7,473,000	79,748,000	356,778,000	60,612
16 mile -----	54,002,000	30,687,000	2,433,000	1,758,000	21,012,000	109,892,000	21,625
25 mile -----	67,468,000	39,908,000	28,799,000	5,068,000	47,086,000	188,332,000	27,642
Goldstream -----	33,649,000	16,406,000	478,000	200,000	7,577,000	58,310,000	8,857
50 mile -----	45,890,000	34,395,000	6,050,000	1,155,000	20,095,000	107,585,000	35,360
Schoonmaker -----	2,785,000	10,851,000	1,348,000		4,108,000	19,090,000	2,116
(83 miles)	407,936,000	179,475,000	57,294,000	15,654,000	179,629,000	839,988,000	156,212
						Dead and down cedar----	25,217,000
							865,205,000

S. A. HOLBROOK (Trustee) TRACTS.

TRACT	CEDAR	SPRUCE	FIR	PINE	HEMLOCK	TOTAL	CEDAR POLES
Gaffney -----	57,433,000	35,534,000	15,653,000	3,409,000	10,168,000	122,197,000	84,062
22 mile -----	60,880,000	67,425,000	28,951,000	8,233,000	74,131,000	239,622,000	32,569
(34 miles)	112,313,000	102,959,000	44,604,000	11,642,000	84,299,000	361,619,000	116,631

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AND BETTER CROPS**
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SEEDS
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WRITE FOR NEW CATALOG
STEELE, BRIGGS SEED CO.
 "CANADA'S GREATEST SEED HOUSE" LIMITED
TORONTO
 HAMILTON WINNIPEG

GUARDING 21 MILLION ACRES BY CO-OPERATION

By Arthur Graham, Manager, Ottawa River
Forest Protective Association.

The fire season of 1918 in the territory of the Ottawa River Forest Protective Association may be classed with that of 1917, as being a favorable one for forest protection. No development of organization will make it possible to leave weather conditions out of conditions out of consideration. The season, however, was not void of extremely dry periods and spells of high winds. The rainfall during the months of July and September, and particularly during the latter, was quite over the average, but May, June and August were dangerous at times.

One hundred and forty-seven fires started in our territory during the season, and of this number 111 were extinguished by the rangers without extra help. The damage to merchantable timber is reported by our inspectors to be not more than 275,000 feet board measure, scorched, and other property valued at \$5,140. The area of merchantable timber burned over is found to be 98 acres.

A careful study of the causes of fires has taught us that more fires are caused by lightning than many are willing to admit. Records for the past two seasons of 1917 and 1918, in our western section, show that 29 per cent of the total fires were caused by lightning. The pine districts are found to be the most susceptible to lightning fires, and especially in old-burn areas where dry pine trees are still standing. These are the hardest to detect, and will often escape early detection unless the rangers are equipped with a system of lookout towers and telephone lines.

Large Equipment.

The number of permanently employed men for the season was 198, and the inspection was taken care of by 11 inspectors. Our organization like many other branches of woods operation suffered somewhat from men enlisting in the Canadian army, the result being that the personnel of our inspectors and rangers in certain districts did not measure up to the usual standard maintained by this association. Now that the war is over we can hope to improve this situation.

The following is some of the travelling equipment used: 20 horses, 90 canoes, 7 motor-boats, 3 outboard motors, 1 steamer and 3 track velocipedes. During the season two fire-

fighting units, equipped with 1,200 feet of distributing hose was purchased for fighting fires. These were not delivered in time for use last season.

Settlers' Fires.

Settlers are found in 72 townships where our members own timber licenses, and it is interesting to note that the percentage of fires caused by settlers burning slash has decreased from 51 per cent to 21 per cent. This remarkable change is mostly due to the enforcement of the Burning Permit Law. 1,466 burning permits were issued by our rangers to settlers during the past season. No fires escaped control.

The number of prosecutions for infraction of forest fire laws, has fallen off considerably. In 1914 there were 40 prosecutions, in 1915 39; 1916, 6; 1917 6.; 1918, 6.

Members Satisfied.

