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CANADIAN FORESTRY

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MAGAZINE



LOOKING FROM THE INTERNATIONAL SCOTT HIGHWAY ON THE PIGEON RAPIDS, MIDDLE FALLS, PIGEON RIVER, ONT. (Photo by Courtesy Mr. A. Anrep.)

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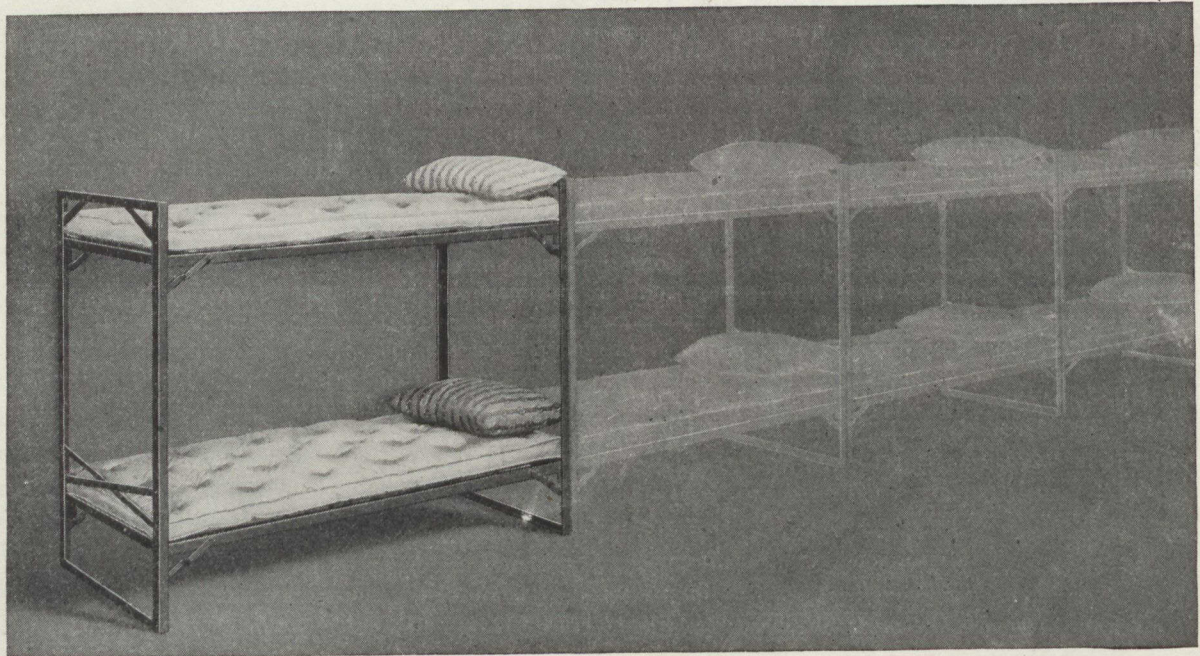


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THE
ILLUSTRATED
**CANADIAN
FORESTRY
MAGAZINE**



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No. 2.

Forest Fires the Plague of the Fur Trade

Enormous Trade Losses Caused to Marten, Fox, Fisher, Ermine and Lynx, unable to take Refuge in Water.

An Article by Five Experts

To our readers: This article was prepared at the request of the Canadian Forestry Magazine, by one of the great fur-trading companies of Canada. It is a compilation of opinions of five experts whose duties bring them close to the wild life of the woods.—Editor.

CONSERVATION of the country's resources is a subject that has been widely discussed. Legislation has been enacted by all provincial governments in the form of closed seasons for fur-bearing animals, with a view to perpetuating the fur trade, but in this connection little has been said of a menace more destructive to animal life than the indiscriminate trapper—the depredations of forest fires.

Forest fires have a disastrous effect on fur-bearing animals, and, unless extensive preventive measures are taken, the great destruction of fur-bearing animals which has occurred in the last several years will seriously reduce their numbers.

Northern Ontario Suffers.

Fur returns of recent years indicate that there are many districts of Northern Ontario almost entirely devoid of those animals that suffer as a result of bush fires. Indeed, were it not for the fur trade derived from such animals as beaver, otter, mink, musquash and bear, which either practically live in the water, or find shelter there while the fires pass over, it is questionable whether the fur trade would endure in those districts.

The onus of responsibility for this destructive agency can be laid directly to the advance of civilization, the carelessness of the white man in handling fires. His senseless slaughter of the buffalo does not appear more serious than his thoughtless disregard for life, either human or



A novel bit of wild life photography, by Mr. Charles Camsell, Deputy Minister of Mines, Ottawa. Mr. Camsell was travelling to Great Slave Lake by gasoline boat and canoe. The latter carried gasoline and the other supplies. When about midstream of Slave River, the canoe got adrift. About the same moment Mr. Camsell espied a lynx swimming directly in the canoe's path. It boldly climbed aboard, rested a while on the boxes and then resumed its journey to shore.

animal, when a camp fire is left unquenched, or a clearing fire is allowed to get out of control.

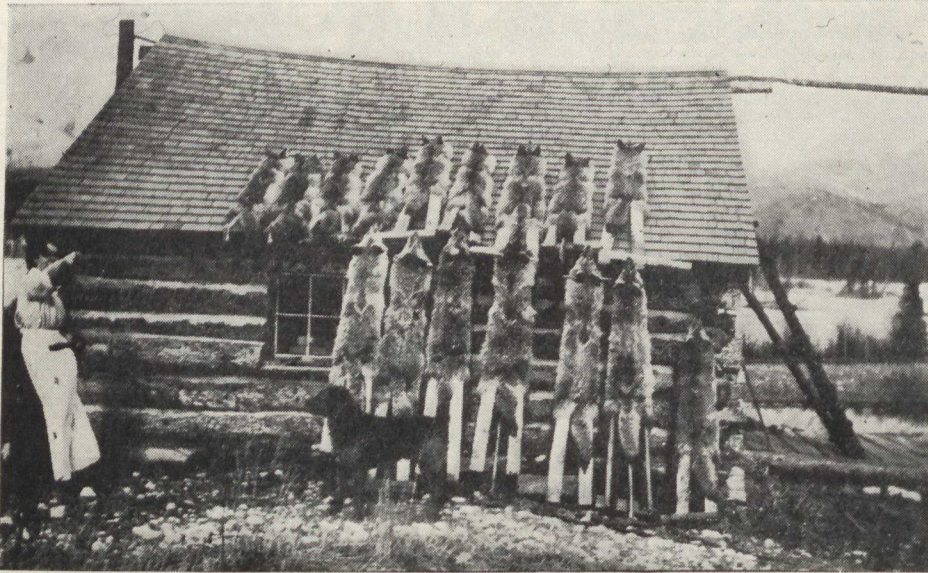
The importance of the fur trade to Canada should not be under-estimated. It is to Canada that the world turns for a large part of its supply of furs. The fur production of the Province of Saskatchewan alone during the season 1919-1920 at present valuation amounted to over \$2,000,000.00.

Who Benefits by the Fur Trade.

Thousands of Canadians rely on fur-bearing animals for a livelihood. Both Indians and white men do the trapping and thereby earn a living. The various provincial governments impose royalties on fur-bearing animals caught and thereby receive a revenue. Thousands of traders deal in the skins of such animals

and thereby add to the wage-earning population of Canada, and finally thousands of furriers are engaged in the tanning, dressing and making up the skins, with the result that a good proportion of the Canadian population is directly dependent on the supply of fur-bearing animals for a living. It is a common complaint of the Indian that fires have crossed his "marten," or hunting grounds, with the consequent destruction of all such game as marten, fisher, fox, ermine, and lynx. This necessitates a "change of venue" for his activities, or the confining of his attention to the trapping of beaver, otter, etc., thereby reducing the numbers of these animals more rapidly.

In the country's wild state forest fires were rare. When a fire did occur it was caused by electrical storms. The Indian knew too well the effect of fires on his



The harvest of the fur trade; the cabin of Warden Biggs at Pocahontas, Jasper Park, showing some of his winter's catch.

source of livelihood to handle fire carelessly. Protection of the forest to him was as natural as the protection of the barn in which his harvest and stock are kept is to the settler of to-day.

A forest fire may start in a dry place on the river or lake bank. The dry ridge probably extends back to higher ground that offers most suitable kindling possibilities and soon the whole high part of that section is a seething mass of flames, leaving only the marshy or wet spots untouched. The process has gone on year after year until to-day instead of a vast wooded country we find many large areas burned over.

Marten Casualties.

The natural food of the fur-bearer has suffered in consequence and many marten, particularly, have been burned because when fire starts marten do not try to run away from it but climb the trees and are burned.

It has been pointed out that the "water" animals are not often destroyed by forest fires, but the fact should not be overlooked that they nevertheless do suffer to some extent. Beaver, for example are deprived of their natural food, the inner barks of the birch and poplar trees, and they are forced to migrate, while the others are affected in a greater or less degree.

It is true of course that animals return, after a few years, to the country that has been burnt over, but it takes many years for a section over which a fire has passed to again produce fur in the same quantity and quality. The quality of the fur is greatly impaired where an animal spends much of its time in a country that is lightly timbered. The colour of the fur becomes faded, hence the decline in value.

What Makes Good Furs.

The northern part of British Columbia has produced perhaps the best class of furs, generally speaking, that is found in any part of North America, the main reason being on account of its wealth of timber and abundance of food. Timber produces the color, while an abundance of food produces healthy fur of a fine, glossy texture.

The southern coastal districts of British Columbia do not suffer from the effect of forest fires nearly as much as do the northern and central parts because of a more humid climate, causing fires, when started, to be limited in extent and the rapid growth of vegetation quickly correcting the damage that was done.

Small animals such as ermine, marten, mink, and fisher get their food in early winter from underneath the snow where



A Civil engineer without a college degree; our Canadian Beaver. This animal has escaped the effects of forest fires, although fox, marten, fisher and ermine have suffered disastrously.

mice and other small rodents abound. About March, most of the food which marten have depended on is consumed, making it necessary to migrate to pastures new. By this time the snow is hard on top and migration is easy. During this migration or shifting of the feeding ground, the trapper has his harvest, as at this time, the animals are hungry and easily attracted by bait into a trap.

Much good has been done by forestry departments in recent years through educational campaigns for the protection of the forests. It would seem that an additional crusade on behalf of the fur trade and the lives of the numerous inhabitants interested in it might appeal more intimately to some men who ignore other warnings, and result in greater individual effort being put forth to guard against far-reaching fires resulting from their neglect.

CANADA NOW HAS 587 FUR FARMS

"Fur Farms," just issued by the Dominion Bureau of Statistics, show that there were, in 1920, no less than 587 of these establishments distributed throughout the nine provinces and the Yukon Territory.

The total value of the animals was \$4,722,995.

The total value of fur-bearing animals sold from these fur farms last year was \$763,221.

Live foxes imported into Canada during the fiscal year ended March 31, 1921, was 69, valued at \$21,740. The number of live foxes exported in the same period was 1,070, valued at \$227,182.

LUMBERMEN A GREAT FACTOR IN EMPLOYMENT.

Speaking at the Annual Meeting of the Canadian Lumbermen's Association at Toronto, President, D. McLachlin declared that the year 1921 marked a more unsettled state than the five years of war. Mr. McLachlin quoted statistics showing a total of 3,410 lumber establishments in Canada representing a capital investment of 231 million dollars and a pay roll of more than 60 million dollars divided among 60 thousand men. The value of the products of these concerns totalled 220 million dollars in 1919. The membership in the Canadian Lumbermen's Association had risen to 181 compared with 173 a year ago.

The continued progress of the Canadian Lumbermen's Association is due in a very large degree to the intelligent executive direction and great energy displayed by Mr. Frank Hawkins, who for many years has been Secretary.

Ontario's Forests as a Continuous Crop

The Prime Minister of Ontario Tells of Ontario's Plans to Maintain the Forest Supply.

Honorable E. C. Drury, Prime Minister of Ontario, whose personal concern for the advancement of forest conservation dates back many years before his assumption of political office, addressed one of the largest audiences yet assembled at annual meetings of the Canadian Forestry Association, at the King Edward Hotel, Toronto, January 10th. Mr. Drury was given a rousing welcome and was listened to with deep attention.

Reproduction and preservation must be the main features of forestry policies in the future. The Premier remarked that the "man in the street," when discussing the forestry situation of the Province and Dominion, is too often apt to lose sight of the fact that "trees grow," and that crops can be grown to supply the lumber industry in the same way that crops of wheat are grown to meet other needs.

The problem was, therefore, to encourage such reproduction as would meet the necessities of the future. He insisted on the need of creating an intelligent public opinion in the matter, and also emphasized the importance of doing away with needless waste from fire and other sources.

Neither Difficult nor Costly.

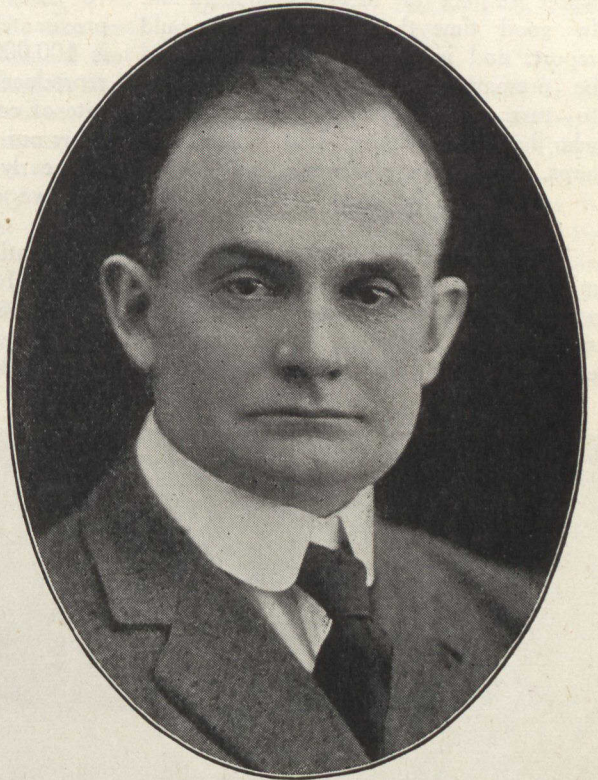
Describing what has already been done to cope with the growing scarcity of our pine and other trees, and outlining the future proposals which his Government has in view, he showed that the task of making the future secure so as to ensure that lumber requirements of the country can be met, is neither so difficult nor so costly as would at first seem to be the case. He mentioned a plan which the Government has under consideration to set aside certain areas, which are of no value for agriculture, for the purposes of reforestation. By replanting 10,000 acres a year in one of these areas it would be possible to supply at the end of 60 years no less than 400,000,000 board feet per year, which is much in excess of the present annual requirements. The annual expenditure upon this would be about \$200,000.

The Premier also hinted at planting along highways, and providing shelter belts; and also spoke of doing something toward maintaining "the farm woodlot." In this latter connection he pointed to the growing scarcity of coal on this continent, and showed the value of the farm woodlot, and similar methods of afforestation in meeting the fuel problem.

Needs Intelligence and Enthusiasm.

"If anything is needed more than another it is an intelligent and enthusiastic interest in the administration, preservation and perpetuation of forest resources. Public opinion has been very slow in moving. Years ago we should have taken up the work where we find it now. But for years, apparently, we looked upon our forests as a thing inexhaustible in extent and needing no care but the care of the Government, but the time has now come when the citizens of Canada, who have any care for the future, or who have a thought for our industries and our revenues, and our condition in the years to come, must rouse themselves and take an active and intelligent interest in the affairs of the forests of the country."

Premier Drury admitted that he, per-



Honorable E. C. Drury.
Picture by courtesy of "Everywoman's World."

haps, approached the subject with some diffidence, as his Government had not been altogether free from blame or criticism. He, however, reminded the delegates that the Government had had a very useful, painstaking and thorough commission at work inquiring into the



The adornment of Trees, a great asset of Rural Ontario.

whole subject of forest administration. In good time that commission would report, and in the meanwhile it would be premature, and perhaps improper, to turn things upside down. Those who had been patient had better, perhaps, pray for increased patience.

Pine Forests Nearing End.

"The most alarming thing," the Premier proceeded, "is that we are getting within sight—within very unpleasant sight—of the end of our virgin pine forests. I find that we have during the past

10 years an annual cut of pine of approximately 350,000,000 feet; that that is 100,000,000 feet more than is being reproduced by annual growth, and at that rate of consumption within 25, 30 or 35 years our virgin pine forests will, perhaps, be nearly exhausted. It is unthinkable that we can restrict the output of our forests. There is only one way to meet the situation, and that is by such provision for the future in the line of production, in the line of propagation, and in the line of taking care of the wastage; and when we come to look at it along those lines we

find things are not quite so hopeless as they would appear to be, because the thing the man in the street loses sight of is the very simple fact that trees grow. The average citizen in this country does not yet realize that trees are things that grow; that crops of them can be grown just the same as a crop of wheat, and the intelligent way to administer a forest area is not to set aside and hold out of the market great areas, but to provide such methods of reproduction as will take care of the needs of the country. Along that line something must be done."

To Take Stock of Resources.

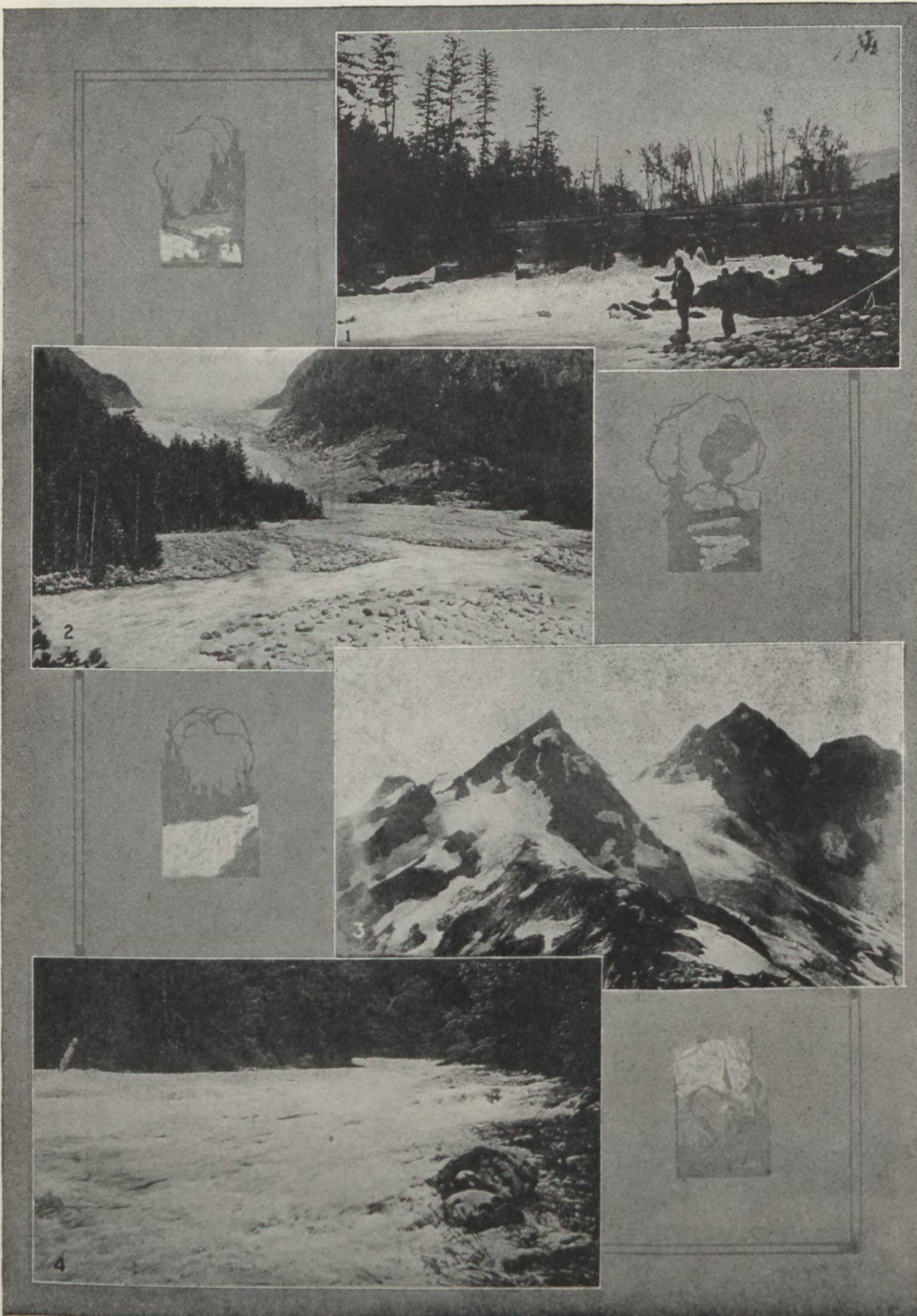
Declaring that the first thing to be done was to take stock of our resources and to find out where we were, Premier Drury outlined some of the things which had been done and some of the plans which were in contemplation by the Government, referring especially to the lower forest district of the Province—the area south of the French River, and between Georgian Bay and the Ottawa River, which was perhaps the best of the forest lands for reproductive purposes. A plan had been proposed to put that upon an improved system of administration, and to provide for reforestation for the production of pine timber.

Referring to fire protection, he pointed out that the forest areas of Ontario comprise approximately 100,000,000 acres, which are exposed to the fire menace in thousands of places from the tourist, the prospector, the hunter and the lumberman. He thought the steps which had been taken in the matter of fire protection had produced results, this being shown by the lack of serious fires in the very dry season of last year. The advertising campaign had also, he thought, been fruitful of good results. More, however, required to be done, and he suggested that they might have to adopt seaplane scouting, as well as keeping fire rangers permanently employed, utilizing them as cullers and scalers in the winter, and by this permanency insuring an efficient staff.

Value of the Farm Woodlot.

"When it comes to the problem of reforestation," said the Premier, "there is the real answer to the whole of the forest problem. There is the answer, it seems to me, to a continual and everlasting supply of timber."

In connection with this subject he dealt with the farm woodlot, pointing out that it was estimated that at the end of a hundred years we should be getting to the end of our coal measures, and remarking that we must not lose sight of the fact that we could help ourselves in the vital matter of fuel by growing fuel trees. He favored legislation for exempting farm woodlots from assessment and taxation.



BRITISH COLUMBIA SCENES.

1. Adams River Lumber Co's. Dam.
2. Ice River. Glacier—Many of the Rivers entering the inlets have their source in glaciers.
3. Mountains and Glaciers, Janes Lake Watershed.
4. Kiltuish River, Gardner Canal. Very typical of many of the coastal streams, as they course through the narrower valleys.