Seven new members have enlisted their holdings for patrolment during the last season, adding 119,368 acres to our area. The total membership now is 67, with an area of 17,033,440 acres, (26,614 $\frac{3}{4}$ square miles) of Licensed Crown Lands, including 4,060,800 acres of Licensed Crown Lands which are taken care of by the association, the total area patrolled is found to be 21,094,240 acres (32,959 $\frac{3}{4}$ square miles). The figures do not include timber lands known as Indian Reserves, Seignories, and lots deeded to settlers, etc., joining the association territory, large areas which have to be patrolled by our rangers in order to protect the limits owned by members. It is interesting to note when summing up the area of this vast territory that only two per cent of the Licensed Crown Lands remain outside of the association. These are classed as non-members. Not a single member has withdrawn from this association since its inauguration, unless by reason of sale.

Co-operation.

The success of the association is due to the Quebec Government by the co-operation of the Hon. Jules Allard, and the officers of the Department of Lands and Forests, to the Canadian Forestry Association for special publicity campaigns and distribution of literature, to the Fire Inspection Department of the Board of Railway Commissioners, and the various bush superintendents, foremen, and others in charge of lumbering operations.



FOREST TELEPHONES

Make the life of the forester better worth living. They relieve him from the appalling loneliness. They help him to keep in human voice touch with foresters miles away.

In emergencies—fire—sickness—hunger—the speed with which they can summon help is marvellous.

Write for full particulars of how to install the Northern Electric Forest Telephone System. Address the Office nearest you.

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Halifax	London	Calgary
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A HELPFUL WORD FOR THE FORESTRY ASS'N

The Forestry Journal acknowledges gratefully the following comment upon the work of the Canadian Forestry Association contained in the report of the Committee on Forests of the Commission of Conservation:

"The Canadian Forestry Association has been extremely active in disseminating educational propaganda along forestry lines. This work has extended to all the provinces, but is particularly notable in the east. Through co-operation with the Railway War Board, a special car was provided and equipped with educational exhibits. Lecturers were provided, through co-operation with Provincial, Dominion and private forest organizations, and lecture trips were made to numerous points in Ontario, Quebec, New Brunswick and Nova Scotia. It is to be hoped that this work can be continued, and extended, if possible, to the western provinces.

"The Forestry Association is doing splendid work along many different lines, and is worthy of the greatest possible support from Dominion,

Provincial and private agencies. It has become a very definite force in the direction of getting things done along the lines of forestry and fire protection. Its usefulness would be greatly increased by the establishment of a branch office in the west, possibly at Vancouver, and it is to be hoped that the necessary financial support may be made available to this end.

MARKING FOREST LAND IN INDIA.

Forest demarcation began in India over half a century ago. As regards land, the situation was similar to Australia when the white man landed. All the land was Government land, and excepting, partially, in one province, has remained Government land ever since. Thus, when forestry was started, the Government had a free hand; and forest demarcation was carried out in the most complete and thorough manner.

NEW "MUST" WRITTEN IN QUEBEC FIRE LAW

The Government of Quebec is about to pass legislation by which limit-holders refusing to join one of the four fire protection associations in the province will be compelled to provide adequate patrol on their lands or have the work done by the associations at owners' expense. This step bridges a very obvious gap in Quebec's fire prevention system inasmuch as certain limit-

holders declined to co-operate in fire guarding or establish a sufficient patrol on their own initiative. The consequences were that in and about the association's areas were blocks of forest offering a constant fire menace and interfering with the continuity and economy of patrol.

LIMIT HOLDERS TO EXPERIMENT WITH SLASH

As an organization unafraid of fresh ideas commend us to the Woodlands Section of the Canadian Pulp and Paper Association. No sooner was the Montreal Forest Conference closed than Secretary A. L. Dawe addressed the following to all the limit-holding companies:

What Are You Doing With Your Slash?

It has been realized for some time that cut-over lands are the greatest fire risk with which we have to deal and also that the decaying slash left on the ground is a breeding place for fungi and bark beetles which are working enormous damage in our woods. This damage is said to be almost as great as that from forest fires.

Try this for the balance of this winter and next season: You are requested to pick out one or two camps in your next winter's operations and try brush burning along the following lines:

Make a fire. A boy can be added to every two logging crews, who on going to work in the morning should start a small fire and the fellers should be instructed to fall the trees as nearly as possible so that the tops may come near the fire. As fast as the trees are swamped, that is the limbs cut off, a boy should gather up the branches and throw them on the fire. When the top is reached a man should help the boy place it on the fire and all should be burnt.

Watch the fire. The location of the fire, as far as possible, should be chosen so that no living trees or at least only a few small ones will be damaged. The fires do not need to be at all large for spruce and balsam as this burns very easily indeed.

Keep a note of the cost. The cost of this operation should be carefully kept and compared with the cost of making logs in similar territory in previous years, also if possible it would be interesting and very valuable to have the actual cost studied at some time during the operation,

so that the time it takes the men to haul and swamp a tree and the time that is employed in putting the brush on the fire.

What do we gain by this? A collection of results from a number of companies would give a very fair average cost of this sort of work. You are asked to give this a fair trial and to impress on your wood foremen that this is not a matter for jesting. You are all familiar enough with the attitude of the men in the woods to realize that unless the seriousness of this is impressed on the foreman, that they will make light of it and do all in their power to push the cost up as far as possible.

Checking up. By having a number of companies doing work along the same lines it will be very easy to pick out the men who have tried to do the work faithfully from those who have not. You are urged to give this brush burning a fair trial and to co-operate in every way possible to establish whether such is practical and economical or not.

Will you let me know that you are ready to help along in this work?

The Woodlands Section has already taken the lead in co-operative work. Let's go further."

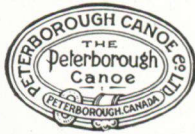
QUALITY OF SOIL IN TREE GROWING.

After depth and accessibility (or possible accessibility) the important point coming before the forest demarcator is quality of soil. I place quality of soil after depth and accessibility, because quality of soil is less important in forestry than in agriculture. To a great extent the forest will make and keep its soil; forest is naturally a soil improver, agriculture a soil exhauster. So that as regards forestry and agriculture, forest should occupy soil that is deep and penetrable by roots, but poor in an agricultural sense.—From "Australian Forestry."

Peterborough Canvas Covered and Wooden Canoes are built in all sizes and for all purposes. For Pleasure, Cruising, Trapping or Freighting.



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comfort to own an Arctic Robe.

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"Booklets Ready for Mailing."



CANADA THE MASTER OF ITS FORESTS

Our forests have a wealth-producing capacity, the possibilities of which, from a long-time viewpoint, have as yet been realized only in small part, observes the Commission of Conservation. To transmute these possibilities into permanent actualities requires, however, the general acceptance, by the people in general, and by Governments in particular, of the fundamental principle that the forest is a crop, rather than a mine, and that cutting operations on non-agricultural lands must be conducted always with a view to the perpetuation of the forest as such.

The practise of silviculture is still in its veriest infancy in Canada, as it is over most of North America. There is still far too strong a tendency toward the practise of forestry anywhere except in the woods. At the same time, it must always be realized that forestry is essentially a business proposition, and that business considerations place definite limitations upon what it is feasible to do in the direction of intensive methods.

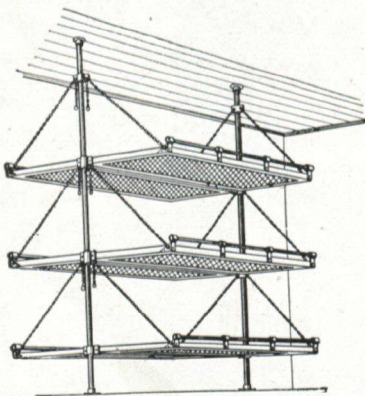
On the other hand, the forest lands of Canada are predominantly Crown lands and are therefore, for the most part, the property of the people of the country. It follows that the public interest, from a long-time viewpoint, should govern in determining the conditions under which exploitation takes place. With the present increased stumpage values, many things in the direction of better management are now becoming economically feasible which would have been out of the question in years past.