The Premier also referred to the areas which ought to be administered as municipal forests, and to the legislation passed last session to deal with this matter. He spoke of what had already been started in connection with this project, notably in the county of Simcoe, but said that it was not much use for Governments to legislate unless the people and the municipalities were enthused into creating an asset for posterity. The Premier said he did not know whether they should not even go as far as planting along highways and planting shelter belts.

Plan for Planting.

Speaking once again of the region south of the French River and between Georgian Bay and the Ottawa River the Premier said the Government had under consideration a plan to plant several square miles a year. It would be necessary to provide forest nurseries, but the matter had been gone into by the department,

and he found it was not so difficult or so costly as he had expected. The men engaged by the Government estimated that if 10,000 acres a year were planted, dividing it into four or five sections, and handling it from different nursery sections, the Province would have sufficient coming in at the end of sixty years to supply 400,000,000 board feet of lumber per year, or about 50,000,000 more than the present annual cut. The annual expenditure would be about \$200,000, and he showed how this could be financed from the revenues from the timber resources of the Province.

The time had come when the Province must look to secure a maximum production from the timber lands as well as a maximum production from the agricultural lands, for there was not so very much difference between the two things. That was the forward policy he hoped to see carried out.

QUICK GROWN TREES FOR THE PRAIRIES.

Many of the species which can be used on the prairies are very rapid growers, for example, cottonwood, willow, Russian poplar, and Manitoba maple. It is safe to say that wood large enough for fuel can be grown from any of these trees within six years. After that time a plantation will increase in value and productivity year by year and will prove one of the best investments on the farm.—Norman M. Ross, Indian Head Forest Nursery Station.

and burns the remaining "slash" to reduce the fire-hazard and leave the forest in shape for growing a new crop. It means also seeding and planting in certain cases. While much remains to be done, the advance from the old methods of unregulated logging has been very great, and the outlook is most encouraging.

Progress in sound forestry practice can be secured only as it is supported by educated public opinion and the advance of technical knowledge; and the work of informing the public and securing of technical information is an important function of the Dominion Forest Service. This work falls into the main lines of stock-taking of the forests; securing of statistics as to the manufacturer and consumption of forest products; the improvement of utilization methods through the work of the Forest Products Laboratories of Canada; and of research stations."

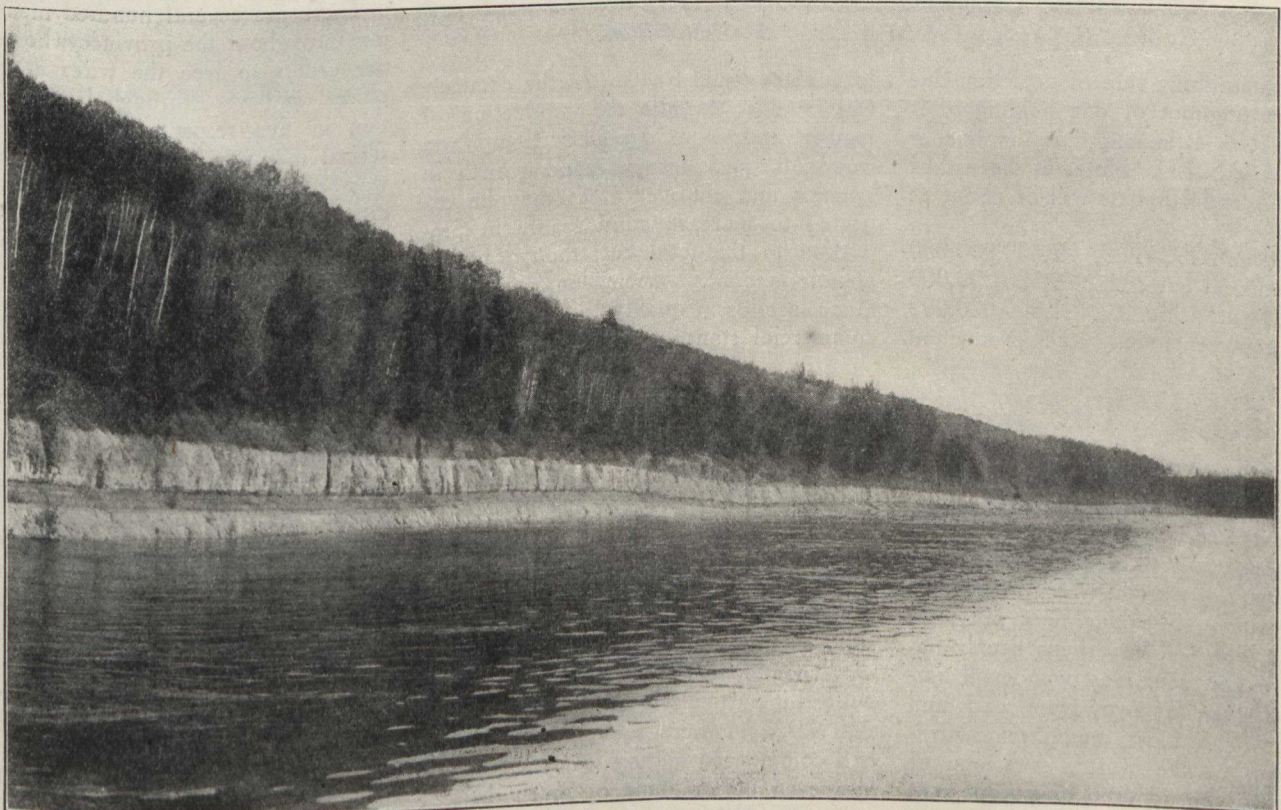
The Dominion National Forests

By T. W. Dwight, Assistant Director of Forestry.

In an address presented before the Canadian Society of Forest Engineers and the Society of American Foresters, at Toronto.

"The Dominion national forests in the Prairie Provinces and British Columbia are protected and managed for the use of the people. The aim of the Forestry Branch is to provide from year to year as much fuel and building timber as pos-

sible for the settlers on the agricultural lands surrounding the reserves and at the same time to increase the stock of the better classes of timber till the area has reached its maximum of production. This means in addition to protection from fire and insect damage, closely supervised logging, under a system of permits and small sales, whereby the operator cuts mature and over-mature timber, takes out every part of the tree that can be utilized,



An interesting scene below Fort McMurray on the Athabasca River.

THE PROGRESS OF DEPLETION IN THE UNITED STATES

822—MILLION ACRES—ORIGINAL FOREST AREA

137—MILLION ACRES PRESENT AREA VIRGIN TIMBER

26—BILLION CU. FEET—ANNUAL CUT AND DESTRUCTION

6—BILLION CU. FEET ANNUAL GROWTH

Present and Future Consumption of Lumber in U. S.

By Wm. B. Greeley, Chief Forester of the United States.

The average annual per capita consumption of lumber in the Lake States is probably not far from the average for the whole country—300 feet. Assuming a 12 per cent increase in population since 1910 (the increase for the previous decade was at the rate of 14.06 per cent), the present population of the Lake States is about 8,000,000. The total annual consumption of lumber in the three States is thus about 2,426,000,000 board feet, or 70 per cent of the lumber produced.

Comparison with the estimates of future cut above given indicates that by 1925 the local consumption will be equal to the local production, assuming no increase in population and the same per capita rate of consumption. At the end of a

decade, allowing for a 10 per cent increase in population, consumption will exceed cut by nearly 50 per cent. In other words, the per capita consumption must either fall from 300 to nearly 200 board feet per year or the Lake States must import nearly one-third of the lumber needed for home use. With each succeeding year the discrepancy between consumption and local supply will become greater. Much western fir and pine lumber is already being consumed in the Lake States, and as the local cut decreases they will depend more and more upon the far West. While an actual lumber shortage may not, therefore, be anticipated as long as the western stands hold out, the lack of a local supply will be felt in increased prices.

tounded to think that this practice of destroying the timber resources of the country could be allowed to continue and that even the Ministers appeared to be blind to the calamity of the future.

WE'LL ALL APPLAUD THIS:

Believing it to be of the utmost importance that Canadian shade trees should be saved from mutilation, the Ontario Department of Highways is carrying on an educational campaign among the wire companies in the province. Recently H. J. Moore, Highways Forester, addressed some 60 foremen and supervisors of the Bell Telephone Company in the company's auditorium in Toronto, and with lantern slides, showed the function of the trees and how they might be pruned to the best advantage.

There are several hundred men working throughout the province who are under orders to free the wires at various places, and who, through lack of education in this respect, have unwittingly ruined many fine maples. The meeting was arranged by R. A. Choquette, superintendent of construction of the western division of the Bell Telephone Company.

The Life of the Lumber Industry

By Wm. B. Greeley, Chief Forester of the United States.

At a diminishing rate of depletion due to the cutting out of one holding after another, it is estimated that the lumber cut of the U.S. Lake States at the end of the next 5 and 10 years will be about as follows:—

Estimated cut, 1925.....	2,400,000,000
Present annual cut.....	3,500,000,000
Estimated cut, 1930.....	1,800,000,000

This represents only the production

from commercial tracts. As the commercial stands dwindle the production of lumber and other products from farm wood-lots and from second growth in swamps and cut-over areas may be expected to increase considerably in proportion to the total cut, though not in actual amount. Such lumber will be much inferior in quality to that from the commercial stands.

TRIBUTE TO THE TREE PLANTING CAR.

From: O. W. Colley, Secretary,
Castor Board of Trade,

To the Canadian Forestry Association: "I am reminded this evening in looking through my correspondence that as Secretary of the Board of Trade of Castor I have failed to thank you for sending the Tree Planting Car to Castor, August 18th. The event was well advertised and Mr. Mitchell had a splendid crowd all interested from the beginning. There must have been over 50 who could not find room in the car. Mr. Mitchell is doing splendid work, ever helpful and willing to lend a hand to beautify the town and community.

The Warning of Australia

The unnecessary destruction of large areas of forest in Australia is severely commented upon by Dr. Arnold Heim, a Swiss scientist and president of the Geological Society of Zurich, who is at present in Melbourne. Speaking to a press reporter he said. "I have been deeply impressed to find your most wonderful timber ruined even far away from roads and railways. The most magnificent hardwood trees of the world, each one of which would be admired in Europe and looked on as a little fortune, are shame-

lessly ringbarked, killed, and fired. This rough method might be justified for a new settlement on timbered country to prepare land for intense culture, but here it is continued in order to provide more grass for cattle and sheep." "The results of this policy were already apparent," continued the Doctor, and he had noticed it particularly north of Murrurundi (N.S.W.) where square miles of soil had commenced gliding towards the valleys even at an angle of seven degrees only. Dr. Heim expressed himself as as-

Reclothing the Prairies With Trees

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

Would the Prairie ever naturally become covered with trees? Yes, without any doubt; and there is abundance of evidence to show that the process is going on before our very eyes.

When white men first came to the western plains, practically the whole of Western and Southern Manitoba was open prairie and so was Southeast Saskatchewan. There are still plenty of people living who will tell you that west of Brandon, forty years ago, except for the river bottoms and the coulees there were no trees on the Prairie. Now you have to come clear west to Pilot Butte ten miles east of Regina, a distance of some two hundred miles, before you are out of the bluffy country.

This summer we met Mr. H. J. Moberley, the well-known old Hudson Bay pioneer, who told us that sixty years ago you had only to go a few miles south of Edmonton and Fort-a-la-Corne before you struck the open Prairie. Now you go south nearly 170 miles before you see the last of the native bush. Twenty years ago, the first bushes as you drove north from Calgary, were met between Carstairs and Didsbury. Now you find them twenty miles further south.

Indeed, in all the country mentioned, you have only to look at the trees to see how very modern most of the bush is. Tree sizes run from about twenty to forty years old and the smaller stuff, the brush, from that down.

Timber Spreading South.

All along the northern fringe of the Prairie there has been a notable spread southward of the native bush in the last twelve or thirteen years, a spread in some cases of close to 100 miles. Not that this country has become totally covered with bush for it has not, but the native trees are now found on very many of the farms as far south as the line indicated.

This summer the Tree Planting Car of the Canadian Forestry Association passed over hundreds of miles where, at the side of the track as well as out in the fields, we saw many thousands of little patches as well as individual trees of native aspen poplar where twelve or thirteen years ago, to our own personal knowledge, there was not a bush to be seen.

Without any doubt, the Prairie is gradually being overtaken by the forest, and that too, in spite of a series of some of the driest years ever experienced in the west.



A Naseby, Saskatchewan, farmer who planted a shelter belt and now reaps his profits in a flourishing vegetable garden.

The "Why" of Bare Prairies.

Why is it? What has taken place so markedly in these recent years that could have any bearing on the matter? A more generous supply of rain has always been given as the reason for the North and East being tree covered and the South and West, bare, but in the last few years the whole country has been drier than ever before. The only real difference has been in the presence of the people living on the Prairie, and that is where we find the answer to the question. After they came, the fires were promptly put down and any little tree or patch of trees that showed any indication of rearing its head above the grass, was allowed to do so, and did not get burned off as had always happened before. Fire is the "Why" of the Prairie and there is little reason to doubt that practically its whole expanse might have been entirely covered with trees long ago but for the fires that were started by lightning and the Indians, and allowed to run unchecked except from natural causes before the coming of the white man.

The spread of the forest Prairie-wards is a slow, a very slow, process that depends on a rather rare triple combination of circumstances. The forest is north and east of the Prairie and as the prevailing winds are west and south west, and, as the spread of the trees depends on seed in the first place, it will readily be seen at the time the poplar seed (for it is practically all Aspen Poplar) is ready to blow, there must be a change of the wind right round from its prevailing direction, and it must blow practically the opposite way at the exact time the seed is ripe.

Add to this the fact that poplar seed loses its vitality very quickly after it is shed unless it soon reaches moist soil, and that the normal condition of the surface of the Prairie ground is dry, and it will be seen that a very unusual triple combination of circumstances must be set up before trees can spread on to the Prairie. The prevailing winds must switch practically right round at the exact time the seed is blowing, and there must be a period of rain either just before or after, for the soil to be in the right condition for germination to take place. A very unusual combination of happenings, but which does develop sometimes, and so we have the forest rapidly, as natural processes go, overtaking the prairie.

A very small proportion of the seed ever gives rise to seedlings and the little forest advance post rarely consists of more than a single tree at first. But the roots soon spread and send up suckers and before many years there is a dense mass of young trees which may in time become the nucleus of further seed spread.

The borders of sloughs are favorite starting places, but you never see the suckers spread towards the water. They are always away from it and towards the dry land. And it must not be understood that slough borders are the only starting places for they are often out on the dry land with not a slough for miles.

At the extreme west of the Prairie, close to the mountains, tree-spread has been much slower than anywhere else, and the cause is not far to seek. There is plenty of poplar in the foot hills to produce the seed and there is usually plenty of wind to carry it and in the right direction too, but rain rarely comes from the

west and the ground is seldom in proper condition at seed-blowing time for germination to take place.

When rain does come at the right time the surface of the ground is so soon dried by the wind that the seed very seldom gets a chance to start.

It sometimes does though, as witness the little bluff on the side of the old Waldron trail about ten miles west of Macleod, now ten or twelve feet high, where twenty years ago there was not the sign of a bush. It is interesting to note this bluff is protected from Prairie fires by a precipitous cut-bank rising from the river 200 feet on the one side, and a broad road on the other.

It is interesting too to see how the so-called hills of the Prairie, the Coteau, The Bad Hills, Bear Hills, etc., are all helping along the movement, for among nearly all of these are to be found little patches of trees which are forming the centres from which further tree-spread will take place. These hills are really old moraines, the resting places of the glaciers ages ago, and when you get up on the top of them a few miles from the edge "up on the bench" you find you are just level Prairie again similar to what you left behind you, only you are now 100 to 200 feet higher and on another Prairie Steppe. The rough ground around the margin of this upper plateau—the hills so-called—is usually full of hills and valleys, with here and there springs and sloughs and an odd creek running a few months in the summer, and it is here, in these moist spots the poplar seed has often been found suitable ground for germination. Snow drifts collect along the edges of these coulees and every year in the spring and fall, the Prairie fire time, for generations these have presented a protective wall of snow between the trees and the fires. The melting of this snow has no doubt in many cases been an important factor in both the germination and the growing of the trees afterwards. Striking instances of this are to be seen on the main line of the C.P.R., on the south side, just west of Beverley, and about ten miles west of Swift Current. There is another fine example a few miles east of Sidewood.

Hills Fail to Protect.

Our Tree Planting Car passed several times this summer through these old moraines, and in every case the spread of the trees was very striking. Only in one case was it absent and that was on the Assiniboia line going towards S.W. Saskatchewan. There we saw no native trees though there were lakes and springs sometimes too. But the hills were all rounded, with no steep places to catch the protecting snow-drifts and Prairie fires had all the chance they wanted to burn over them. There were thus, as far as we could see

THE TEN COMMANDMENTS OF THE PRAIRIE SHELTER BELT

By Archibald Mitchell

- 1.—*Thou shalt not neglect thy duty toward thy Home, thy Wife and thy Children, thy Live Stock, thy Garden, thy Farm and thy Country; Thou shalt plant a Shelter Belt of trees.*
- 2.—*Thou shalt not forget to plan it large enough to enclose and shelter from six to ten acres.*
- 3.—*Thou shalt remember that success in tree growing depends upon moisture.*
- 4.—*Thou shalt also remember that there is enough moisture every year in the ground to grow trees but that the greater portion of it is lost through the action of the sun and wind.*
- 5.—*Thou shalt therefore plant the trees 4 x 4 ft. apart so that the branches may meet as soon as possible and shade the ground and so protect the moisture, and the main belts from four to six rods wide so that the drying winds may not enter but be compelled to pass over the tops of the trees.*
- 6.—*In preparing land for planting thou shalt summer fallow it well the year before it is planted, or break, backset, plow deep and cultivate two years before.*
- 7.—*Thou shalt use small plants, cuttings or trees only 12 to 24 inches high.*
- 8.—*Thou shalt plant alternate rows of Manitoba Maple and Russian Poplar, with Ash or Elm as every fourth tree of the Maple rows so that thy plantation may grow tall and bushy and require no further labour after the second year.*
(A row of Caragana on the outside is an advantage.)
- 9.—*Thou shalt carefully cultivate thy trees one year or two years to preserve the moisture, after which thou shalt cover the ground with a permanent mulch of straw or manure at least one foot deep.*
- 10.—*Thou shalt do all in thy power to encourage thy neighbour by example and precept to fulfill his duty in this same respect so that thou, thy neighbours, and the stranger who may visit thee may know it is a goodly land and a pleasant one to dwell in, and so shalt thou and thy children be happy, prosperous, and contented.*



How is this for fruit growing on the Canadian prairies? Photograph shows a plum tree, "mammoth" variety, heavily fruited. It grows at Indian Head, Sask., and was made possible by shelter belts.

no parent bluffs preserved from old fires to serve as nuclei for new forest spread. The difference as seen from the railway was very remarkable.

The spread westwards of the trees has met with a decided check in recent years by reason of the clay of the Regina Plains. The bluffs on the margin are bigger, and the trees much larger in the last ten years, but the actual tree-spread has not advanced much westward, as the soil is a heavy clay, the surface of which dries up very quickly after a rain and leaves little chance for seed to germinate.

Chinooks Not Responsible.

Any old timer in Southern Alberta or S. W. Saskatchewan will tell you the Prairie is treeless because of the Chinooks. "The warm winds come along in January or February and the trees start growing. Then a change takes place, the wind switches round to the north, down she goes 30 or 40 below, and the trees die." That is the theory, but for 23 years we have never seen the slightest vestige of it. Introduced trees like the Manitoba Maple and some of the softer poplars may have suffered from the Chinooks, though even that is not always clear. Usually the trouble with such trees comes from overgrowth in the fall as a result of the habit of the tree or because of too much late rain followed by an early frost, or too dry a condition in the fall to go through the winter. Late frosts in the spring are also responsible for a good deal of damage.

The native trees, the Cottonwood, the Aspen, and other Poplars do not suffer

from the Chinooks. If so, those fine 40 or 50 feet Balms at Calgary, High River, Macleod, Lethbridge and Cardston would have been dead long ago. The Poplar bluffs round Okotoks would be non-existent. These really owe their preservation to the coulees and the snowdrifts in the burning season. One has only to look at the map to see how the district is criss-crossed with little creeks. Wherever there are creeks, there you find coulees and where there are coulees, there you find snow drifts in the spring and the fall.

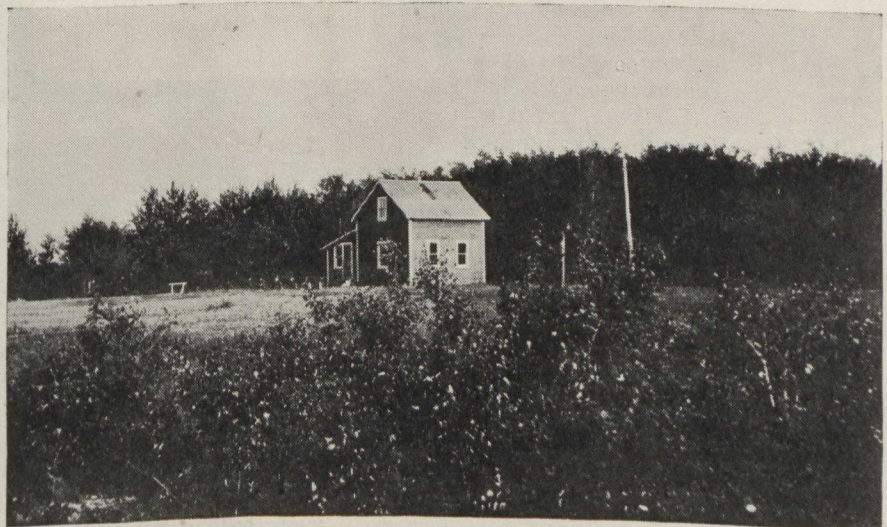
And we have not forgotten the acre or so of Aspen that used to be in the Porcupine hills west of Parkland, right in the middle of the table-land between Boneyard and Pine Coulee, miles away from any other tree. The ground up there was

covered with ground cedar, or Dwarf Juniper, and the fires could not travel over.

Natural Barriers.

Nor the so-called "Pines" a few miles west of the Oxley Ranch which were really a group of some half dozen Douglas Fir about 4 feet in diameter. They were able to survive because they were growing on the little flat top of an ancient land slide, some ten feet below the level of the Prairie and about the same distance from it. Snowdrifts had collected between the Prairie and the trees and stopped the fires, though three times at least had they leaped the barrier as could be seen by the fire marks on the bark of the original trees and by the successive stages of the young growth coming on below. They were exposed on all sides to the Chinooks which never did them the least damage.

Nor must we forget the little group of trees on Arrowood creek about twenty miles east of High River which used to stand up in the middle of the Prairie, and looked in the distance like an oasis in the desert. Little cutbanks and sloughs kept the fires back there. And the Old lone tree on the north side of the Piegan Reserve, right on the edge of the cutbank boundary of the Old Man river, and 200 feet above it, looking from a distance as if it was growing on the very edge of the level Prairie. Close examination showed the "why" of its existence quite clearly, for centuries ago a piece of the Cut Bank had slid bodily forward about twenty feet and left a hollow five or six feet deep between its crest and the Prairie. The tree was right on the top of this crest and the snow gathering in the hollow had preserved it from the fires. If the Chinooks had been the deadly detriment to tree growth as so many people claim, that tree had no business to be growing at all. But it was growing, and, moreover had its use, for at the time of our visit it had,



A cosily sheltered prairie home, surrounded by native bush carefully preserved.

away up in its topmost branches what appeared to be a squaw's petticoat fluttering in the breeze, doubtless, as we learned afterwards, an offering to the sun for the recovery of a sick papoose.

Nature Tells us How.

Was the Prairie ever covered with trees? We don't know. Nobody now living ever saw it, and we doubt very much if it ever was as long as Indians or lightning could set fire to the grass. But we do know these isolated trees were in existence in the extreme west twenty years ago, and able to survive for the reasons given.

We know also that the bluff country is rapidly spreading westward and south. And the great lesson we learn from this is that men can go ahead and plant all the trees they want on the Prairie in full hope and confidence of success, if they only are willing to adopt nature's methods and use the right varieties in their planting.

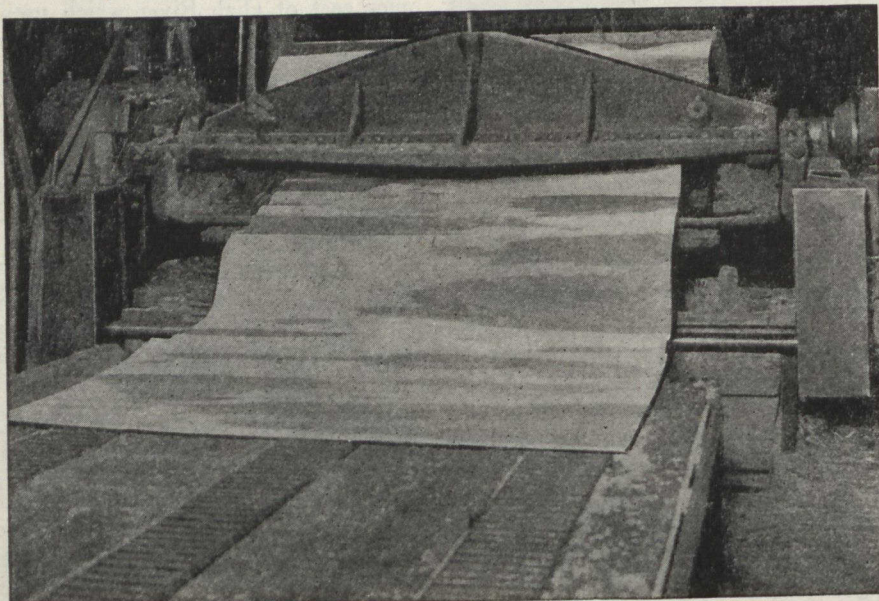
Nature is the great teacher. She never makes any mistakes, but she is very exacting in her demands, and especially so in a country of limited rainfall. Moisture is the main factor in successful tree growing, and we know now we have enough moisture for trees even in the driest years.

It only remains for us to follow nature's methods in preserving that moisture in our plantations in order to insure success.

The last twenty years of tree planting have taught us a great deal and there never was a time when planting was more needed than right now or more assured of success.

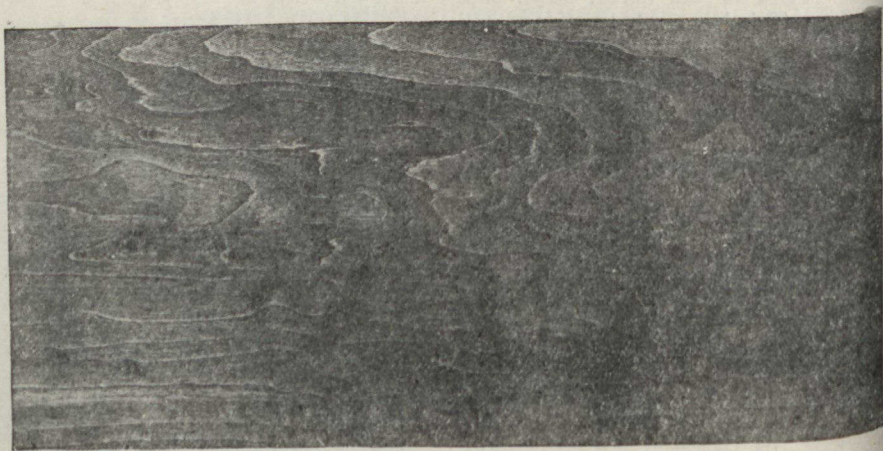
The Prairie will never become tree-covered now. Farming makes that impossible, but it is for us to carry on where we have compelled nature to leave off, and see that our farms and homes have their proper compliment of trees to make the country fit to live in. That is the real lesson.

Another "Useless" Wood Turned to Account



By courtesy "Western Lumberman"
A fifteen-foot lathe turning veneer from cottonwood logs to make plywood panels at the plant of the Laminated Materials Company, New Westminster.

Whether to furnish the "three ply" for aeroplanes, material for making a trunk, interior finish for a ship's cabin, or a city dwelling, the construction of a kitchen cabinet or an ice box, laminated wood manufacture is at last coming into its own. Since 1915 a large firm at New Westminster, B.C., the Laminated Materials Company has been utilizing the familiar cottonwood, an outcast of the commercial tribe. A special waterproof cement makes the finished product so rigidly waterproof that with a coat of paint it has been used on the outside of workmen's homes and on garages for years and has withstood the rainy coast climate. The material will not check, crack nor come apart and has great tensile strength and extreme lightness.



A plywood panel of cottonwood, showing the beautiful grain produced.

What Do We Plant ?

What do we plant when we plant a tree?
We plant a ship which will cross the sea,
We plant a mast to carry the sails,
We plant the beams to withstand the gales—

A keel, a keelson, and prow and knee;
We plant a ship when we plant a tree.

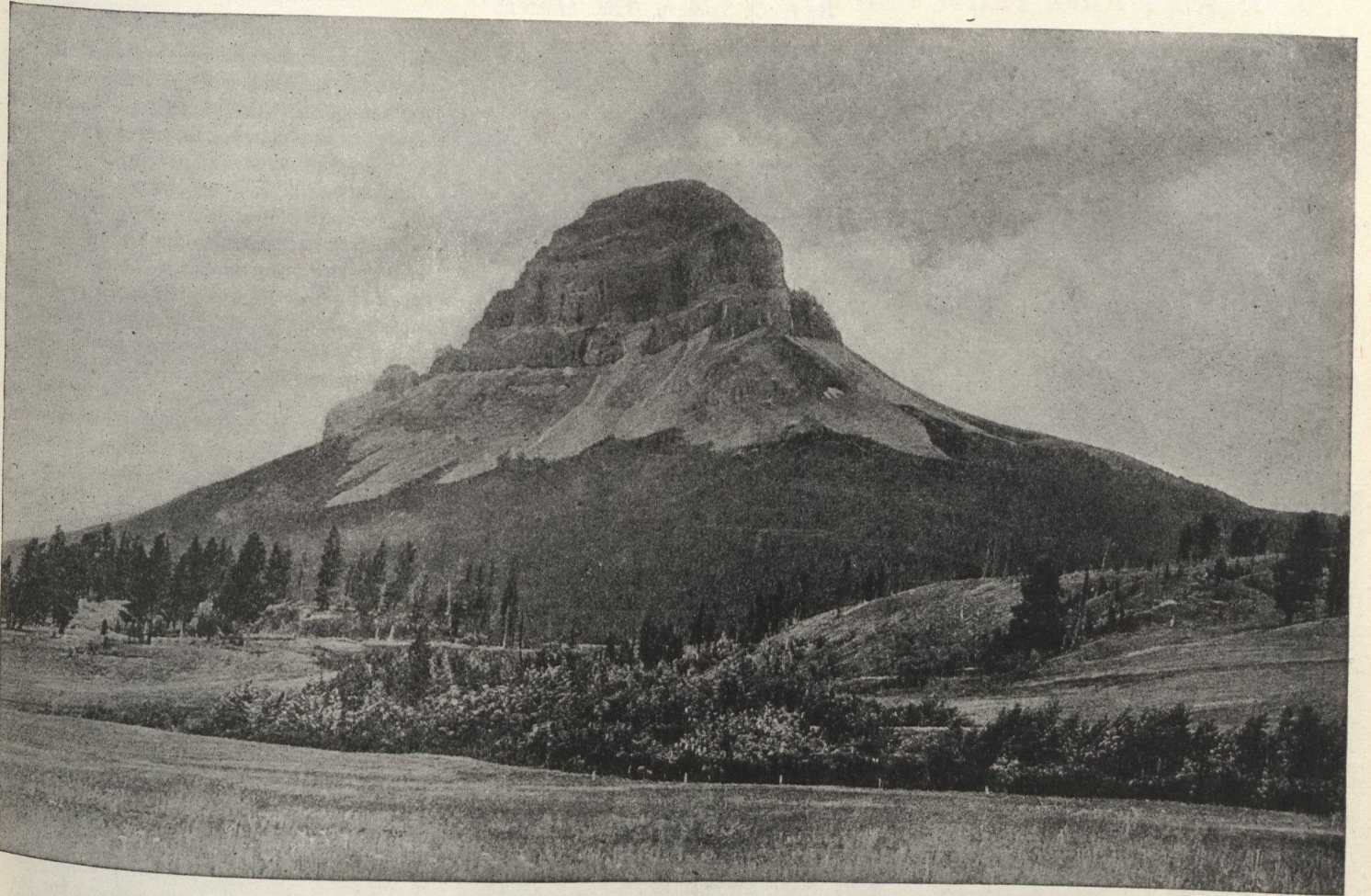
What do we plant when we plant a tree?
We plant the houses for you and me,
We plant the pillars, the shingles, the floors,

We plant the studding, the laths, the doors,

The rafters and roof, all parts that be;
We plant a home when we plant a tree.

What do we plant when we plant a tree?
A thousand boons that we daily see;
We plant a spire to out-climb the crags,
We plant a staff for our country's flag,
We plant a shade, from the fierce sun free;

We plant all wealth when we plant a tree!



Above:

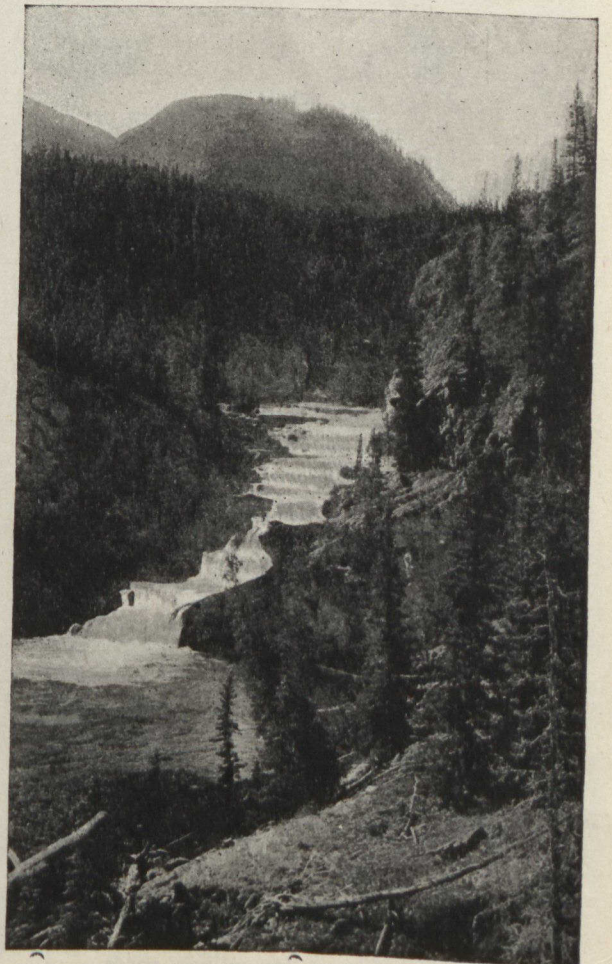
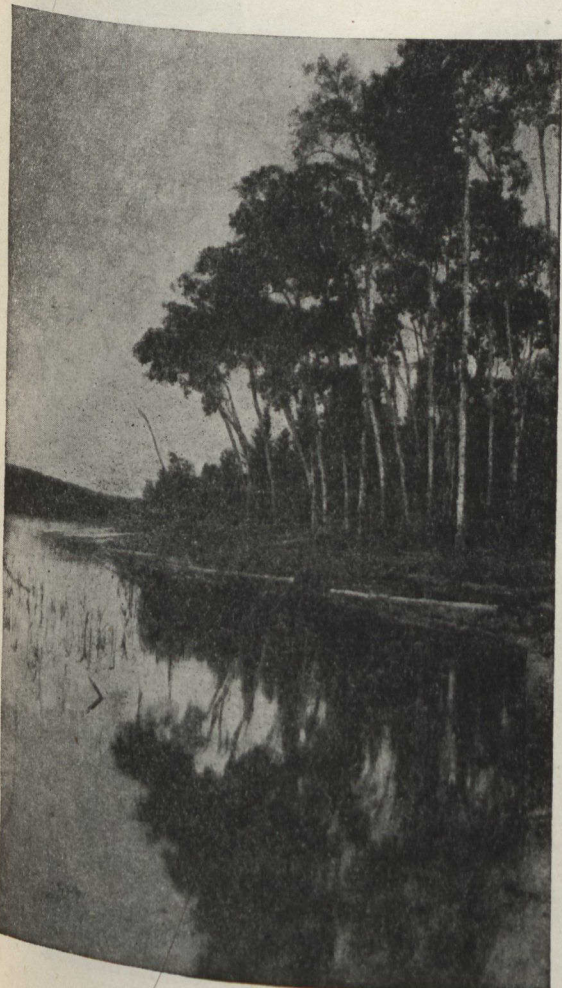
The famous
Crow's Nest
Mountain and
Crow's Nest Pass.

At Left:

A scene on the
Winnipeg River,
Manitoba.

At Right:

Along the Bra-
zeau River, Al-
berta.



Canada Must Take Out a Timber Insurance Policy

By R. O. Swezey, B.Sc., M.E.I.C.



Le Gres Falls, St. Maurice River, Quebec.

We are told by competent authorities that the destruction of the spruce forests of the United States, east of the Rockies, is nearing completion. Fifteen years more at the present rate of consumption will see the end of their standing spruce and balsam.

This is the most serious, because spruce and balsam are the only really suitable woods for the manufacture of newsprint and sulphite paper. Pine, of which there is a fair young crop growing up again by natural reforestation, both in the United States and Canada, is suitable as a pulp only in the manufacture of kraft paper.

If such is the condition of the United States' forests, what about the forests of Canada? At the present rate of spruce and balsam consumption for pulp paper and lumber in Canada, plus the fire and insect damages and increasing demands, our forests can last about fifty years.

The Trail of Fire.

From a negligible production in 1900, the pulp paper and pulpwood consumption and exports of Canada have risen to the equivalent of over three million cords (spruce and balsam). Add to this the equivalent of four million cords (spruce and balsam) that goes into lumber, plus fire and other losses, and we find (bearing in mind also the increasing demand) that a consumption of ten million cords

per year is in sight. Now our forest capital of available spruce and balsam in Canada scarcely exceeds five hundred million cords. In the past we have lost more by fire than we have cut. Over 75 per cent of the present forest area of Canada has been burnt over at least once in the past two hundred years. We know what has happened in the United States, and we know that when the destruction has been completed there, a further heavy tax must fall on Canadian forests; we also know that the world consumption of paper is increasing every year. We know a lot of things, but democratic like, what is everybody's business we regard as nobody's business.

The first necessity in forest conservation is obviously protection from fire, and for this—thanks to the untiring energy and dogged persistence of Ellwood Wilson, of the Laurentide Company,—Quebec

Province at least is now organized for fire prevention and fire-fighting to the point of having thus far saved the country scores of millions of dollars that would otherwise have gone up in smoke.

What Quebec Province is doing for fire protection the rest of the country can do. What Europe has a little too late, awakened to do in scientific forestry, we can start before it is too late. True, our problems differ in many respects, but they can be solved. We must stop eating up the



Bow Lake, Alberta.



Anderson Lake in the Coast Mountains of British Columbia.

COMMISSION OF CONSERVATION

principal and live upon the interest, or increment of the forest.

Trees grow by accretion, the larger the tree the greater the volume of growth in a year, up to the point of maturity. Instead of cutting an area clean, we must spread our operations over larger areas, select only full-grown or nearly full-grown trees, leaving the younger to grow up to be in turn cut at or near maturity. A combination of natural and artificial reforestation is necessary to develop the maximum production on a given area. This is known as scientific forestry. That we can expect a great deal of help from natural reforestation is obvious from the fact that all our present forests have grown from nature. At present we select the spruce and balsam and pine for cutting, leaving the hardwoods to gain supremacy, and eventually choke out the soft woods, as in the Eastern States. This is only one, but a serious one, of the problems confronting us.

Our Canadian Outlook.

The solution of these forest problems is necessarily costly. Hitherto the lumber and paper industries made insufficient profits to enable them to cope with the difficulties, but the amalgamating of interests and recent growth of several of the leading pulp and paper companies should enable them to attack the question of forest conservation and perpetuation with every confidence of success.

In this country it should be possible to obtain an annual increment of three per cent on our estimated capital of five hundred million cords. This could supply all the paper requirements of the world.

The attainment of such an ideal can hardly be expected, nor can even a fair part thereof be realized short of many years of grinding and struggling against the fanatical jeers of the so-called practical logger, no less than against the ill-advised application of theories from the utterly unpractical mind.

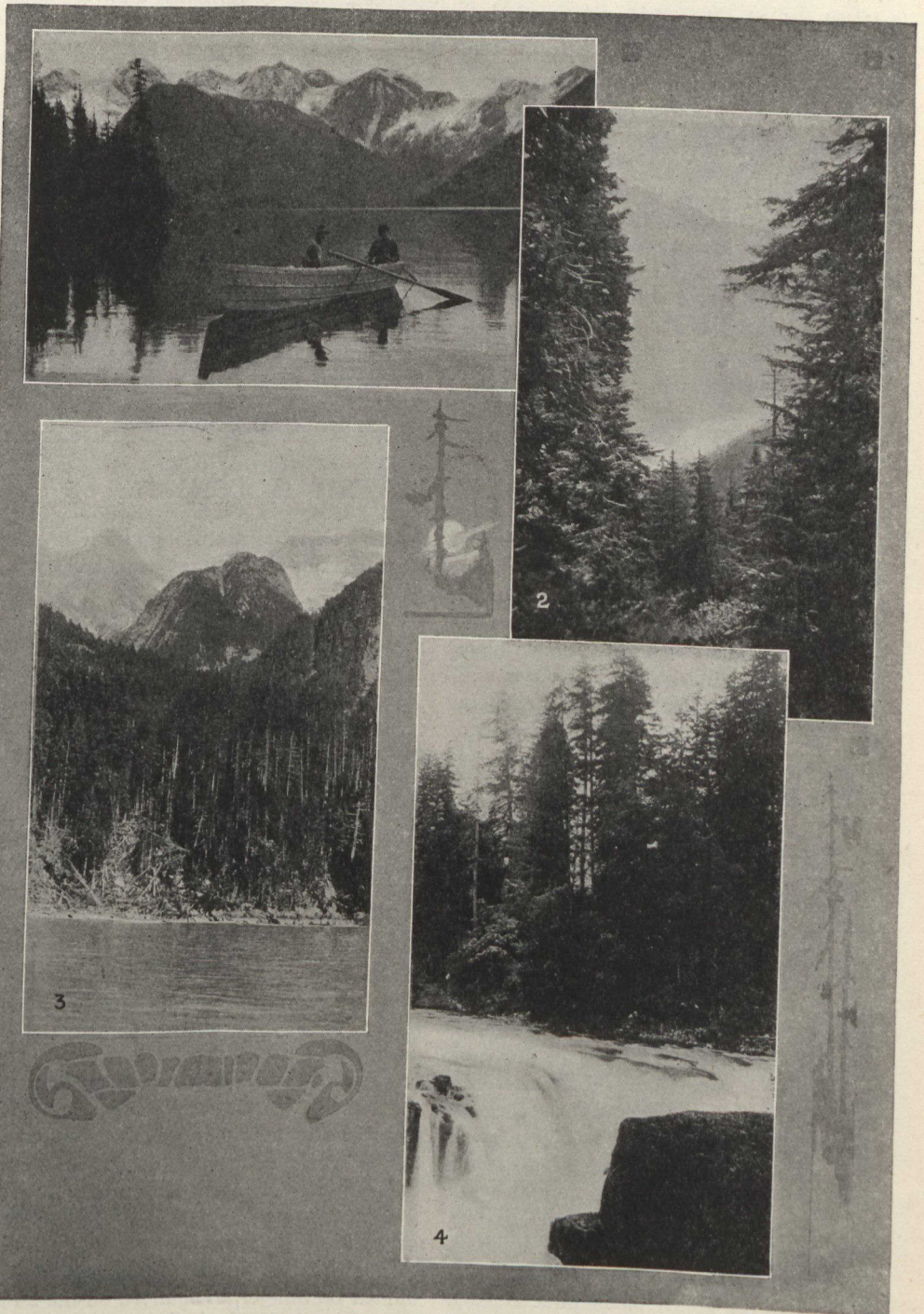
We are not yet practising scientific forestry in any of the present large logging operations in Canada. The Quebec Government authorities are endeavoring to formulate laws for the purpose, and so are the New Brunswick authorities, but their efforts, though laudable, show an insufficient grasp of the practical details.

That there are proper solutions to the difficulties cannot be denied. It is largely a question of dollars and cents, with the argument for immediate profit outweighing for the moment all arguments for the long term profit.