THE GARBAGE OF THE WOODS

"Slash is the garbage of the woods; and just as the city garbage must be destroyed to protect the health of the citizens, so should the forest garbage be burned for the protection of the trees. How can we expect the remaining timber to be healthy when each year we distribute throughout the province many square miles of this rubbish, the finest breeding ground for in-

sects and fungi that could possibly be conceived?

"As a preventive and insurance against insect and fungus troubles the slash should always be burned; but at this time, when slash burning will without any doubt go far toward checking the balsam disease in regions where it has only started, and in preventing its development in areas that have thus far remained healthy.



STEEL BUNKS FOR CAMPS

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PROF. MILLER AT YALE. --

Prof. R. B. Miller, recently of the University of New Brunswick's Department of Forestry, has been for some time acting as lecturer at Yale Forest School on Forest Management, and State Forest Law. In addition to these duties, Prof. Miller is engaging in special post-graduate studies.

In order to encourage slower eating and better mastication it is proposed to permit lumberjacks to talk at table. If they do, and the straw-boss will stick around, he will probably hear something to his disadvantage.—“The American Lumberman.”

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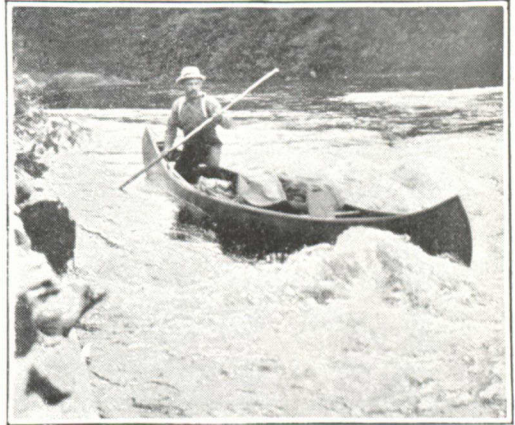
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REFOREST BARE HILLSIDES.

The scarcity of lumber for mine pillars and other mine uses has led to the creation of a forestry department by several of the large mining companies, one of which has just reforested Bear Creek watershed with 5,000 white pine, and 5,000 Norway spruce trees.

Thirty thousand more trees are in process of cultivation at Hauto, Pa., in the Panther Creek valley. When timber is ready to cut in the vicinity of the mines troublesome waits and long hauls will be eliminated.

More timber in the anthracite region would stop floods, add to the water supply, reduce the drought periods and enable the anthracite industry to add to its output. Many thousands of acres are available about the mines for reforestation.

"With regard to Trees, I passed part of my youth in the shade of Burnham Beeches, and have now the happiness of living amid my own 'green retreats'. I am not surprised that the ancients worshipped Trees. Lakes and Mountains, however glorious for a time, in time weary. Sylvan scenery never palls."—Letter from Lord Beaconsfield.

JACK MINER

(Continued from page 103)

that old leader goes right over them—now he has passed them. There I am under the blanket—possibly it is a sheet if there is a little snow on the ground—the three corners are tied down and I am underneath it, just hidden there, with a gun ready. And the leader swings around, and as he swings around he calls and starts to drop his big black feet to come down. But for some unaccountable reason he changes his notes and climbs into the air—everybody look out for himself; and the minute he changed his note they all darted in as many different directions as there were geese—it was the danger signal. What did he see? He didn't shy from the other fellows, but, he said, that fellow over there knocked out two of my family last year. Two and two make four—if the wild goose knows his enemy why wouldn't he know his friend?

The Neighbors' Boys.

I have only ten acres, people; how can I protect the geese? There are eight boys around the neighborhood, from five families. I said to them: If you won't shoot at the wild geese around here, I will see that you get a chance to shoot at one in the pond. That was in 1904. In 1905, 1906 and 1907 no wild geese came. In 1908, one morning eleven wild geese came, and they hadn't been there ten minutes before the boys came along with their guns. I said: "Boys, leave it entirely with me; don't shoot at them for a week or two". "But", they said, "you said we could shoot them"? I said, "Boys, if you don't get the opportunity to shoot a wild goose, I will give you ten dollars a piece, if you will let me manage it." They said: "We don't want your money"—of course they knew that I didn't have it. However, in about three weeks, we hoisted a signal, "Go on, boys!" We were behind the bank I had thrown up there.

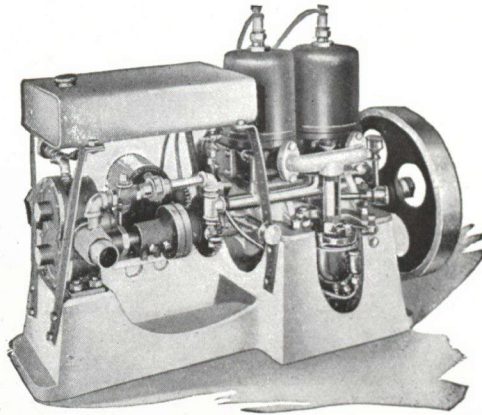
Uncle Jack was to shoot the two ganders. The boys lined up on one side and cocked their guns, and as they raised them, I made it my business to scare the geese so that the boys wouldn't shoot them. Bang! went their guns. The two ganders got away, but five geese lay dead in the water, one of each family. I asked the boys not to shoot the others. To my surprise and delight, the other six did not stay away until the time came for them to migrate. stay away two hours; they came back, and If you get one bird to come, there is your opportunity.

Moving Day in Birdland.

Next spring it was asked if the geese would come back. On March 18 I heard a strange honking and I looked up and saw that they were coming—32 of them. They came down within 100 feet of us, I walked out and they never flew away. I had the privilege of seeing them introduce their families. The boys shot ten, and that left 22 to go away. Next spring it was asked what time the geese would come back. They started to come on March 4, and in less than two weeks there were over 400 there. The boys shot 16 and let the rest go. Look how our flock of geese has multiplied; now we have a flock of over 350. They started coming on February 20, and when the first was whirling down I counted 175 shots at him between my home and Lake Erie. When the first was lighting in the pond, you couldn't see the end of the string of families that were coming.

Five Acres of Geese.

I don't know whether you have experienced it, but I have: there is nothing more embarrassing than to have more guests than you can feed. There I was, on Good Friday of 1913, with a five-acre field full of geese. We couldn't begin to feed them. Some of the geese must have told their friends what was not true, and induced them to come to a place where there



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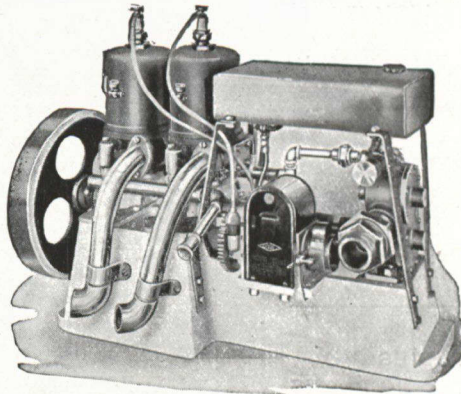
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was not enough to eat. We brought the feed close to the house and let the tamer ones come there to eat. I was speaking at the Rotary Club in London the other day, and one gentleman asked me how I moved the birds. This was my explanation to him: If you want to move your birds, keep moving the food accordingly, and pretty soon you can put the spoon in your mouth and the birds will alight on it.

I will tell you about one family, one of a dozen interesting cases last autumn. On October 10, six geese came. By the way, we never had over 150 in the autumn. Which way do they come in the autumn. I went out and called to these six geese, and the old gander answered. He knew me. I got twelve ears of corn, and threw one of them at him. Just as I did so the four baby geese jumped into the air, but he called them and they dropped down. Then I threw more ears of corn, and each time the same thing would happen; he would sound that low note, and every time he did so the geese would come down. By the time I had thrown the eighth ear he had convinced them that all was well, and they didn't fly up any more. It was interesting to watch him trying to educate them to take the kernels of corn off the ear, but it was strange to them. He would get a kernel off and drop it down, but it was fully fifteen minutes before he got those goslings to take the corn; when they did start they cleaned off every kernel of the twelve ears. That told me these young goslings have never seen an ear of corn before, and that they had come all the way from Hudson Bay without a mouthful and dropped down there. The old gander had led them all the way down.

Why "Canada Goose"?