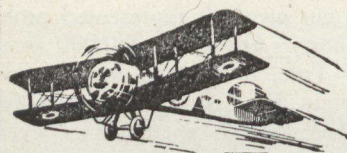
GOOD FOR UNCLE SAM BUT WHAT ABOUT CANADA ?

In the course of Toronto address Mr. Edward Beck, the able manager of the Canadian Pulp and Paper Association, called attention to the export of pulpwood, stating that 1,247,404 cords, valued by the Customs authorities at \$15,778,171, were exported last year. "None of it," he said, "contributed a cent to the upkeep or perpetuation of our forests. It contributed nothing to the development of our industries and made but a negligible contribution to the employment of our labor. Nevertheless it depleted to an appreciable degree our forest wealth and was used to benefit foreign industry in lively competi-

tion with our own. It represented probably a century's growth on 250,000 acres of land. True, it brought into Canada some revenue, \$15,778,171 are the figures given. Had it been kept here, however, and utilized in the manufacture of newsprint paper and exported in that form it would have brought back to Canada between 85 and 100 million dollars, besides giving employment to Canadian labor and contributing to the national welfare." He argued that an effort should be made to have this pulpwood manufactured into paper at home and that there was ample justification for the levying of an export duty.



BRITISH COLUMBIA SCENES.
 1. Jones Lake looking North.
 2. Jones Lake from Tunnel Pass.
 3. Bute Inlet, showing Mt. Superb, 8,000 Ft.
 4. Stamp River Falls.



AVIATION

IN FOREST CONSERVATION



A Department Devoted to the Discussion and Promotion of Civil Aviation in Canada

Quebec Will Explore New Regions

"The Government intends to build various forest stations along the north shore of the St. Lawrence, the coast of the Labrador, in the Bay of Ungava, and also in the Hudson Bay, where the forest engineers may explore the surrounding country, employing all the instruments and means in their power, even the aeroplanes. These reconnaissances will enable the Government better to protect the country and also to put rapidly into value various units for pulp and power development," said Mr. G. C. Piché, Provincial Forester for Quebec, in course of his address before the joint meeting of the Canadian Society of Forest Engineers and the Society of American Foresters at Toronto recently. "Quebec has over 6 million acres of timberlands in private ownership, 45 million

acres under license for timber and pulp-wood purposes, and more than 79 million acres of Crown lands that are as yet unoccupied. The Government aims to work in co-operation with the private owners by helping them to protect their holdings against fires and to reforest their waste lands, but no legislative power enables the provincial Government to prevent destructive cutting. Forest utilization is greatly encouraged. On the timberlands under license the Government has full control since it remains the owner, but the modifications and reforms needed must be introduced gradually. The limit holders of Quebec are eager to improve the forests leased by them and they have already done a good deal in the way of forest surveys, fire protection, conservative lumbering and reforestation."

Dusting Trees From an Aeroplane

The use of the aeroplane in entomological work is no novelty, since it has been frequently employed in both the United States and Canada in locating areas in forest lands, where injurious insects have been at work. Messrs. J. S. Houser and C. R. Neillie, of Ohio, however, tell of a new use to which aeroplanes have been put, viz., that of applying insecticides to the tops of trees.

In a paper read before the Association of Economic Entomologists at Toronto city, these gentlemen described an experiment made at Troy, by the Federal Air Service, co-operating with the Ohio Experiment Station and the Department of Forestry of the City of Cleveland, for the purpose of testing the value of the aeroplane as an instrument for distributing poison on tall trees. A six acre grove of Catalpa trees, containing 4815 trees, 25 to 30 feet tall, was selected for the work, these trees having been badly infested with caterpillars. The work of distributing the poison took only the actual flying time of 54 seconds and thus established a world's record as to speed of applying insecticides to forest areas. The trials demonstrated the ability of the pilot to place the poisonous dust where desired, and at the same time the effect on the cater-

pillars was most gratifying, since it was estimated that 99 per cent were destroyed.

EARLY HISTORY.

Geneva, N.Y.—Evidence that the art of flying was discovered before the days of Langley and the Wright Brothers has been unearthed by a student of Physics in Hobart College, doing research work in the Hobart College Library. In a newspaper of September 11, 1811, the following article was found:

"The art of rising and moving in the air by means of wings, continues to engage the attention of a number of persons in Germany. At Vienna, the watchmaker Degen, aided by a liberal subscription, is occupied in perfecting his discovery. He has recently taken several public flights in the Preter. At Berlin, Claudius, a wealthy manufacturer of oil cloth, is engaged in like pursuits; he rises in the air without difficulty and can move in a direct line, at the rate of four miles an hour, but his wings are unwieldy and he cannot turn around in them. At Ulm, a tailor named Berblinger, announced on the 24th day of April, that he had after great sacrifice of money, labor and time, invented a

machine in which he would on the twelfth day rise in the air and fly 12 miles."

PLANE SAVES 12 STRANDED.

Miami, Fla.—After passing five days without food or water on a reef of the Bahama Islands, twelve men aboard the stranded British motorboat "Priscilla," have been rescued by a hydro-aeroplane of the Aeromarine Airways Company.

AIR CRAFT INTRODUCE A NEW ERA

An address of great significance to foresters and of great interest to the public was given by Ellwood Wilson, Chief Forester to the Laurentide Company, Grand Mere, Quebec, at Toronto, recently. Hydroplanes employed in his work scout for fires, inspect logging operations, make maps and estimates of timber areas. Mr. Wilson said: "The two greatest needs of Canada to-day in the management of her all important forest resource is its protection from fire and an estimate of its extent and amount. This would have taken years of work, but with aircraft it can be completed in a very short time; witness the work done by the Air Board for the Ontario Government at English River this past season.

"In this country of poor communications and enormous distances, aircraft offer almost the only means for quickly and accurately reporting fires and getting assistance to extinguish them. A scheme for doing this has been carefully worked out, and will be given a thorough try-out in the spring.

"Those who have had experience with aircraft feel that a new era has dawned in the proper management of our forests based on the knowledge gained from the air."

IRISH FREE STATE AND AVIATION.

It is to be noted that in the peace terms with the new Irish Free State provision is made by the British Government for "Facilities in the neighborhood of the above Ports (Berehaven, Queenstown, Belfast Lough, and Lough Swilly) for Coastal Defense by Air," and further, that "A Convention shall be made between the Governments for the regulation of Civil Communication by Air."

How Planes Help With Fire Fighting

By Paul G. Redington, District Forester, San Francisco.

Special flights over and around large fires to get a comprehensive view of the situation are of inestimable value. Very often we have fires in such rough and inaccessible country that it would take a day or even more for the man in charge to get around them, size up the situation and determine his plan of attack. Of course in the meantime the situation might entirely change, and he would be little better off than when he started. If, however, he makes use of a plane he can, in an hour or less, get an accurate picture of the fire, and can immediately so dispose of his forces as to attack it most effectively. Such flights should of course be made with the man in charge

of the fire or an experienced fire fighter as observer, since a great deal will depend upon his personal judgment. If desired, an emergency radio station can be established on the fire line and direct communication may be had from the plane to the ground. All pilots are radio operators, so that if the forest officer who is flying as observer is not qualified in this respect he can write out the message and hand them to the pilot for sending. However, even if no radio is used there is very little delay in the dispatching of the information gained, since a plane traveling at ninety miles an hour will return to a landing field in a few minutes, and the observer can then report by phone or in person.

Seaplane Service for Manitoba

By Col. H. J. Stevenson, District Inspector of Forest Reserves, Winnipeg.

I have discussed the use of planes very fully with Stitt, Fisher, and McLeod, the three District Fire Rangers and they agree with me that one seaplane of the F. 3 type, located at Norway House, and one at The Pas, in addition to the main base at Victoria Beach, would be able to do all the work at present done by ground patrol in these districts, and do it 100 times more efficiently.

When I started out with the planes I was of the opinion that we should have small scout machines to locate fires, using the heavier machines to take in fire crews and supplies. I have, however, entirely changed my opinion. In using the small scout machines, it would be necessary for them to return to the base, prepare the large machine, get a fire crew and return to the fire; whereas if the large machine had gone out in the first place, a fire fighting crew would be picked up at nearby points in the neighborhood and in this way save two or three hours, while the consumption of gasoline in both cases would be the same.

Crews are Willing to Fly.

We anticipated difficulty in securing fire fighting crews, but have had no difficulty whatever; as a matter of fact we could pick up a full crew at any available point, and in many cases the men express a willingness to fight fire without pay.

I believe that in 1922, provided we can be supplied with the machines, it would be possible to do away entirely with the ground men and canoes, keeping the District Fire Rangers and possibly two men who would make trips with the machines and take charge of the fire fighting crews in the event of fire. In this

way we could fight two or three fires in each district.

The country over which we flew is splendidly adapted for sea-plane work; in fact the whole area seems to be from 30 to 60 per cent water, and the planes can travel safely in any direction. If it were possible I should like to extend the work at once. I am thoroughly convinced that patrol with canoes is obsolete, and also convinced that it will be possible to do the work more efficiently with aircraft and at considerably less cost than our present methods.

ALPINE FLIGHTS NEXT.

Berne.—Trips to Alpine resorts by aeroplane are promised for next summer. The safe landing of the airman Durafour on the snow fields of the Dome du Gouter, at a height of 14,210 feet, or 1,572 feet below the summit of Mont Blanc, is, according to the officials of a Swiss aeroplane company, only the beginning of a new era in Alpine tours.

CONGO AIR MAIL.

The air mail service on the Upper Congo is now available. The rapid transmission of correspondence from Great Britain by the aeroplane service which has linked up with the European steamship arrangements is now operating between Kinshaba and Stanleyville. The air service is scheduled to take three days, as compared with fourteen days by river boats. An air letter fee of three francs per twenty grammes is charged to the addressee on delivery.

AVIATION IN AUSTRALIA.

The Australian Federal Government is carrying out its determination to utilize aircraft for long-distance postal and for limited passenger service, and the latest information upon this development comes from The London Times' Melbourne correspondent. Tenders have been accepted for such services between Adelaide and Sydney, and again between Sydney and Brisbane, 750 and 575 miles respectively as the crow flies. By rail the distance from Adelaide to Brisbane is 1,800 miles, and occupies four days. The subsidy for the first section is £17,500 a year, and for the second £11,500.

Tenders are also being called for a service between Charlesville and Cloncurry, in Queensland, a distance of 575 miles, much of it over country which in the rainy season is practically impassable.

Recently an aviator arrived in the centre of Australia in comparatively few hours, covering a distance which occupies carters' wagons two months. Added to the service in West Australia, there will soon be 3,000 miles of postal and commercial aerial highways in constant operation. If the experiments are satisfactory, they will be extended and will solve one of the great communication problems of Australia.

On the other hand, the Federal Parliament has seen fit to reduce the Defence estimates by £100,000, which means the practical abandonment by the Government of the air scheme outlined earlier in the year. The two squadrons of flying boats have both been abandoned, and the two seaplane squadrons, one active and one reserve, modified to six machines, three active and three reserve. The scheme now amounts to the carrying on with what is possessed at the present time, with the addition of several Avros ordered at a local factory.

DUTY OF FORESTERS.

(By Dr. C. D. Howe)

"I like to emphasize with all my strength that the object of a forester is not to protect trees from being cut. There would be no foresters employed in this country or in any other country if there were no lumbering operations. It is the forester's business to produce wood, and if he can make money in cutting and selling trees three inches in diameter he is doing perfectly legitimate business.

"The guiding principle in forestry is to see that wood production is continuous for all time; to see that areas that have been cut over shall come up again in commercial trees; that areas having been burned over shall be regenerated with commercial trees; and that waste lands and areas unfit for agriculture shall be made to bear commercial trees."

This is the Year's Story of Your Association

Canadian Forestry Association Developed in all Departments During 1921, and launches on Larger Plans for the Present Year.

In a year when voluntary associations in Canada and the United States have usually reported reduced memberships, reduced revenues, and a less healthy business condition, it is gratifying to report to the members that the Canadian Forestry Association has maintained in nearly all departments its steady advance as chronicled for many years past.

Following is a brief survey of the Association's income, all of it from voluntary sources, for the past seven years:

1915 -----	\$ 5,279
1916 -----	7,182
1917 -----	11,192
1918 -----	14,296
1919 -----	20,067
1920 -----	38,418

And for 1921, \$47,836.58, an increase of \$9,418 over 1920, which with our surplus carried forward from the previous year, made available for our work, \$49,850 in the twelvemonth just closed.

The increase in cash receipts during 1921 over 1920 amounted to 24.5 per cent.

The sum of \$47,850, however, does not represent the Association's total income, for the donation of materials and services from various sources, amounted to more than \$14,000 additional. Thus the Association utilized in the prosecution of its work in 1921 a total in money, materials and service value of over \$60,000 or at the rate of \$5,000 a month.

This increase is attributable to a development of government grants, to mem-

bership fees, and to advertising in our Association Magazine. Government grants were \$15,050 in 1921, as compared with \$8,850 in 1920, giving us a seventy per cent increase.

Our members paid in fees \$14,899.79 in 1921, as compared with \$13,066.75 in 1920, an increase of 14 per cent.

We secured 2,200 new members, while 800 were discontinued through death, or by resignation, giving us a net of 1,400 representing an increase of about ten per cent.

The membership growth is summarized as follows:

1914 -----	2,900
1915 -----	3,400
1916 -----	4,500
1917 -----	6,500
1918 -----	8,000
1919 -----	10,000
1920 -----	12,500
1921 -----	13,000

From the latter figure it will be seen that, while we secured 2,200 new members, giving us 1,400 net, we are, however, taking the precaution to credit ourselves with only a nominal net gain of five hundred members placing the balance of nine hundred against possible loss in resignations over the year-end, when new accounts are sent out.

The loyalty of our members deserves more than passing comment. The majority undoubtedly recognize and accept to the full their personal responsibility in the cause of forest conservation in this Dominion. With no selfish interest to serve, they express their sense of practical pat-

riotism in supporting a cause which in their opinion makes Canada's future prosperity more secure.

It is but fair to assume that in a year of fewer financial discouragements and cheerier business spirit, our membership will grow by many thousands.

Private Subscriptions.

During a period when companies were seeking new financing, writing down inventories and contemplating a sluggish and unpromising market, a voluntary educational association was bound to suffer by comparison with other and more prosperous years. Such in fact was the Association's experience but to only a nominal extent. Our total of company cash subscriptions in 1921 was \$14,188 as compared with \$15,250 for 1920, a decrease of \$1,062, although if we include free materials and free service placed at our disposal by companies, the Association's total by way of grants in money and material equivalents was easily five thousand dollars above 1920. Our 1921 company cash subscriptions, while behind 1920, is more than double the total of 1919. Company contributions in cash to the Association over a period of recent years are as follows:

1916 -----	\$ 1,010.10
1917 -----	2,235.00
1918 -----	3,759.00
1919 -----	6,840.00
1920 -----	15,209.00
1921 -----	14,188.00

Of the amount received in this way for 1921, \$2,990 came from firms interested in our Prairie Tree Planting Campaign,



Honorable W. L. Mackenzie King, Honorary President.



Dan. McLachlin, Esq., President, 1922.



R. H. Campbell, Esq., Vice-President.

\$4,468 from lumber companies, \$6,425 from pulp and paper companies and \$305 from miscellaneous contributors such as coal mining companies.

Ninety-eight firms contributed in 1920 and 86 in 1921. There is ample reason for believing that practically all of the firms refraining from contributing in 1921 were forced to such action by the slump in trade and will be with us whole heartedly as soon as business revival sets in. It is especially gratifying that many of the pulp and paper companies, even under depressing circumstances greatly increased their grants.

At this point in our report it may be well to discuss the prospects for financial support in 1922. We have reason to believe that one corporation, not previously a money contributor, although most generous with free services and materials, will come in for an annual grant of fifteen hundred dollars. Efforts of our directors in the Western provinces to organize financial support for the Association are bearing fruit, and some new money is expected from British Columbia timber holders, as well as new contributions from the efforts of directors in Alberta, Saskatchewan and Manitoba.

An improvement in business sentiment will also automatically bring increases in membership fees and in our advertising receipts.

How the revenues have been applied and how the purposes of the Association have been carried out are our next consideration.

How the People are Reached.

As the Association is an educational body, and the first forestry problem is

fire prevention, the Association staff has endeavored to reach and convince the maximum number of people that forest protection should become their personal policy and the policy of their governments. To that end we used eighteen various methods of propaganda.

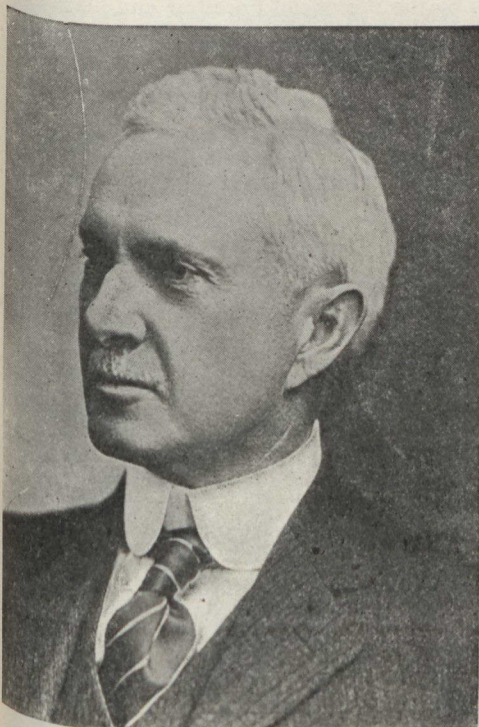
The Eastern Forest Protection Car, equipped with graphic exhibits, and bringing to hundreds of communities its daily lectures and motion picture warnings has been especially effective. Where less picturesque methods would attract a few dozen inquiries the railway car method drew thousands. In a season's travels of 8,630 miles, this car attracted 135,000 people and was responsible for 185 public meetings on forest protection. This is more than double the mileage and three times the attendance which characterized a similar effort in 1920. From Halifax Fort Frances, Ont. this enterprise made its influence felt, as is well attested by local authorities. When in French speaking districts of Quebec, as was the case for months, French speakers took charge, by courtesy of the Quebec Forest Service and the language of the district became the standard of the car, its banners, explanatory signs and literature. In Nova Scotia, in almost all parts of New Brunswick, along the south shore of the St. Lawrence of Quebec, and over hundreds of miles south to the United States border, unvarying crowds amounting sometimes to two thousand daily displayed a serious interest in the Car and its forest protection message and thronged the meetings, frequently necessitating the holding of three and four lectures a day. In the Lake St. John Region, on the National Transcontinental in Central Quebec, and on a protracted course through northern Ontario, the interest of the general public was immediate and sincere. Mr.

Blyth, the Assistant Secretary, handled the car with efficiency and throughout the season from May to December employed a total of seven assistants. We have had several unique and instructive models built for the 1922 tours, which cannot fail to drive home special phases of the forestry problem so that even the youngest child will quickly understand and retain the lesson. The educational principle on which the Exhibit Car is based is scientifically sound and has proved of very great service in making a rapid and lasting impression of a definite point on the maximum number of people with the shortest expenditure of time and money. It is a good method for reaching and impressing crowds.

Plans have been put through for sending both the Exhibit Car and the Association's Lecture Car for two months' tour of British Columbia in March and April next. The enterprise has been assured of a hearty welcome from our friends at the Coast.

At Work on the Prairies.

The Association Tree Planting Campaign in the three prairie provinces is now known far and wide and has already won endorsement after two seasons effort. This project in an educational way supplements the excellent work of the Tree Planting Division of the Dominion Forestry Branch. It carries helpful information on the value of shelter belts, the proper methods of planting, the selection of trees, the effect of tree planting on farm prosperity and home comfort to thousands of prairie settlers who otherwise would not receive such help. For this purpose we equipped in April, 1921, a



C. E. E. Ussher, Esq., Retiring President.

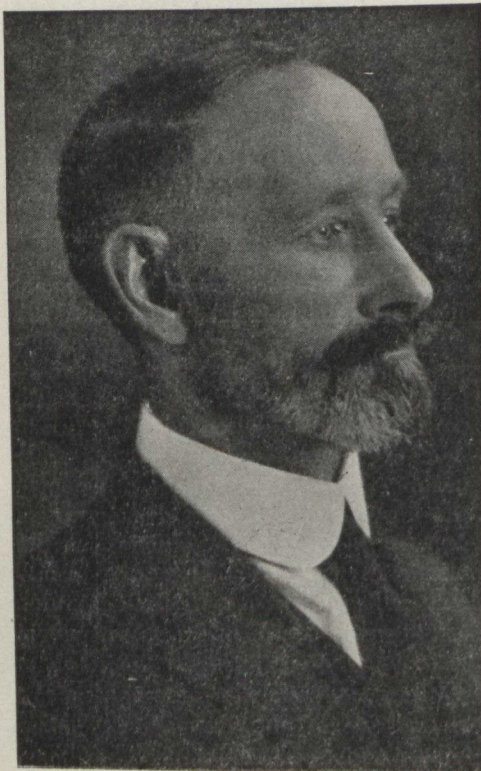


Robson Black, Manager and Secretary,



G. Gerald Blyth, Assistant Secretary.

special Lecture Car, with sloping floor and a seating capacity of 125 adults. Full electrical and motion picture equipment was included thus providing satisfactory facilities independent of local conditions. Mr. Archibald Mitchell, who joined our staff in the early part of 1920, gave renewed proof of his fine qualifications throughout the Spring, Summer and Fall of 1921. The audiences increased from 10,000 in our first year of Western campaigning to 48,000 last year, all obtained in very small communities. With Mr. Mitchell and his assistant, Mr. Angus Cooch, 396 public meetings were held during the last season, and since the close of the tour Mr. Mitchell has brought the total to 400 meetings on the subject of tree planting for a single summer and fall. In all, 8,500 miles were traversed in six months. Behind the Association's campaign stood the Western newspapers with remarkable generosity, and thanks is due in no less degree to the organized agricultural societies and to the branch managers of our chartered banks. The gift of free haulage by the railways for both our Association cars is recognized with most hearty gratitude. Wherever the Association's flag made its appearance, the courtesy and friendly help of the railway company executives and staff were given without stint or hesitation. The Government of Saskatchewan too, has our thanks for placing every facility at our disposal, and for including our car and staff as a feature of their Better Farming Train for five weeks tour. Through the Saskatchewan Government also, with Mr. Mitchell's aid, a new tree planting film



Archibald Mitchell, Lecturer on Tree Planting in the Prairie Provinces.

has been prepared and will be employed in our campaign for 1922. Mr. Mitchell's work has been recognized by the University of Saskatchewan which has joined hands with this Association by employing him on its teaching staff for extension lectures during a portion of the winter.

An Influence in the West.

That this Tree Planting Campaign is performing pioneer work of real magnitude is the consensus of opinion of those Western authorities most familiar with the needs of the country. It has not been a process of merely scattering good advice, but of converting thousands of indifferent settlers to actually set about tree planting, to show them the shortest and surest route to success in that field, to correct past mistakes in tree planting in numerous districts and to change failure into success. The men in charge not only delivered illustrated practical talks and gave demonstrations, but travelled to scores of farms away from the railway to help individuals and societies with their local problems.

As we made our entry into the special forestry problem of the prairies two years ago, so this past year we hope will represent the Association's active entry as a constructive influence in the forestry problem of British Columbia. The holding of a Forestry Convention at Vancouver on September 19th and at Victoria on September 20th performed a service of more than transient value. It brought together leaders in all branches of the wood-using industries and technical foresters. It induced specialists to assemble new data for important and helpful addresses which ultimately reached thousands through the newspapers and magazine press who were unable to attend personally. The addresses were keyed to the everyday problems of the British Columbia forest industries and the Government forest administration and local lumber journals and newspapers freely congratulated the Forestry Association not alone on the large attendance but the strong and practical calibre of the topics and their treatment. The Association was represented at the Convention by the President and the Secretary, and by most of the British Columbia directors. Since the convention, arrangements have been made to apply practically all of our educational methods to British Columbia, and in this we enjoy most friendly relations with the Forest Service, and the several associations into which the forest industries are organized.

Lectures During Winter.

Another undertaking which introduces to some extent a new avenue for educational work is the giving of forest protection lectures during the winter in the back settlements of timbered districts. We have made arrangements this winter to send a

well trained French speaker and Mr. Cooch of our own staff with complete electrical and motion picture machinery into four counties of northern New Brunswick where much of the travelling will have to be done by sleigh. Part of the expense is being paid by the Government of that province.

We have endeavored in the year under review to establish closer educational relations with the school children in all parts of Canada by two methods:

Enlisting the interest of their teachers by an extensive circulation of forest protection talks, which were read in the classrooms to a great army of young Canadians. The undertaking covered every province except Manitoba which supplied us mailing lists too late for use. Illustrated lectures sent to teachers and local speakers, as well as the work done with many child audiences by our own lecturers made an impression regarding which many favorable testimonials have reached us.

Our Speakers Bureau, also, has done good work. This Bureau has three hundred volunteer members in three hundred communities who undertake public addresses with the aid of the Association's manuscripts. The cumulative effect of such effort cannot fail to influence great numbers of the younger generation.

The columns of the daily and weekly newspapers of Canada hold out a welcome to forest protection publicity as at no time in recent history. This is but one of the signs of awakened public interest in the subject of conservation for the editor's judgment usually reflects the preference of his readers. By designing attractive forms of publicity such as a series of articles written for the papers of each province by the Provincial Foresters and placed by us, and by a series called "Questions and Answers on Forestry" which is a weekly feature with sixty influential papers, we



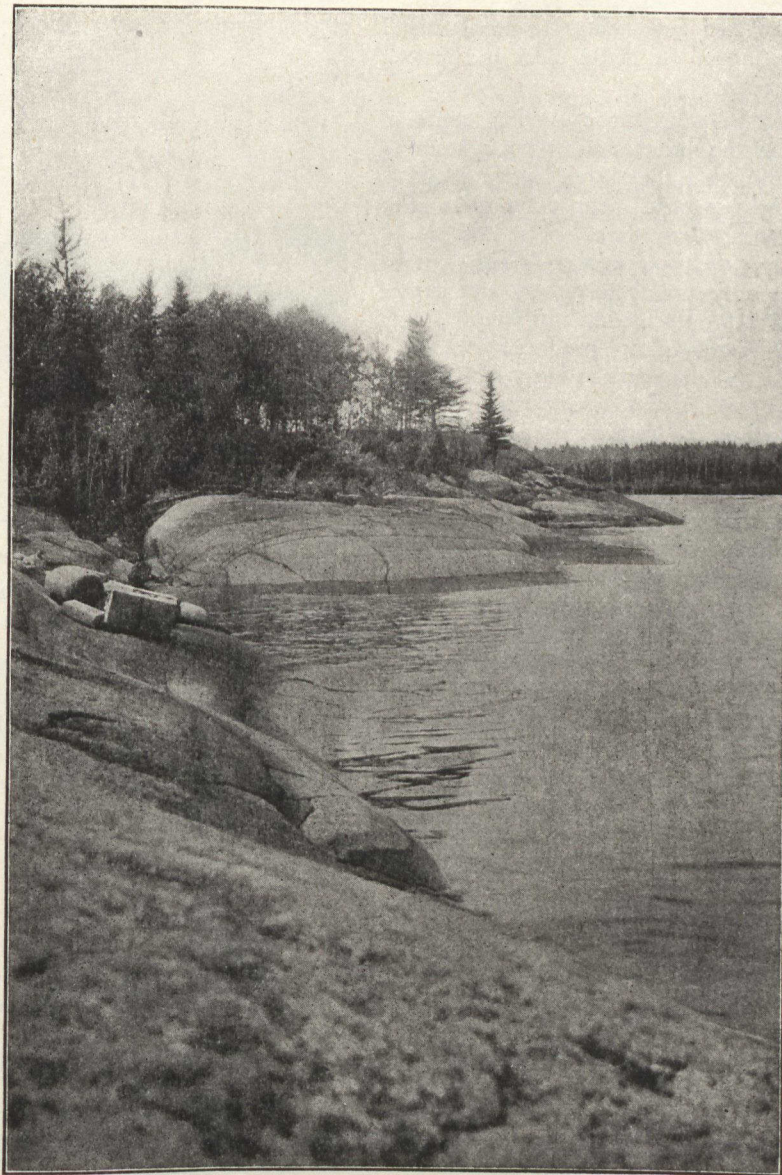
George A. Mackie, Publication Manager.

have been able to talk day by day to a great body of men and women through the mediums they are accustomed to read.

Travelling Sets Useful.

We have built up another department, having a constant and unique educational value, viz: the travelling lecture sets. A popularly written manuscript, covering the rudiments of the forestry cause, the common sense argument for forest protection, the problem of land classification, etc. is supplemented by sixty handsome lantern slides packed in a break-proof travelling case. There are now nine of these units in constant action. Two deal with the general story of forestry and fire prevention, two are specially written on the topic of reforesting the deforested lands of Ontario, two treat of tree planting on the prairies, two are devoted to Quebec Province and are in the French language, and one is adapted to British Columbia. These nine sets, going from town to town on the plan of circulating library, reach, it is safe to estimate, from two to three hundred people a day for six months of the year.

The Association's Magazine changed its name to the Illustrated Canadian Forestry Magazine, and in August made an important step forward by changing its form to larger dimensions. The move made an immediate appeal to our members and advertisers and daily letters from many parts of the Dominion assure the Association that the new magazine is greatly valued and closely read. The magazine is vital to our growth, and must continue to improve. Its pages are one of our best propagandis; agencies have served to cultivate an interest in Canada's forest problems on the part of thousands of citizens coming within its influence. The improvement in our advertising revenues, which amounted in 1921 to \$3,661.54, came in a year when advertising in the magazines



In Canada's Far North: on Taltson River, between Great Slave and Athabasca Lakes.

of Canada and the United States fell away forty per cent.

One of the indexes by which the dili-

gence of the Association's office staff may be gauged is found in the fact that nearly 200,000 pieces of educational mail were prepared and despatched in 1921, and this does not take into account 130,000 copies of the Forestry Magazine. Six hundred public addresses were given by the staff in the year just closed.

The Public With Us.

In facing the opportunities of 1922, we are more than ever confident of the soundness of those forestry principles which gave the Canadian Forestry Association its birth and have earned it a steady ascent in public favor. Everything yet accomplished is the produce of co-operation and team work. A very meagre executive staff has been supplemented and strengthened by the goodwill and sacrifice of hundreds of volunteers. Our campaigns have been financed, our results secured, wholly as a consequence of earning public confidence. Propagandist work, however, by its very nature, lives on persistent action. Spasmodic effort is waste. The fields into

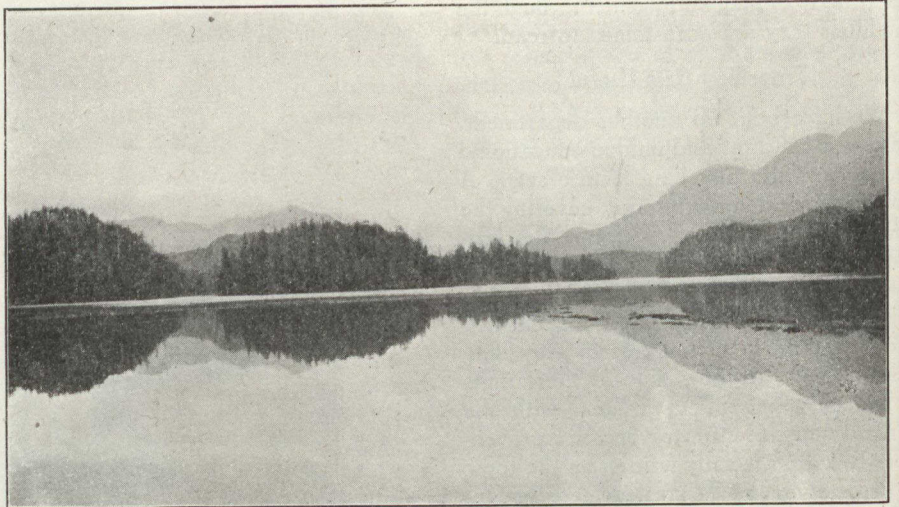


On the edge of Coquitlam Lake, B.C.

which we have ventured must be kept cultivated and new fields are constantly opening, indeed we invite them and urge them to open.

Considering the money-saving consequences of the Association's work, it seems only reasonable that more financial aid should be expected. The plain facts of forest conservation should be in the possession of every Canadian. This presupposes educational machinery and personnel which only money can secure and support. Our working programme at no stage thus far presumes to keep pace with the conception of the Association's potential usefulness for we have been restrained in every direction by limitations of income. Whatever advantages have accrued thus far from our efforts can be multiplied many-fold as soon as our Association obtains a sufficient income.

Your directors immediate ideal is a minimum annual income of \$100,000 and



Seal Inlet, Graham Island, one of the Queen Charlotte group.

they urge upon the members the necessity for reaching at least that figure at the earliest date.

Colonial Lumber Co.	50.00
Owens Lumber Co.	100.00
W. H. Johnson.	100.00
North American Bent Chair Co.	25.00
Nashwaak Pulp & Paper Co.	50.00
P. Burns & Co.	250.00
F. J. D. Barnjum.	1,000.00
Schroeder Mills Timber Co.	200.00
Consolidated Elevator Co.	15.00
Wayagamack Pulp & Paper Co.	100.00
Osler, Hamond & Nanton ..	100.00
Shives Lumber Co.	25.00
Jas. Richardson Co.	75.00
Hudson's Bay Co.	500.00
McLachlin Bros.	100.00
Can. Western Lumber Co.	50.00

List of Company or Individual Grants

A. Barnet & Co.	\$ 100.00	The Bronson Company.	200.00
E. A. Dunlop.	50.00	Gillies Bros.	100.00
Chaleurs Bay Mills.	50.00	H. H. Hettler Lumber Co. ..	50.00
Nisbet & Auld.	25.00	W. R. Brock Co. Ltd.	25.00
The Lowndes Company.	50.00	Jas. McLaren Co.	200.00
C. Beck Manfg. Co., Ltd.	50.00	W. J. Bell.	100.00
Imperial Bank.	100.00	Massey-Harris Co.	250.00
H. S. Howland & Sons.	25.00	International Harvester Co.	250.00
Calargy Brewing & Malting Co.	25.00	Jas. Richardson & Sons.	500.00
Shelvin Clark Co.	400.00	H. N. Haberer.	50.00
Internatonal Elevator Co.	25.00	Robinson, Little Co.	200.00
		W. C. Edwards & Co.	200.00

Built in One Day.

As a demonstration in house construction, Chicago lumbermen put together the house, shown in illustration, in one working day of eight hours. It was not a "ready-made" house but was built piece by piece. The building was ready for occupying by evening.

Picture by Courtesy of "Canada Lumberman".



St. Maurice Forest Prot. Ass'n.	100.00
R. Laidlaw Lumber Co.	50.00
J. R. Booth, Ltd.	200.00
R. J. Whitla Co.	200.00
Hon. George Burchill	25.00
New Brunswick Ry. Co.	500.00
Prairie Nurseries Ltd.	200.00
O. B. Davies Co.	100.00
J. B. Snowball Co.	50.00
N. S. Steel & Coal Co.	200.00
J. R. Scoby	5.00
Can. Land & Irrigation Co.	50.00
F. A. Sabbaton	300.00
Hon. Geo. Gordon	250.00
A. H. Campbell	25.00
Alberta Clay Products Co.	100.00
Jacob Kaufman	13.00
Sir Geo. Perley	10.00
Otis Staples Lumber Co.	100.00
Lethbridge Municipality	50.00
Miramichi Lumber Co.	50.00
H. A. Calvin	20.00
Laurentide Company	1,000.00
Laurentian Forest Prot. Ass'n.	100.00
Brown Corporation	200.00
Canada Paper Company	100.00
J. H. Ashdown Hardware Co.	100.00
Fraser & Co., Ottawa	100.00
Fraser Companies, Ltd.	100.00
Belgian Industrial Co.	200.00
Graves, Biwgood & Co.	50.00
Estate Wm. Hendrie	100.00
Abitibi Power & Paper Co.	500.00
Hon. N. Curry	100.00
Donnacona Paper Co.	500.00
Ontario Paper Co.	500.00
Spanish River Pulp & Paper Mills	1,100.00
Logantown Municipality	25.00
Price Bros. & Co.	500.00
Brompton Pulp & Paper Co.	200.00
Hammermill Paper Co.	25.00
St. Maurice Paper Co.	200.00
Interlake Tissue Mills	100.00

14,188.00

According to Sources.

Lumber Companies	4,468.00
Pulp & Paper Companies	6,425.00
Prairie Province Co's. Gifts	2,990.00
Miscellaneous	305.00

14,188.00

Government Grants.

Dominion	\$ 9,000.00
Ontario	2,000.00
British Columbia	1,500.00
Quebec	1,000.00
Saskatchewan	1,000.00
New Brunswick	550.00

\$15,050.00

TREES ON PRAIRIE FARMS.

In the case of two prairie farms of equal size and fertility, one without trees and the other sheltered with belts of trees, there is no doubt the farm with trees is worth several thousand dollars more than the bare one. This is not only on the score of sentiment and comfort but because of the increased financial return.

THE U.S. PAPER INDUSTRY.

The United States has 818 paper and 322 pulp mills. Their product in 1920 passed the billion dollar point in value. Twenty-three companies report new pulp mills erected or projected. Number paper mills in operation 1921, 1,700.

"Lovers of crisp, fresh, tasty vegetables and bright, beautiful flowers fresh from their own gardens, should plan those gardens long before planting time."



HERE is our practical method of helping. From our many varieties of McDonald's Tested Seeds we have selected an assortment that will give you an ample supply for the table throughout the season. And we have not forgotten the flowers.

It's a dandy collection and we know it will please you. Why not send us \$2.50 to-day so that you may be all ready to start your garden when the season opens?

By buying these or any of McDonald's Tested Seeds you are "getting in line" as a possible winner of one or more of the gold prizes we are offering for the best results for 1922 from McDonald's Seeds.

Details of this prize offer on pages 2 and 3 of our 1922 catalogue—send for your copy.

McDonald's Banner Collection of Vegetables and Flowers for the Garden :

SEEDS

to the
VALUE OF

\$3.50

for

\$2.50

POSTPAID

ORDER NOW

All packets are full, regular size, and filled from our finest selections of stock. Special cultural directions, "Vegetable Garden," also "Annuals from Seed" will be supplied free with every Collection.

McDonald's Banner Collection is made up as follows:

- ½ lb. Beans, Burpee's Kidney Wax.
- 1 oz. Beet, McDonald's Improved Blood Turnip.
- ½ lb. Corn, De Lue's Golden Giant.
- 1 oz. Carrot Nantes, Half long.
- 1 pkt. Cucumber, Devon White Spine.
- 1 pkt. Lettuce, Grand Rapids.
- 1 pkt. Lettuce, Improved Hanson.
- 1 pkt. Musk Melon, Miller's Cream.
- 1 pkt. Water Melon, Cole's Early.
- ½ oz. Onion, Prizetaker Red Globe.
- 1 pkt. Parsley, McDonald's Perfecta.
- 1 pkt. Parsnip, Improved Hollow Crown.
- 1 pkt. Pumpkin, Winter Luxury.
- 1 pkt. Radish, Rosy Gem.
- 1 pkt. Tomato, Bonny Best.
- 1 pkt. Squash, Hubbard.
- 1 pkt. Cabbage, McDonald's First and Best.
- 1 pkt. Cabbage, Danish Roundhead.
- 1 pkt. Turnip, Danish Queen.

Also one packet each of the following choice flower seeds:

- Aster, Fine Mixed.
- Balsam, Camellia flowered.
- Poppy, McDonald's superb Shirley.
- Morning Glory, Tall Mixed.
- Nasturtium, Dwarf Mixed.
- Sweet Peas, McDonald's Rainbow Mixture.

NOTE—Our 1922 Catalogue is full of information, pictures and garden facts. You will be glad to have it, and we'll be glad to send you one.

Kenneth McDonald & Sons Limited
Seeds Ottawa, Can.
66 Market Sq.

Canadian Forestry Association's Business Meeting

The Annual Meeting of the Canadian Forestry Association, held at Toronto on January 10th, was divided into two sessions, the business meeting being held in the morning with a largely attended public session in the afternoon.

The result of the annual election places Hon. W. L. Mackenzie King as Honorary President of the Association; Hon. Charles Stewart, Minister of the Interior, as Honorary Vice-President of the Association; Mr. D. McLachlin, of Arnprior, President; Mr. R. H. Campbell, Director of Forestry, Ottawa, Vice-President. New Directors elected for Ontario were: Dr. A. C. Rutherford of the Board of Railway Commissioners, Ottawa, and Mr. W. C. Cain, Deputy Minister of Lands and Forests, Toronto; Mr. David Champoux, formerly a Director for New Brunswick, was included in the list of Directors for Quebec, and Hon. Sir Lomer Gouin, Minister of Justice, was a new Quebec appointee. For New Brunswick Mr. G. C. Prince, Provincial Forester, joined the directorate, Hon. Mr. Brownlee was added for Alberta, and Hon. W. R. Motherwell and Hon. C. M. Hamilton for Saskatchewan.

Thanks Expressed to Mr. Ussher.

After two years of untiring devotion to the interests of the Canadian Forestry Association, Mr. C. E. E. Ussher, who in business life is Passenger Traffic Manager of the Canadian Pacific Railway Company, retired from office but will continue his relations as a director of the Association.

Brig. General J. B. White took occasion to introduce a motion of hearty thanks to Mr. Ussher, under whose leadership, he stated, the Association was making good strides. General White emphasized the unanimous opinion of the directorate that the progress of the Association had been materially helped and its policy guided in safe and constructive lines through Mr. Ussher's devoted service. Mr. W. E. Bigwood seconded the resolution which was carried with hearty applause by all present.

The Annual Report of the Directors of the Canadian Forestry Association is published in this issue as a separate document and to it the attention of all our readers is heartily invited. This report displays progress in all branches of the Association's work. During a year of very discouraging business sentiment the revenues of the Association advanced over 1920 more than \$9,000, and the membership made a gain of twenty-two hundred. In point of service to the forest conservation movement, and to the cause of tree planting on the prairies, the past year was a

distinct improvement on any previous season through which the Association has passed. The feeling of the directors and officers, however, is that the Association cannot afford to rest upon past achievements but must seek to extend its educational service far more intensively and extensively so as to more thoroughly carry out the object for which it came into existence twenty-two years ago.

A One-year Term.

Amendments were passed to article seven of the Constitution of the Canadian Forestry Association by which the offices of President and Vice-President respectively shall not be held by the same person for two years in succession. This change originated with Mr. Ussher and Mr. McLachlin, President and Vice-President, respectively, in 1920 and 1921.

Article five was amended to make provision for the appointment of an Association Manager and to this office Mr. Robson Black, Secretary of the Association, was appointed at a salary of \$6,000.

The Association's list of Directors and Officers as determined at the Annual Meeting is as follows:—

Patron:—His Excellency the Governor-General.

Honorary President:—Honorable W. L. Mackenzie King.

Hon. Vice-President:—Honorable Chas. Stewart.

President:—D. McLachlin.

Vice-President:—R. H. Campbell.

PAST PRESIDENTS.

(Directors Ex-officio).

William Little,
Thomas Southworth,

Hon. W. A. Charlton,
F. C. Whitman,
Lt.-Col. J. B. Miller,
Col. J. S. Dennis,
J. S. Gillies,
C. E. E. Ussher.

ELECTED DIRECTORS.

(Ontario).

Gordon C. Edwards,
Clyde Leavitt,
R. H. Campbell,
Dr. B. E. Fernow,
C. J. Booth,
E. J. Zavitz,
W. C. Cain,
Percy B. Wilson,
T. W. Dwight,
J. A. Gillies,
J. W. Black,
W. E. Bigwood,
Cyril T. Young,
Hon. Geo. Gordon,
Dr. A. C. Rutherford.

(Quebec).

David Champoux,
Alex. MacLaurin,
Monseigneur Roy,
G. C. Piche,
Sir William Price,
Brig-Gen. J. B. White,
Geo. Chahoon, Jr.,
Ellwood Wilson,
R. O. Sweezey,
Hon. Sir Lomer Gouin.

(New Brunswick).

G. H. Prince,
Angus McLean,
W. E. Golding.



LEADERS IN NURSERY INDUSTRY OF WESTERN CANADA.

(Photo taken in a block of Laurel Leaf Willows in grounds of Prairie Nurseries, Ltd. during summer 1921.)

Commencing at left: Mr. H. L. Patmore, Prop. Patmore Nurseries, Brandon, Man., Lieut. Col. B. D. Wallace, Prop. Island Park Nurseries, Portage la Prairie, Man., Mr. O. Torgeson, Director; Mr. T. A. Torgeson, Managing-director, and Mr. Geo. Wicklow, Farms Manager, of Prairie Nurseries, Ltd.