My wife and I coaxed this old gander and his five goslings into the coop and she held the door while I went in and clamped a tag on his leg. After I tagged him I took him to the door and threw him out—this same old gander that had been telling his girls and boys to eat the corn and to stay there and not be afraid. When I threw the gander out, did he fly to the lake? To know the Canada goose is to love him forever, and if there is any person in Ottawa who can tell me how that most intelligent, self-sacrificing bird came to be honored by being called the Canada goose, I wish he would write me. You cannot show me any of his actions that one need be ashamed of, not one.

To resume my story. This old gander went out, and when he was about two rods away he turned around and looked back. You could hear him calling for the rest of his family in that little catch pen. Mrs. Miner at this time would rather have been on the inside looking out than on the outside looking in, because, as I was catching number two, the gander came right back to the door and tried to break in and get at me. We are talking about the same bird that I tried to get a shot at three fields away; here he is now fighting to get at me to protect his young—trying to get his young out. He didn't leave that door until every one of his family had been liberated; he stood right there and fought for them. We caught him the second time, put a cuff on each leg and named him "Sir John Moore". We put on the tag this verse of Scripture:

"No good thing will He withhold from them that walk uprightly".

They migrated as usual, and on March 17 following, the boys said, "Look! Dad," and there was old Sir John Moore looking for more corn, with the two cuffs on his legs. Five of his family had returned; he had taken care of them down in the southern states all winter, and brought them back. The last week in April they disappeared, and my heart sank when I opened a letter from Fort George, James Bay, and found four of the tags. The letter read: "The Indian says that seven geese came into their decoys, and they killed four of them; each one had a tag on it". You know just how I would feel, although that is part of the game. To the fellow who wants to shoot let me say this: I am not opposed to a man shooting a bird or two, but will you not join with us in limiting your gun? Remember, that bird that falls out of the air from your deadly aim gives you and me a little pleasure, but deprives thousands of people of pleasure and recreation in seeing it alive. Let us consider that; let us think it over.

Delilah raised during the six seasons, five families, two of eight and two of nine, and this year she came home with twelve. What does game protection mean? Protect the old duck, and you can quickly figure out what the total increase in six years will be. Delilah returned for the sixth time and she raised these five families. I haven't seen her since August.

The Drake's Bad Character.

The Canada goose is the most faithful and self-sacrificing bird on earth. I kept one for

four years, and I know. I kept old Jack Johnson for two years and a half, but I got rid of him. I wouldn't keep a wild goose or a gander around the premises after he had lost his sweetheart; they just keep on honking in that sad way. But the poorest-principled piece of live flesh in feathers is th' drake; he is nothing but a Brigham Young, that's all. Puts me in mind of the mother who has to be father and mother both, like some poor washwoman who goes out and does \$5 worth of work and willingly accepts 50 cents for it; then takes it home to feed her family, while the lazy, good-for-nothing husband is putting in his time in the far end of nowhere, swapping garbage stories and passing remarks about the clean people that pass the dirty window. That is the principle of the drake.

MONEY FROM STUMPS.

The Washington Legislature is being asked, through the Spokane Chamber of Commerce, to establish a by-product plant, to be used for the extraction of turpentine, resin, etc., from the stumps, fallen timber and such stuff lying throughout the state. It is expected that the lumbermen of Idaho will also endeavor to have such a plan adopted by their State Legislature.

NOVA SCOTIA'S GAIN.

That the business welfare of Nova Scotia calls for the appointment of a Provincial Forester, is a truth that has had many exponents. Mr. D. Macgillivray, President of the Halifax Board of Trade, said recently in his annual address:

"In the transition from war conditions to those of peace, Nova Scotia will have less to reconstruct, or even to readjust, than probably any other portion of Canada. This strong economic position will justify progressive policy on the part of both Government and municipalities. There is a point where caution and economy may become reactionary. The Government should match its progressive policy in agriculture by at once appointing a first class forester to make the most of our timber resources."

The tallest trees of the United States are the California redwoods or the Douglas fir. Both claim the distinction of being the tallest, and it is an even match between them. A maximum of about 350 feet is the greatest, though a little more than that has been claimed. There is no question that in trunk diameter the redwood, that species known as sequoia, is the champion.

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