(Nova Scotia).

Hon. N. Curry,
F. J. D. Barnjum.

(British Columbia).

Hon. H. Bostock,
Hon. A. C. Flumerfelt,
R. D. Prettie,
P. Z. Caverhill,
Chas. D. McNab,
H. R. MacMillan.

(Alberta).

William Pearce,
G. R. Marnoch,
Hon. J. E. Brownlee.

(Manitoba).

John W. Dafeo,
Edw. FitzGerald,
G. W. Allan, K.C.,

(Saskatchewan).

Hon. W. R. Motherwell,
Hon. C. M. Hamilton,
Jos. Glenn.

Territorial Vice-Presidents.

- Ontario—Hon. Beniah Bowman, Toronto.
- Quebec—Hon. Honore Mercier, Quebec.
- New Brunswick—Hon. C. W. Robinson, Fredericton.
- Nova Scotia—Hon. O. T. Daniels, Halifax.
- Prince Ed. Island—Hon. Murdoch MacKinnon, Charlottetown.
- Manitoba—Hon. T. C. Norris, Winnipeg.
- Saskatchewan—Hon. W. M. Martin, Regina.
- Alberta—Hon. H. Greenfield, Edmonton.
- British Columbia—Hon. T. D. Pattullo.
- Yukon—Geo. Patrick Mackenzie, Commissioner, Dawson.
- Patricia—His Honour, Col. Henry Cockshutt, Lieut.-Governor of Ontario.
- Ungava—His Grace, Mgr. Bruchesi, Montreal.

It was decided to refer the question of continuing the essay competition on farm forestry as announced in the Forestry Magazine for September to the incoming executive for action.

The following directors of the Association were present: Messrs. Ussher, McLachlin, Dwight, Young, Golding, Leavitt, Black, White, J. A. Gillies, Colonel Miller, Campbell, Gordon, Bigwood, Zavitz, Prettie.

THE AFTERNOON MEETING.

The large audience at the Canadian Forestry Association's annual meeting at Toronto, January 10th, listened with

great pleasure to addresses given by Hon. E. C. Drury, Premier of Ontario (which is reported in this issue of the Magazine); an address by Mr. Edward Beck, Manager of the Canadian Pulp and Paper Association, which was in the January issue of the Canadian Forestry Magazine, under the title, "A Canadian Observer in Scandinavia"; a brief and breezy and informative talk by Mr. Archibald Mitchell, western lecturer of the Canadian Forestry Association, on the need for a

tree planting campaign in Western Canada; an illustrated talk by Mr. Arthur Herbert Richardson, of the Provincial Forestry Branch of Ontario, on "Reforesting the Waste Lands of Ontario." Mr. Richardson's address was peculiarly interesting and was followed with devoted attention by all present. His illustrations were both apt and beautiful.

The afternoon session was one of the most interesting and helpful ever held by the Canadian Forestry Association and the large audience gave plentiful indication of appreciation.



Everybody Smokes

OLD CHUM

CANADA'S FAVORITE
PIPE TOBACCO



President Ussher's Address

At the last annual meeting, at which you did me the great honor of electing me as your President for 1921, I urged and with every possible respect, that I believed the best interests of the Association required the position of President to be occupied for one year only by the person elected to that important office. It is with that in mind, and the added experience of a second year, that induced

me to recommend to the directors that the President and Vice-President shall not remain in office two successive years. This amendment is before you for consideration.

At the last annual meeting it seemed desirable to bring to your attention the necessity for creating the position of Manager. The dual duties of Manager and Secretary can be filled by the same person

until the affairs of your Association are of sufficient volume to require separate officers for the position. At that time I commended in strong terms the excellent services of your present Secretary, Mr. Robson Black, and a further year's knowledge of his practically inestimable value has convinced me that I made no mistake in urging upon you the great value that his services are to the Canadian Forestry Association. I may also express the hope that should you agree to a change in the constitution the incoming Board of Directors will unanimously appoint Mr. Black as Manager.

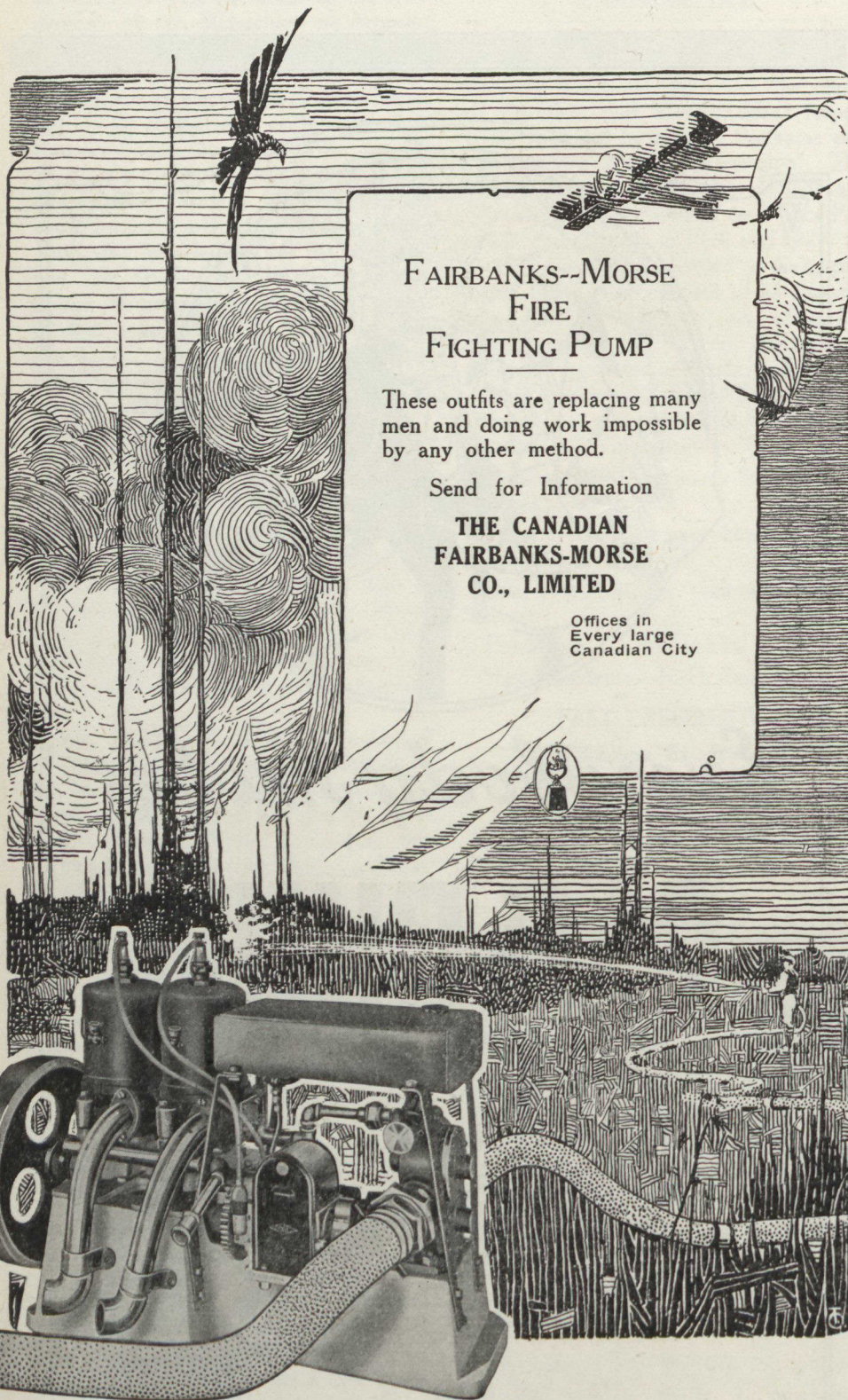
It is desired to emphasize one of the reasons for stating the comparative figures for results in given years, i.e., 1921 contrasted with previous years.

I am perfectly satisfied, and believe you will be, that no one member of your Board of Directors for 1921 has a different purpose in mind in giving these figures, which will be printed later on, than to spur all members of the Association to still greater activity during 1922. The Directors were sufficiently fortunate in securing fairly satisfactory results for the year 1921 in the face of very adverse conditions, but they point to that as one of the direct results of practical team work, all being inspired with one aim to advance the interests of the Association.

It is desired also to place emphasis on the statement that it is really necessary to attain an annual income of at least \$100,000 and one of the means which can be adopted, and which in other lines of business has been adopted to increase membership and increase enthusiasm and which resulted in exceedingly gratifying increases, is a carefully prepared method of work, in commencing with a selected community whereby intensive cultivation (if I may use that figure of speech) is adopted. I understand it is the intention to bring this matter to the attention of the 1922 Board of Directors.

No doubt there is a long distance between the maximum annual income so far obtained by the Canadian Forestry Association and the \$100,000 minimum goal, but there are many of us here who have seen many more difficult things accomplished, and in my belief no practical reason exists why we cannot reach that figure if we are all determined to get that result and work together for it.

I wish to acknowledge with grateful thanks the strong support given your President during the past year by the Board of Directors, and again I commend your untiring Secretary, Mr. Robson Black; his enthusiastic work every working day in the year—and I rather suspect he can be properly accused of working overtime) has accomplished results that we are all proud of.



Advisory Committees to Aid Ontario and Quebec

Deep interest has been shown in the proposal emanating from the Canadian Forestry Association that an excellent purpose would be served in the provinces of Ontario and Quebec if the Ministers of Lands and Forests would call into consultation periodically committees of practical men capable of advising the Government on behalf of all the wood-using industries of either province. Such committees would not consist of nominees of the Canadian Forestry Association but of the lumber and pulp and paper industries. The application of the advisory council idea to Ontario and Quebec was suggested by the success of the advisory committees already functioning in British Columbia and New Brunswick. It is everywhere recognized that forestry legislation and changes in regulation must be workable and reasonable or they will bring about confusion in the relations between the forest service and the industries and hamper industrial development. Two reports explaining the progress of this proposal were presented at the Annual Meeting of the Canadian Forestry Association at Toronto as follows:

(1) Report of Committee appointed to interview Hon. Mr. Mercier, Minister of Lands and Forests of Quebec, re appointment of advisory committee.

In the absence from Quebec of Mr. W. G. Power, one of the Committee members nominated by our Directors, we asked Mr. R. P. Kernan, woods manager of the Baie St. Paul Lumber Company to accompany our deputation with Mr. Ellwood Wilson, Mr. B. M. Winegar, of the C.P.R. and the Secretary of the Canadian Forestry Association. A visit was paid to Hon. Mr. Taschereau and Hon. Mr. Mercier at Quebec on Wednesday, December 21st.

The Premier of Quebec, while broadly endorsing the principle of consultations with the wood-using industries after the manner of the Advisory Committees of British Columbia and New Brunswick, referred the deputation to his Minister of Lands and Forests.

Hon. Mr. Mercier gave us a careful hearing and frankly discussed the proposed Advisory Committee. The Minister was especially solicitous that he might avoid previous experiences whereby those whom he had consulted had not been able to speak with sufficient authority for the industries or limit holders as a body

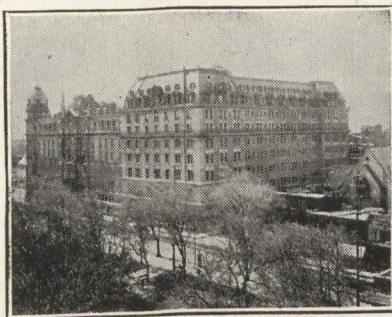
and thus consultation at times had only intensified his troubles as administrator.

The Minister stated finally that if the Canadian Forestry Association would undertake to have an Advisory Committee formed which could truly express the opinion of the pulp and paper industry, the lumber industry, and limit holders in all portions of the province, he would promise to call such committee into con-

sultation before legislative or departmental changes affecting the timber industries are promulgated. The Minister's assurance was definite and the deputation felt fully satisfied with the results of the interview.

Ontario Favorable.

(2) Report on meeting of delegation of Canadian Forestry Association at Tor-



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THE BRIDGE RIVER TIMBER
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We own and offer 8% Cumulative Preference shares with a bonus of 75% Common. The Common show an earning power of over 23%.

We recommend the purchase of these shares for the following reasons:—

- 1.—The timber is a high class Virgin Pine Forest.
- 2.—The average haul to water is only 3-4 of a mile.
- 3.—The quantity is under estimated.
- 4.—The Capitalization is low.
- 5.—The assets on an extremely low valuation, show value of \$175.00 for each Preference Share authorized.
- 6.—Competent authorities value the Timber at more than three times the purchase price paid for it by the Company.
- 7.—If only 5% of the best timber were sold at to-day's highest prices, enough net profits would be earned to pay back every dollar invested in the Company and the Stockholders would still have their Common shares, which would own and control the Company, with 95% of its assets intact.

Prospectus will be furnished on application.

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onto, Wednesday, December 28th, with Hon. Beniah Bowman, Minister of Lands and Forests, concerning the appointment of an Advisory Committee.

The Deputation consisted of Mr. C. T. Young, Dr. Howe, Mr. Ellwood Wilson, who invited as participants the following: Mr. G. H. Prince, Provincial Forester of New Brunswick, and Mr. P. Z. Caverhill, Provincial Forester of British Columbia, and Mr. G. C. Piche, Provincial Forester of Quebec. The Secretary of the Canadian Forestry Association was also present and introduced the object of the interview.

Hon. Mr. Bowman in reply asked many questions of the British Columbia and New Brunswick foresters and expressed his satisfaction with the working of the Advisory Council idea from the standpoint of the administrator. He also remarked that it probably could be applied with like results in Ontario and bring the Provincial Government and the wood-using industries into closer harmony with mutually beneficial consequences. The Minister agreed that co-operation between the Forest Service and the lumber and paper industries must be secured if any progress was to be made. He asked to

be allowed to consult his colleagues and promised to inform us of his decision, if possible, at the time of this meeting.

Recently at the annual meeting of the Quebec Limit Holders Association a committee consisting of Mr. Stearns and Mr. McLachlin was appointed to confer with the Minister of Lands and Forests as to his wishes respecting an advisory committee. At the annual meeting of the Canadian Pulp and Paper Association the principle of an advisory committee to assist the Minister of Lands and Forests both in Ontario was heartily approved and it was decided to recommend action on the matter to the incoming executive. An effort will be made to have two of the strongest company executives in Quebec act for the pulp and paper industry in future negotiations with the Minister of Lands and Forests. The Forestry Magazine understands similar action will be taken in regard to the advisory committee for Ontario.

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Day in and day out service makes Monarch Tractors economical for hauling in the lumber woods.

Monarchs give all-year-round service—on snow or ice, in deep sand or mud—for they lay their own tracks as they go—broad steel chain treads that get sure footing on any surface, and which do not sink even in the lightest soil.

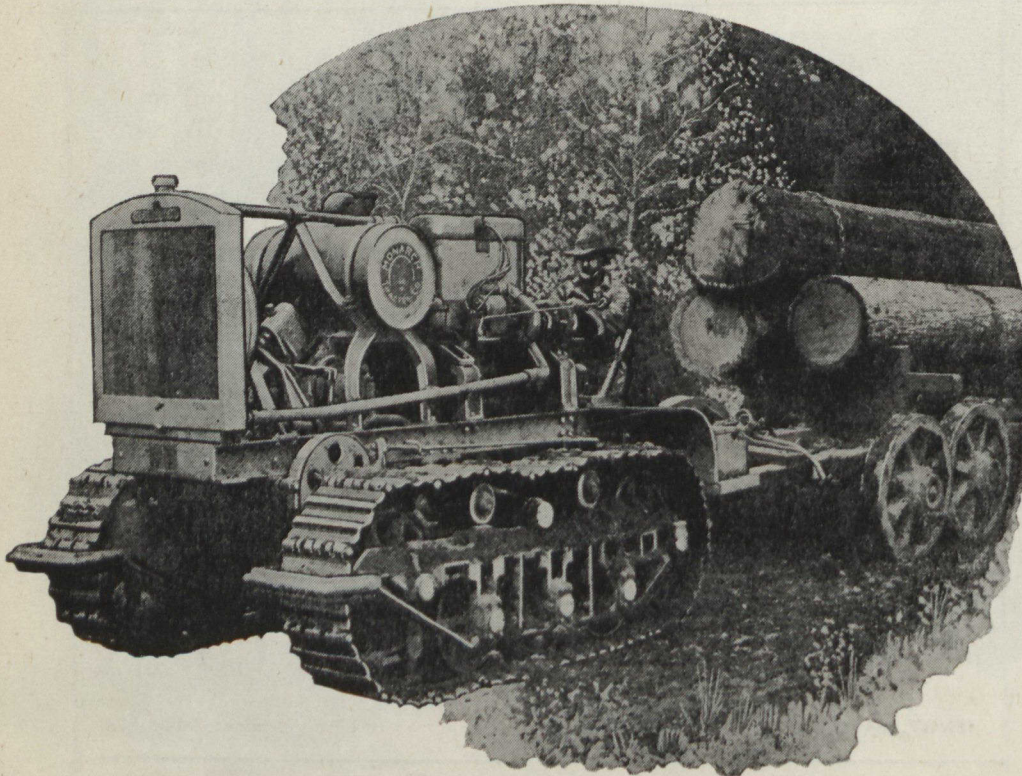
Out in the woods, where mechanics are scarce and spare parts hard to get, you will especially appreciate the sturdy, simple construction which enables them to give continuous, uninterrupted service.

Their cost of operation is low for their fuel is coal oil.

They are easy to operate and will turn in their own length.

In addition **Monarch Tractors** furnish power for snaking or for any purpose for which a stationary engine is required.

Monarch Tractors Limited, Brantford, Ont.



HOW CHILDREN ARE INFLUENCED.

How the Speakers Bureau of the Canadian Forestry Association reaches the children of the public schools is well attested by the following comments in a letter from Mr. J. E. Keenan, Secretary-Treasurer of Keenan Brothers, Limited, Owen Sound, Ont., a devoted member of the Canadian Forestry Association who has rendered much unselfish service to the cause of forest conservation in his community. Mr. Keenan's letter states that all of the pupils in the Owen Sound Collegiate Institute witnessed the Association's travelling lecture-set on forest protection and listened with interest to the manuscript which was read in different classes by co-operation of the teachers. The principal of each of the public schools also took hold of the lecture set and arranged that it should be delivered to the senior pupils. Mr. Keenan very kindly carried out the negotiations.

A NEW BRUNSWICK FRIEND.

From Mr. George Allen, Wapske, N.B.:

"I would like to see your Magazine placed in the hands of every man in New Brunswick, as I have found every page filled with useful information and I can assure your Association will always have my support as a member and in every other possible way."

Q. Which province has the most timber?

A. British Columbia contains as much timber as the rest of Canada.

Our Lecturers Reach Back Communities by Sleigh

Lectures on forest protection during the winter are being carried out by the Canadian Forestry Association. One of our most interesting enterprises is now under way in Northern New Brunswick where Messrs. Angus Cooch and Mr. A. S. Legere, an accomplished speaker are at work. A letter just received from the Provincial Forester, Mr. G. H. Prince, states: "In regard to the educational campaign now being carried on in New Brunswick by members of your staff, let me express my hearty approval of its value in preventing fires by awakening public interest. I was present at Nelson at one of Mr. Cooch's meetings and assisted him in Moncton on the 19th instant when he addressed 3,300 school children and 88 school teachers. Arrangements were made for this meeting by Hon. C. W. Robinson, Minister of Lands and Mines, and the Secretary of school trustees in Moncton. The children gave Mr. Cooch's address splendid attention and burst out in applause many times as the pictures of fire fighting, fishing and hunting were shown. In the evening Mr. Cooch repeated the pictures after my address on fire protection and care of the farm woodlot, to the 250 farmers who attended the United Farmers and Dairy-men's Convention meeting. I expect Mr. Cooch will arrange to visit Fredericton where we have about 300 new student teachers. Everything considered, the lecture tour is a splendid success."

One of the most interesting and unusually features of this trip is that part of the itinerary will have to be covered by sleigh. The lecturers are well equipped with an electric generator, a motion picture machine and stereopticon, with plenty of entertaining films and lantern slides. During the first three weeks of February most of the public addresses will be in French. One of the English lectures at Doaktown attracted 236 people and another at Blackville drew 187.

PUBLIC FOREST SERVICES SUFFER.

"The most critical difficulty which confronts the Forest Service to-day is that of securing and holding a personnel able in numbers and in qualifications to do

efficiently the growing volume of work which we are called upon to perform," says Col. W. B. Greeley, Chief Forester of the United States Department of Agriculture, in his annual report. "For a period of four years," he states, "the Service has suffered a steady loss of trained and experienced men. The annual turnover in the various groups of scientific and technical employees still ranges from 14 to 27 per cent. The outside compen-

sation received by these former employees of technical training exceeds, on the average, their total compensation in the Government service by 60 per cent. During the fiscal year 1920, 330 rangers, a full third of the ranger force, resigned. The Forest Service is compelled to function in no small measure as a training school for private enterprises, taking green and inexperienced employees from the civil service register, carrying them through a breaking-in period which is comparatively unproductive, and then losing a large proportion of them at the time when they are qualified for really effective work."

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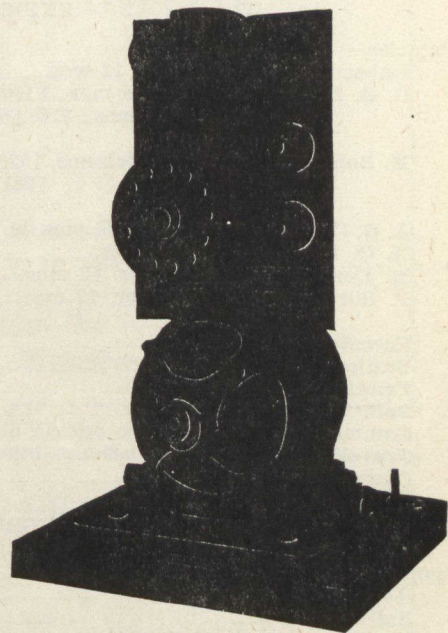
Belt Connected Plants—Direct Connected Plants—Wires and Supplies—Water Systems.

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

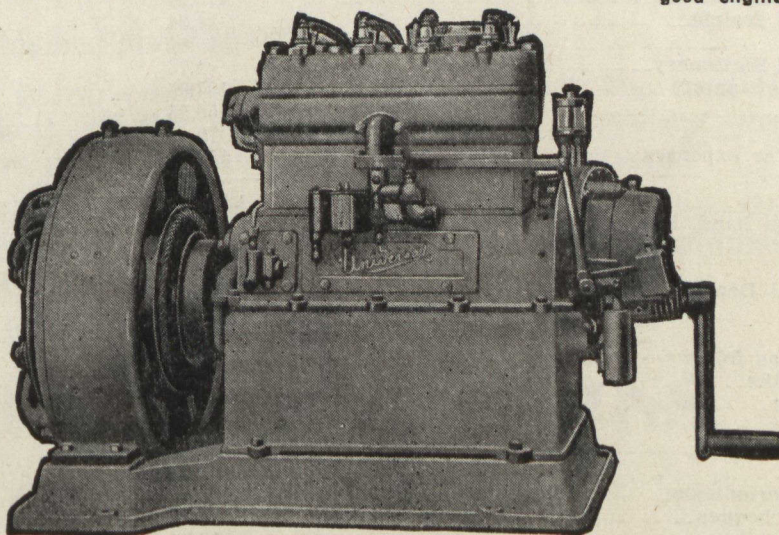
The Plant is 32 volt and has a capacity of 32 lights direct from the generator or 67 lights for five hours when combined with TITAN 216 ampere hour battery.

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Canadian Forestry Association

Treasurer's Audited Statement for 1921.

RECEIPTS.

Balance on hand from 1920.....		\$ 1,990.27
Government Grants—		
Dominion.....	\$9,000	
Ontario.....	2,000	
British Columbia.....	1,500	
Quebec.....	1,000	
Saskatchewan.....	1,000	
New Brunswick.....	550	
		15,050.00
Special Subscriptions.....		14,188.00
Fees.....		14,899.79
Advertising.....		3,661.44
Sale of Books.....		31.14
Refund Insurance.....		1.87
Exchange allowed on cheques.....		27.50
		<u>\$49,850.01</u>

EXPENDITURE.

Salaries—		
Robson Black, Secretary, 12 mos.....	\$5,000.00	
G. G. Blyth, Asst. Secy., 5 mos., \$150.....	\$ 750.00	
7 mos., \$166.66.....	1,166.62	
		1,916.62
M. Robinson, Treasurer, balance, 1920.....	\$ 200.00	
1921.....	500.00	
		700.00
A. G. Cooch, Clerk on Car, 10 mos. at \$130.00.....	1,300.00	
H. G. Brown, Clerk, 12 mos.....	1,200.00	
M. Darragh, Stenographer, 12 mos.....	1,200.00	
P. Burbidge, Stenographer, 12 mos.....	780.00	
		12,096.62
Forestry Journal.....		14,571.89
Stationery and Supplies.....		2,080.88
Printing Circulars, etc.....		2,539.63
Salaries of Lecturers.....		1,980.00
Commission and salary to agents obtaining members and adv.....		1,028.45
Travelling expenses of officers other than Secretary.....		4,357.27
Clerical assistance.....		929.87

ADVANCED TO SECRETARY FOR EXPENSES.

Disbursements—		
Hotels and meals.....	\$ 406.80	
Railway fares.....	422.45	
Sleepers, chairs and tips.....	226.46	
Telegrams and telephone.....	18.72	
Baggage, cabs and car fares.....	112.20	
Express and freight.....	10.94	
Postage.....	10.00	
Printing and Stationery.....	1.75	
Wages to assistants.....	107.05	
Incidentals.....	58.25	
Sundries.....	70.22	
Exhibition Car expenses.....	153.32	
	1,598.16	
Less—Bal. on hand, December 31, 1920.....	121.23	
	1,476.93	
Bal. on hand December 31, 1921.....	223.07	
		1,700.00
Office Expenses as follows—		
Rent 12 months.....	840.00	
Electric light.....	26.00	
Telephone.....	116.21	
Telegrams.....	274.91	
Petty Cash.....	280.79	
Books and periodicals.....	28.90	
Postage for cheques.....	8.50	
Rent of typewriter.....	17.25	
Water and ice.....	14.00	
Insurance.....	11.70	
Express.....	21.59	
Press clippings.....	75.15	
Furniture and repairs.....	86.98	
Cleaning office.....	20.00	
Miscellaneous.....	5.05	
		1,827.03

(See also page 632)

QUEBEC FOREST ENGINEERS ACTIVE

The first convention of the Association of Forest Engineers of the Province of Quebec, comprising a membership of eighty forest engineers, was convened recently in Quebec City. This Association of Quebec forest engineers was organized in 1920, with approval of Hon. Mr. Mercier, Minister of Lands and Forests, to co-operate with the department on all matters connected with the protection and technical work in relation to Quebec forest lands, the interest of limit holders, etc., in cutting logs and lumber in general in the province.

At the inception and organization of the association last year, an Advisory Board was elected to draft and submit by-laws for approval at the first annual convention just closed.

The election of officers took place with the following result:—President, Mr. Omer Loussier, of Quebec; vice-president, Mr. Decarteret, of The Brown Corporation; secretary-treasurer, V. Ballarge, of Department of Lands and Forests. Councillors:—G. C. Piche, Chief of the Forest Service, Ellwood Wilson, Laurentide Co.; Henry Sorgius, St. Maurice Forest Protective Association; B. Guerin, Southern St. Lawrence Protective Association, and G. Maheux, Provincial Entomologist.

The by-laws drafted were submitted, and approved, and a technical outline of policy for inventory and working plan of forests was submitted by the Advisory Board, and discussed between forestry experts of the Department, and the forest engineers connected with Quebec logging interests. This was finally approved and ordered sent to the Committee on Standardization for consideration, with the understanding that the conclusions of this committee would be printed and copies of same mailed to the engineers of all Quebec logging firms.

Mr. Piche was asked by Mr. Ellwood Wilson, of the Laurentide Co., if it was the intention of the Department to bring in legislation in connection with the suggestions discussed and sent to the Committee of Standardization. The chief Entomologist, of the Department of Lands and Forests, replied that it was the wish of the Department to co-operate with and assist the Association and work for the advancement of forestry interests.

In reply to another question, Mr. Piche said after May 1st, the time allotted by the Order-in-Council in September last, giving privileges in cutting logs this winter, that the law which prevailed prior to September last, in regard to logging and stumpage dues, would again govern forest operations.

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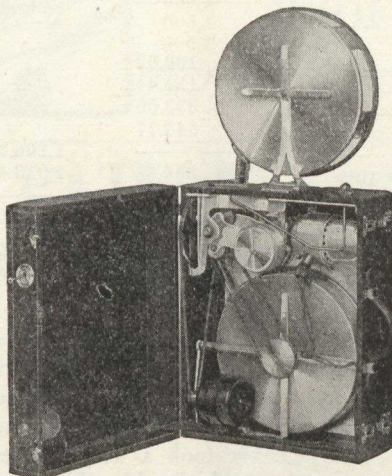
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General Expenses as follows—

Exhibition Car.....	\$2,386.64	
Lectures.....	666.73	
Railway Transportation.....	295.00	
Express and Freight.....	24.07	
Insurance.....	50.00	
Advertising.....	12.00	
Books and stencils.....	30.58	
Rent and chairs for meeting.....	12.25	
Refund.....	5.00	
Miscellaneous.....	36.46	
		3,518.73

Miscellaneous—

Auditor's Fee, 1920.....	100.00	
Purchase of books for sale.....	124.44	
Postage.....	633.00	
Bank exchange.....	348.77	
		1,206.21

Balance in bank, \$2,702.01, less outstanding cheques... \$ 688.58

2,013.43

\$49,850.01

Aeroplane Service.

Mr. G. C. Piche referred to the Forestry Convention at Toronto, saying that Mr. Ellwood Wilson read a paper at the convention regarding his company's experience with an aeroplane service for forest surveying and air photography, and he requested Mr. Wilson to favor the meeting with a talk on the main points of his paper.

Mr. Wilson complied in a short talk and in reference to the value of the aeroplane for survey work in the forests, said the method was a decided advancement over previous ones. Mr. Wilson pointed out that, after three years' experience with aeroplanes in forestry work, he would say they were decidedly useful for vertical work in connection with forestry.

Speaking of the values of photography from the air, Mr. Wilson asserted that they were far superior to maps and plans, and so perfect in an educational sense that, when photographs of forest property and lakes were shown to the management of lumber firms, they could realize the location and extent of the areas. He also said that the trees could even be distinguished to such an extent that one could name the various species. Another thing he referred to in order to show the value of photography taken in the air, was in the purchase of a lot or even of limits which enabled the forest engineer to know the value of the properties and advise his firm whether to buy or not.

In answer to a question Mr. Wilson said aeroplanes could be operated in winter as well as in summer, but owing to the white ground caused by the snow the photographs were not so accurate, and furthermore the green leaves on the trees and the various shades were a great help in summer.

P. Z. Caverhill, chief forester of the Department of Lands, British Columbia, who was in attendance at the convention, was introduced by Supt. Price. He said British Columbia had its wealth of forest

resources like Quebec, but difference in growth and in species of trees. He had, however, attended the convention of Quebec forest engineers to gain information. The speaker took a deep interest in the remarks made by Mr. Wilson in support of the aeroplane for forest survey and photography in the air, and would say that British Columbia had the same results from aeroplane experiments, Mr. Caverhill referred to an occasion of a big windstorm which swept over the British Columbia province, and the destruction of 300,000,000 feet of timber, and how the aeroplane with the photographic expert had been sent into the air and gave an almost exact report of the area destroyed.

Getting Accurate Estimates.

Mr. Nesbitt, forest engineer in the employ of Price Bros., Limited, gave a short talk on the aeroplane service for his company. He told of the work he is now carrying on for his company in connection with their vast timber limits and the use of aeroplanes, three in number. He submitted a number of photographs taken in the air in demonstration of the efficiency of forest engineering with the aid of the aeroplane, which was enabling Price Bros. to obtain an accurate estimate of their limit holdings, their values, and the various species of trees.

Alphonse Landry, in charge of the government airdrome at Roberval, in the Lake St. John district and the northern timberland of the province exhibited photographs taken in the air to demonstrate the values of photography from the aeroplane in forest survey work.

Annual subscription to "Canadian Forestry Magazine," with membership in Canadian Forestry Association, \$2.00. 224 Jackson Bldg., Ottawa.

FUR FARMS IN CANADA.

(Halifax Chronicle)

It is beginning to be realized that before long the main reliance of the fur markets of the world for supplies must be the breeding of fur animals under conditions of domestication. Even the muskrat-producing swamps will be managed as fur-growing farms.

In that direction Canada is now far in the lead, the total value of fur-bearing animals on farms in the Dominion being \$4,632,600.

There are 306 fox-fur farms on Prince Edward Island—more than half of Canada's total number. Nova Scotia has 52 fox farms, New Brunswick 57, Quebec 76, Ontario 40, the Prairie Provinces 18, and British Columbia and the Yukon 24.

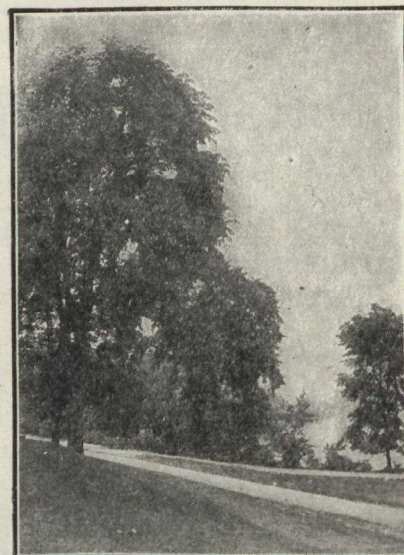
Nova Scotia has three mink farms, Quebec one, Ontario one, and British Columbia one.

Quebec has two raccoon farms, and the Prairie Provinces have one farm devoted to the rearing of caracul sheep for the fur (derived from the new born animal), which is known in the market as "Persian lamb."

The total number of fur farms in Canada is 582.

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Quebec Alive to Forest Problems

A strong and definite pronouncement on the forest policy of Quebec was given by Honorable Honore Mercier, Minister of Lands and Forests, at the luncheon of the Canadian Pulp and Paper Association at Montreal, January 27th.

"There is no doubt that the time has come to make a good start in the reforestation of our timberlands," said Mr. Mercier. "We have over seven million acres of waste lands belonging to private individuals and to the Government. We intend to begin this important work very soon, and we expect that the private forest owners will not hesitate to do their share. Next Spring, we shall enlarge the nursery at Berthierville, so as to bring its capacity to at least ten million trees per annum. We hope to be able to plant in this province every year at least a tree for every one that will be cut, so as to improve our forest wealth and remedy the losses suffered in the past by fires, bad lumbering, poor settlement and other causes. Legislation will also be introduced to encourage individual effort. I am glad to have the opportunity of commending the work done by such companies as the Laurentide Company, which maintains a large nursery near Grand Mere and has experimented extensively in various plantations. We hope that others will follow suit, as this problem requires the co-operation of everyone."

The Minister sounded a note of warning to companies which pollute the running waters by allowing mill waste to run into rivers without first being treated to neutralize harmful ingredients. "This is a matter of major importance to the community. Pure water is one of the Creator's best gifts to man. Private interests, even those of great industrial undertakings of vast acknowledged benefit to the province, cannot be allowed to pollute public waters, endanger human and animal life and destroy our wealth of fish.

In other countries it has been distinctly held that this condition of affairs cannot be tolerated, and I do not say that a

similar stand must be insisted on here; and that mill waste must be properly treated before being permitted to escape into our rivers and lakes. I am convinced that with a due share of good



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will and regard for the general welfare of the public some means can be found of complying, without compulsion, with the necessary requirements of the law in this matter, as well as in the construction of the necessary fishways in all dams."

A Tribute to Sir Lomer Gouin.

After emphasizing the necessity of forest protection, Mr. Mercier reviewed

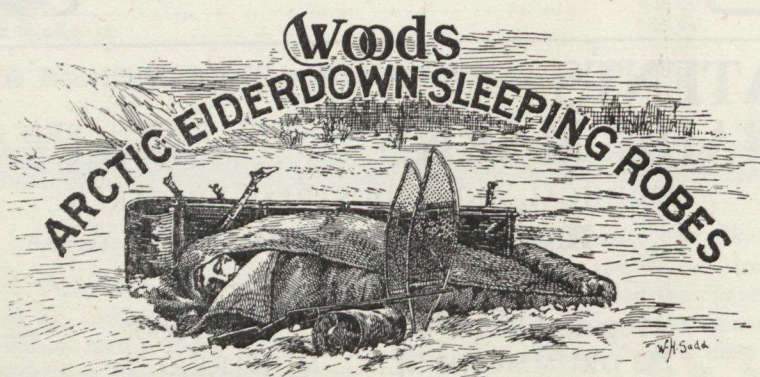
the expansion of the pulp and paper industry under the Gouin administration. "The foundation of the industry was laid by enacting careful regulations governing the control of waterpowers, the cutting of timber, the protection of forests from fire, reforestation, and to ensure the manufacture in Canada of timber cut in the province on Crown lands by making such manufacture a condition of the lease of

timber limits. The result is seen in the fact that we have today over 30 pulp and paper factories, representing an investment of 100 million dollars. And yet, this is but a commencement. Notwithstanding a recent temporary setback, Quebec confidently believes that it is destined to become the most important centre in the world for the manufacture of pulp and paper. It can hardly be otherwise. We have the raw material in abundance; we have expert manual labor in this kind of work; we have numerous and well-situated rivers for the floating of logs, and with considerable water-powers we have electric power in profusion. And as a guarantee for the capitalist who risks his fortune in such enterprises, we have the inestimable advantage of being free from socialistic agitations and of having a population which is a respecter of peace, of order, and of property."

Another note of warning could be discerned in this pronouncement: "It is contended in some quarters that our policy prohibiting the export from Canada of our raw material for pulp and paper is to some extent nullified by the fact that considerable quantities of it are shipped into other provinces and thence finds its way into the United States. The suggestion has been made to the Government that legislation may become necessary to prevent this roundabout way of evading existing laws and regulations. I am not ready to say what steps may be taken to meet this state of affairs, but something must surely be done.

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Ugly Facts That Canadians Face

By Frank J. D. Barnjum.

It has been recently brought to my attention that some foreign buyers of Canadian wood, who are trying to camouflage their own operations, are making the statement that my efforts to conserve Canadian wood for Canadian industries is not an unselfish campaign, as an embargo on wood being shipped out of the country would materially increase the value of lands which they claim I own in the United States.

I do not own an acre of land in the United States or a dollar's worth of property of any nature in that country. Even my own relatives who have small land holdings in Maine have sold a large part of the stumpage on the same, leaving them with but a small supply of wood for their own mill, so that they are in the same boat with other pulp and paper manufacturers in the United States.

If I had any selfish motives I would not be advocating an embargo on fee land wood, as my holdings are all fee land in Nova Scotia, and if it is worth more to the settler and farmer to be free to ship his wood to the United States, the same argument would apply to my holdings as well.

I have become so thoroughly imbued with the critical situation that is facing this continent with regard to its wood and timber supply that I am withdrawing from business as rapidly as possible so as to be in a position to devote my whole time to what I consider is the most important problem facing Canada, namely, the conservation of her wood supply.

It has been frequently stated that the bud worm has passed over New Brunswick and departed, but from a recent cruise on quite a large area in that Province it was discovered that thirty-five per cent of the soft wood trees were defoliated by this pest the past summer.

An owner of some 250,000 acres of land in Maine advised me last week that after a careful cruise of his lands the investigators found the fir was all dead, and from 48 to 52 per cent of the spruce as well.

I have seen another recent report on a large area in Northern Maine which shows 64 per cent spruce and fir dead.

The whole situation looks very serious to me. It would seem as if man and insect were fighting for control of the earth as, without trees, human life could not exist.

Slash Threatens Destruction.

The time is approaching when we shall be forced, for the very preservation of our lives, to burn all logging slash and debris left in the woods. This slash has

been very aptly termed by Dr. J. M. as a breeding place for insect life which Swaine "the garbage of the forest." It threatens the destruction of our forests as just as much a menace to our tree growth the garbage of a city is to human life,

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with the added danger from the enormously increased fire risk. If all land owners are required to burn their slash, it will be no hardship as every one will be on the same basis and the cost will simply be passed along or added to the sale price of the product, whether it be pulp wood or lumber. As this is one of the most effective measures in prolonging the life of our forests, no one should object to its adoption.

The Canadian pulp and paper companies should—

(1) Reduce the cut on their own lands as near one-half as possible;

(2) Insist on an embargo or an export tax of not less than \$10.00 per cord on fee land wood, so as to save for the mills of Canada the large amount of wood that is now being shipped out of the country, and with the immense amount of capital invested in Canada in the pulp

and paper industry this is imperative;

(3) Insist on more and better fire protection;

(4) Insist on the burning of all slash;

(5) Insist on the utilization of every inch of the tree that is cut down;

(6) Improve present wasteful logging methods; and

(7) Insist on reforestation on a large scale.

The most serious question to consider in this connection is what we are to do for a wood supply for our mills between the time of the exhaustion of our present stand, some fifteen years hence, and the time when the seedlings we are about to plant grow to the minimum size for pulp wood, some forty years hence.

Increase in Consumption.

Very few writers figure on the enormous increase in consumption of all kinds of wood that is going on on this continent through increase in population. This increased consumption, together with the enormous destruction caused through fire, bugs, wind, and waste in every logging operation, is usually overlooked in computing the duration of our present wood supply. They simply take the estimated stand, which is always very wide of the facts, and then compare this with the annual cut, which is always much larger than is reported, leaving out of consideration entirely the very much larger elements, namely, increase in consumption and the tremendous loss through waste.

Even the annual shipments of Christmas trees from the State of Maine increased in twelve years from 600 to 1,750,000 trees. I merely cite this as an example of the enormous increase in consumption in only one small branch of the wood-using industries.

In this connection I should like to call attention to Bulletin No. 835, entitled "Wood for the Nation," written by Colonel W. B. Greeley, Chief Forester of the United States, and published by the U. S. Department of Agriculture, which is one of the best written and most comprehensive articles that has come to my notice. This Bulletin should be read by every one who takes any interest in forestry.

There should be no further expansion of the pulp and paper industry in the East, from the standpoint that there is not the raw material to feed them. Any new mills that are built in the East will simply be taking the raw material away from the mills which are already operating and which have very large capital investments and upon which whole towns and cities are depending for their existence.

This year we shall, of course, see the same high prices, proportionately, for wood that obtained a year ago, and personally I have always felt that high prices

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From Mr. Barnjum's article:

The entire timber supply in Canada would not last the United States over six and a half years.

The United States has lost by forest fires in the past five years over 56 million acres of timber. With the further depletion due to cutting, wind damage and insect attacks, the total destruction in the United States equals over 26 million acres per annum.

Between La Tuque and Cochrane on the National Transcontinental Railway, 20 million cords have been destroyed by fire as against one million which have been cut and hauled out on the same railroad.

for pulp wood and paper are the only salvation of the situation, as high prices are the only thing that will reduce waste and prolong the life of our wood supply and the life of the pulp and paper mills.

High Prices Help Conservation.

Just so long as low prices for wood and paper continue, this enormous waste will go on. High prices are the most practical conservation measure we can have. The higher the value, the greater the conservation; so in my efforts to arouse the public to our critical condition with regard to our wood supply I am simply working not only in the best interest of the pulp and paper mills but for the good of the whole continent as well.

The price for pulp wood for the future will have to be much higher than in the past in order to compensate the land owner for the cost of slash burning, increased fire protection, reforestation, continual increase in length of haul, and increasing scarcity in the supply.

The one consolation the timberland owner has with regard to the loss he has suffered through the ravages of the bud worm is the fact that what he has left will be worth four times as much per cord or thousand on account of the great reduction in the remaining supply. This is, of course, only from the mercenary standpoint, and the sad question remains as to what our children are to do for wood, as we are even now using up their heritage. Every time we cut one of these small, half grown trees, of which our operations are largely made up to-day, we are simply robbing our own children. In fact, it is worse than robbery as it is a menace to their lives.

I have heard the remark made that we are still cutting, in spite of the prediction made thirty years ago that timber would be exhausted in the East by the present time.

My answer to this is that the prediction made at that time has proved absolutely correct, as what was called timber in



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those days is gone forever. I sold my first stumpage at that time and the operator would only cut a mark of logs that would run four to the thousand or two hundred and fifty board feet per tree, while we are cutting mere poles to-day running down as small as forty trees to the thousand board feet, and which at that time would have been considered worthless. So you must not derive any comfort from the fact that we are still cutting trees, but rather the reverse, when we look at the size of the poles in our river drives and the amount of three and four inch pulp wood seen at our railway sidings.

There seems to be so much ignorance with regard to our timber resources that I shall here merely state a few well known



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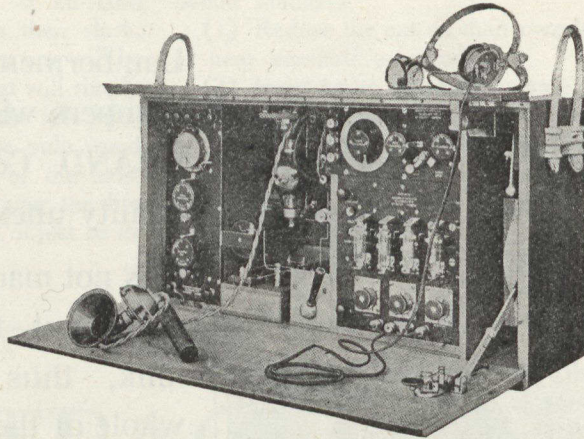
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and acknowledged facts, and then every one, whether he be an expert or a layman, can figure out whether we need any further information before we come to a realization of the alarming condition that is facing us with regard to the future of our wood supply.

In the first place, the word **TIMBER** is a misnomer as applied to our wood growth east of the Rockies to-day; for our timber is practically a thing of the past, and we are down now largely to a pulp wood proposition.

The Story of Maine.

Take the State of Maine, for instance. A few years ago this was called the Pine Tree State, while to-day the pine is gone. It next became the great spruce lumber producer. To-day the saw mills of the mighty Penobscot and Kennebec Rivers are little more than a memory; while here in Nova Scotia it is very difficult to fill an order for lumber calling for even 5 per cent of 12-inch stock.

In addition to the loss from cutting, fire, and wind, very few are yet fully aware of the tremendous loss we have suffered the past three or four years through the spruce bud worm and its resultant pests or followers. It is perfectly safe to state that Maine has lost through dead and still dying timber 50 per cent of her spruce and fir stand. The same figure will apply to New Brunswick. The loss in Quebec has been set by competent authorities at 75,000,000 cords. Nova Scotia has practically escaped this pest. Owing to the small amount of fir or balsam in that Province, it has been unable to gain a foothold here. This scourge, having swept over the eastern country, is

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now working west through Ontario, as well as along the north shore of the St. Lawrence and in the Lake St. John district, and is doing a vast amount of damage in these sections.

Some writers have advocated that we should take a census of our timber supplies, but we already know, without any further information, for all practical purposes, just what the situation really is. All we need is to take the figures we now have and use a little intelligence.

The United States is cutting more than half of the entire amount of timber that is consumed in the whole world, and is using 95 per cent of this at home.

In the United States to-day there remain only 137,000,000 acres of virgin timber, quite a proportion of which is in inaccessible locations and is of indifferent quality. The cut-over and partly burned land amounts to some 250,000,000 acres, making a total of only 387,000,000 acres of forested and partly denuded land.

The loss by fire alone in the United States during the past five years amounts to over 56,000,000 acres, or more than 11,000,000 acres per year. This is from fire alone, to which must be added the depletion from cutting, wind, and insects, which means at least an additional annual shrinkage of 15,000,000 acres, or a total destruction in the United States of not less than 26,000,000 acres per annum.

With regard to the loss from wind, the United States, in just one storm last January, lost from this cause some 7,000,000,000 feet of timber, equal to 14,000,000 cords. In addition to the damage by these gales, we have the continuous loss that is going on all the time in the woods from wind which, if it amounts to only

three trees per acre, more than offsets any annual growth, and the harder our lands are cut, the greater this loss from wind will be.

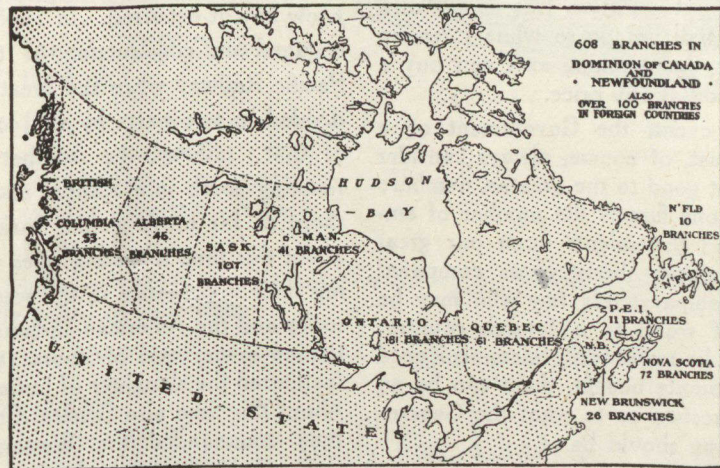
Canada Must Face Facts.

The situation in Canada is equally alarming, for while our annual cut is very much less than in the United States, our standing supply is also very much smaller, and our destruction from fire, wind, and bugs is proportionately larger. As a matter of fact, the entire supply remaining in Canada to-day would not last the United States over six and one-half years. In British Columbia alone 665,000,000,000 feet of timber have been burned, while on the Transcontinental

Railroad between La Tuque and Cochran 20,000,000 cords have been destroyed by fire as against considerably less than 1,000,000 cords which have been cut and hauled out on the same railroad. This shows the enormous waste as compared with the amount that is actually cut.

When we consider all the above facts, it is ridiculous for any one to suggest that some hardship might accrue to the farmer if he were to be deprived of an open market for his pulp wood in the United States. All I can say to this is that every day the farmer allows his wood to stand and grow he is making money very much faster than he possibly can by cutting it now, as it is increasing faster in value than

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anything else in which he can possibly invest; and I cannot urge the farmer too strongly to let his trees grow, even to the point of borrowing money if necessary. In addition, he must remember that every cord of wood he ships out of the country shortens the life of one of our greatest industries, namely, pulp, paper, and lumber; and he is thereby destroying his home market for his produce by the premature closing down our home industries through the exhaustion of their wood supply. Finally, by reducing the cut one-half, which would produce a shortage rather than a surplus, as at present, the farmer's income would be just as large because the price of wood would automatically double and, instead of practically giving his stumpage away which he is doing at present, he would then be obtaining a fair stumpage return as well as an operating profit, and at the same time be conserving our timber supply. I am not cutting a tree on my own land and shall not do so while I remain in business, just so long as I can buy a cord of wood at any price.

In any event, the Government of a country must, of course, always consider the greatest good to the greatest number; and when one figures the number of employees and dependents upon our great pulp and paper industry, as compared with the comparatively few who may be shippers of wood to a foreign country, who might be temporarily inconvenienced to their ultimate benefit, there can be no possible question as to what the Government's action should be.

Canadian Wood for Canadian Mills.

I am positive, now that the whole truth is apparent, that the urgency of the situation and the force of public opinion will compel the Government to take action to conserve Canadian wood for Canadian mills, and that in the future no Government can stand that does not provide adequate protection for Canadian wood-using industries. These industries are in a class by themselves, as every industry and every individual in Canada is dependent upon the preservation of our wood supply.

The subject of an embargo or export duty on pulp wood is not a question of what Canada might like to do. It is an absolute necessity for the protection of her own mills. It is a situation where she must retain what small wood supply she has left or close down prematurely one of her own most important industries in order to ship wood out of the country to supply the mills of the United States. Therefore, any suggestion of retaliation by the United States is unthinkable and could not be seriously considered. It must not be forgotten that small as the supply of standing timber in the United States is now

is, it is still four times as large as the Canadian stand.

The wood supply is unlike any other commodity, as it takes from 50 to 150 years to raise a new crop of trees.

FRANK J. D. BARNJUM.

Annapolis Royal, N.S.,

January 14th, 1922.

FACTS OF BUFFALO HISTORY.

The Forestry Magazine:—

Some few months ago I read an article in the Forestry Magazine of interest to me relating to rapid destruction of the great buffalo herds of the plains, as I saw something of this rapid depletion and its cause, it may be of interest to your readers to know how it occurred. In 1868-69 I was engaged on construction of the Union Pacific Railway when the great herd was divided in two parts by the construction of that railway, the southern portion roaming south into Kansas and the northern as far north as the Saskatchewan, about this time repeating rifles were making their appearance in the western territories and the American Indians were obtaining some, and of course these rifles facilitated the slaughter of buffalo greatly. About this time also General Crooks, who then commanded the Western Department of the American Army, reported to his government that so long as the buffalo remained on the plains it would be impossible to keep the Indians on their reserves, hence the destruction of the buffalo was rather if anything encouraged.

In 1870, while engaged in exploring passes through the Rocky and Bitter Root Mountains in Montana and Idaho for the Northern Pacific Railway, I met several large bands of Nez Perces passing back and forth from their reservations on the Snake and Clearwater branches of the Columbia River to the Missouri River for their annual supply of buffalo meat and robes, and those Indians reported buffalo as being very numerous. The Nez Perces were a very fine looking tribe of Indians and were very well off, owning a great number of horses, and their reservations on the plains of the Columbia were particularly well adapted for both grazing and cultivation purposes. The tribe divided in spring, one-half going off bag and baggage as I have said, to the Missouri for buffalo and the other half remaining on their reservations to cultivate their gardens and to catch and cure a supply of salmon as well as to lay

in a supply of lamas, a root that grows in that section of the country and very much used by the Indians for food. In 1871-72, while in charge of the first exploration for the Canadian Pacific Railway from Fort Garry (now Winnipeg) to the summit of the Rocky Mountains, in the Howse and Yellowhead passes, I met buffalo herds just west of where I crossed the South Saskatchewan River, about where Saskatoon is now located, and for several hundred miles buffalo herds were always in sight and we derived a great deal of sport in running them, but we only killed what were necessary to supply the party with fresh meat; just after crossing Battle River I met Poundmaker, the Cree Chief, who afterwards during Riel's 1885 Rebellion, became a prominent figure. He asked me to camp near him as his young men were out driving the buffalo towards one of his pounds and he was afraid if we went on my party might meet and turn the buffalo away. We remained camped for two or three days and held several pow-wows with him and parted very good friends. We did not lose sight of buffalo until we reached a point south of Edmonton where I turned north to reach that Fort. At this time most of the Canadian Indians were still using the Hudson Bay Company's single flint lock trading gun which was about as dangerous to the hunter as to the hunted, some of the more southern tribes such as the Blackfeet, Bloods and Piegiens were beginning to get repeating rifles, and consequently making a greater slaughter among the buffalo. In 1882, while engaged in an exploration of the South Saskatchewan and Red Deer Rivers for the C.P.R. I came across a band of 14 buffalo near the junction of these two rivers, and of this band we killed one, and as far as I have been able to learn, these were the last buffalo on our northern plains, as that in 10 or 12 years the great herds covering the country for hundreds of miles from East to West and from 1,500 to 2,000 miles from North to South due principally to the improved firearms, had disappeared, but of course settlement was beginning and the settler and the buffalo could not have lived at peace together.—

FRANK MOBERLY.

WOOD IN DEMAND.

Although many substitutes for wood have been devised, the great demand for timber continues to grow, and more wood is used in building construction to-day than before the discovery of concrete, and in the construction of railway cars than before the steel car was developed.—Col. W. B. Greeley, United States Chief Forester.

League of Boys for Forest Protection

By A. de H. Smith
(Editorial Staff, The Edmonton Bulletin)

Boys plus Fire equals delight supreme. Likewise Boys plus Fire equals holes burnt in clothing, irate parents, and well-deserved lickings. Despite the Sword of Damocles for ever gyrating over their heads, it is apparent that boys do, and will always continue to poke fires to the end of time. Nothing will stop them; the primeval urge which causes boys to rejoice in a fire, however humble, will be with us to the Millenium. Hence the query arises, "Is it not possible to gratify their heart's desires, and at the same time cause them to become an assistance to the fast dwindling forests?"

As a Scoutmaster, I have had considerable to do with the boy mind, and have come to the conclusion that boys and fire are absolutely inseparable. Our troop possesses a camping place on the outskirts of Edmonton, far from the haunts of men, in the dense poplar brush, and there we are wont to foregather, build huge fires, and having warmed numerous potatoes on the outside consume them in this condition. Cookery is a considerable attraction but pales into insignificance when compared with the all absorbing attractiveness of the Red God.

Once we arrive on the scene of action we build fires, all day long we continue to build, and when the time comes to homeward hie it is a difficult matter to prevent the enthusiastic youths from remaining all night "to get the good of it."

Alive to the Dangers of Fire.

Throughout the summer on Saturday afternoons this procedure has been indulged in, but although I have had sixty or more care-free youths under my charge I have never had any trouble in respect to fires running, although our camping place was highly inflammable with brush, grass and all sorts of woodland debris. In addition, each group of four or five boys had a fire for their particular use and benefit. Prior to leaving, all fires were thoroughly quenched, the large sticks poked in the ground and "killed" and the smaller embers dampened and tramped out. I have never found any difficulty in impressing the boys with the gravity of the un-guarded camp fire and though happy-go-lucky persons, the lesson of the fire hazard apparently remained in their somewhat uncertain memories.

A Fire Badge Proposed.

Now if the boys must play with fire—and they will—it should be possible to satiate their desires and at the same time turn them into a corps of volunteer fire rangers. To this end I would suggest that

the Canadian Forestry Association offer some badge to be worn on the uniform of the Scouts who have proved themselves most proficient in bush fire fighting, or an annual team prize for the Troop showing the best results. In the majority of urban centres in the north and west where the forest fire hazard is greatest there are Troops of Boy Scouts, and if they re-

ceived some encouragement I feel assured that they would be of considerable assistance in the quenching of incipient prairie and bush fires. Naturally some training would be necessary, but doubtless if the various Scoutmasters were supplied with literature on the subject they could instruct the boys, and the whole would form an interesting Scouting phase.

Win the Boy First.

Naturally the greatest number of fires occur in districts where the scattered homestead population precludes the possi-

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Lumber of All Kinds

bility of forming Scout troops who could be utilized, but there are boys galore whose services could be obtained. From information supplied to the writer by Colonel R. H. Palmer, of the Forestry Service in Edmonton, it is apparent that the bulk of the timber fires are traceable to the settlers. Where there are settlers there are boys. Why not use them?

The life of the average country boy is a colorless existence; outside his farm work he has no distractions or pleasures such as the town youth knows, but in common with his urban confrere he has

imagination. I would propose to put some color into his life, enthuse his imagination and make him of use to the forest. All boys delight in badges and decorations of all descriptions, they like titles, and when this is offered in conjunction with a sense of importance, he will go to the full length of his tether.

I would propose to establish a cult somewhat on the lines of the Boy Scout movement, calling it the Fire Patrol Corps, or some similar title, with various decorations for proficiency, in addition to some ornate badge of office or perhaps

uniform, and some prizes for the best record of each Patrol. In addition I would suggest that a correspondence be kept up with the various boys, addressing them by their official title, which would cause them to feel the true importance of their new responsibility.

Wherever there are fires there the boys will be, and I venture to say that in a good many cases the boy Fire Wardens would prevent fires getting away, and when they did would aid in notifying the proper authorities and assisting them to the limit. The duties would consist in preventing fires and spreading the gospel of fire protection through the medium of word of mouth in the schools. In respect to the latter I have found that verbal messages from boy to boy carry more weight than a multitude of printed notices; the latter are rarely read by the youth of to-day, but no comrade can ignore the forceful boy-to-boy talk. It is pungent, pointed and is enforced physically as well as mentally.

There are thousands of country boys whose life at present is a dreary round of the daily task. Brighten their colorless existence with an assortment of badges, medals and titular distinctions, and I will wage that the effort expended will result in large forest saving dividends.

THE WEALTH OF PATRICIA.

A few years ago a large part of what was called the North West Territories of Canada was divided between the provinces of Manitoba and Ontario, giving the latter province a shore line on Hudson's Bay of over 1,000 miles in length. To this new district of Ontario was given the name Patricia. During the last summer Dr. E. M. Burwash, of the University of Manitoba, Winnipeg, has been exploring part of the district, and at the Geological Section meeting of the American Association for the Advancement of Science held at Toronto recently, gave an account of his discoveries. Parts of this vast district give promise of containing important mineral areas. Its geology is much like that of other parts of Northern Ontario, which has become famous for its Porcupine, Cobalt and Sudbury.



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New Brunswick Takes an Inventory

To make possible the adoption of improved methods of management in the future a complete classification of the Crown Lands of New Brunswick is being made. Over 4,000,000 acres have already been classified as to nature of the soil, amounts of timber by size and species per unit of area, with complete forest maps to various scales showing the location of the topography and timber. The survey is being made on a four per cent basis and is the most comprehensive of its kind ever undertaken in America. The wealth of data collected is beyond explanation here, but there is sufficient to lay down intensive and reliable working plans. Studies of annual growth and reproduction of softwood species is part of the forest survey work.

The Forest Service organization consists of a permanent staff of forest rangers appointed by competitive examination and these rangers, supplemented by temporary men as required, scale the season's cut of logs in the winter, act as fire wardens in the summer, and at all times of the year act as game wardens. The Forest Service is directed by an Advisory Board of five members, viz: The Minister of Lands and Mines, the Deputy Minister, the Provincial Forester, and two provincial lumbermen who hold office for three years.

The carrying out of the timber regulations and the collections of dues is in the hands of technically trained foresters. The revenues from the forests have more than doubled in the five years that the administration of timberlands has been in the hands of foresters.

To prescribe the best cutting method for stands of slow growing spruce which does not reach the regulation cutting limit, and upon which special cutting permits are granted, an area of one square mile has been reserved and logged experimentally under different cutting methods on a scale sufficiently large to form under intensive study conclusive results in a few years. Co-operation is maintained with the Dominion Government and lumber companies in the work, and it is expected that more experimental preserves will be established in other forest types for the purpose of improving cutting methods now in force.

New Brunswick's forest policy has been definitely established. To the Forest Service is given the means of improving on the details of the various phases of forestry administration, and the time is not so far distant, as time is measured in forestry, when the ideals of its pioneers will be realized.

WHY IS FORESTRY?

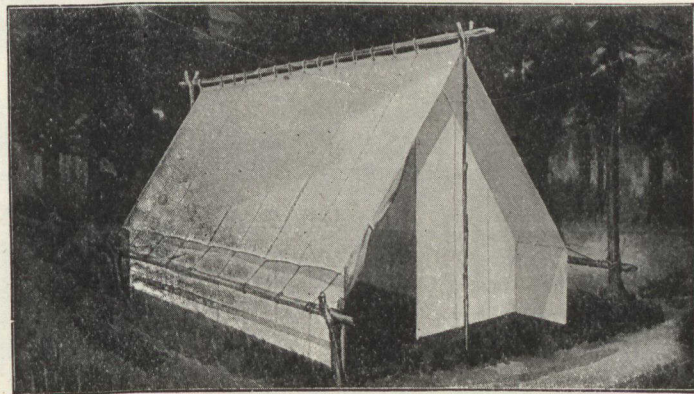
There is a good deal in the press these days about the necessity for forest conservation and wise utilization, and people may be led to ask: Why should Canadians bother their heads about forestry? The answer is very simple. Canada, like every other country in the world, has a large proportion of land that is not good for agriculture but which will grow tim-

ber. In some countries it is with great difficulty that these non-agricultural areas are got to grow trees, and even then the timber is of inferior quality. In Canada on the contrary, the land, if given a chance, readily bears a new crop of trees, and when grown these trees provide the finest structural timbers in the world. How much of Canada is of this character is not yet definitely known but a conservative estimate places it at sixty per cent of the country. The reason why Canadian statesmen and leaders in all walks of life are urging the study and practice of forestry is that if citizens sit still and

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allow these non-agricultural lands to be repeatedly burned over, then these immense areas will become deserts, whereas

if kept growing timber they will provide a permanent and increasing revenue. This is the "Why" of forestry.

The Crisis Facing the United States

The original forests of the United States are estimated to have covered 822 million acres and to have contained 5,200 billion board feet of timber. Over two-thirds of this area has been culled, cut-over, or burned. There are left to-day

about 137 million acres of virgin timber, 112 million acres of culled and second-growth timber large enough for sawing, 133 million acres partially stocked with smaller growth, and 81 million acres of devastated and practically waste land.

There are 463 million acres of forest land of all sorts which contain about 2,214 billion feet of timber of merchantable size. Three-fifths of the timber originally in the United States is gone.

The cutting and loss of merchantable timber consume about 56 billion board feet yearly. About 40 billion feet of this amount is cut from the virgin forests still left, the rest from second growth. They are even cutting into pulpwood, acid wood, and fuel 14 billion cubic feet per year of material too small for sawing. All told they are taking about 26 billion cubic feet of material out of their forests every year and growing about 6 billion feet in them. They are cutting more of every class of timber than they are growing. They are even using up the trees too small for the sawmill but upon which their future lumber supply depends three and one-half times as fast as they are being produced.

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SHELTER BELTS AND WIND BREAKS.

The term "shelter belt" denotes a protecting strip of trees made up of several rows. In planning the arrangement of the main shelter belt, always bear in mind that it is to be a permanent feature. The main belt practically determines the limit of space available in future for additions to buildings and so on. The belt of trees planted to-day will be in the same place thirty to forty years later. It may be well to suggest here that forethought be called to aid; settlers have at times planted the trees at the correct distance but in the wrong locations. The trees should be planted where they will be a protection—not to the log or summer shack of to-day but to the commodious farm house which it will be possible to erect after some prosperous years have intervened. It is therefore a good policy not to use the one ideal building spot for the original, and often humble dwelling. Once established, the trees cannot be removed without great labour. If for any reason it is found necessary to do this in after years, it simply means the destruction of what otherwise may be the most valuable portion of the home site. Remember, too, that any belt of trees will collect large drifts of snow in the winter time. It is not desirable to have such drifts immediately around the buildings, and for this reason the trees must be kept well back.

When we plant our cuttings it is somewhat difficult to realize that within ten or fifteen years they will be from twenty to thirty feet high with a corresponding spread of roots and branches. This must be taken into account when arranging for a shelter of high growing trees round the vegetable garden or fruit orchard. To

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be on the safe side it is not well to try to determine the smallest possible area that might answer the purpose, but rather to make provisions for every conceivable development that can be thought of and then allow for just a little more room still; for ten chances to one, some necessity will arise later on for which no provision has been made.

To arrive at a definite conclusion, it may be stated that no buildings should be within thirty yards as a minimum of the main belt, unless there is outside of this belt a narrow wind break with an intervening vacant strip a few rods in width.

Secondary wind breaks.—During the earlier years the trees are small and their sheltering influence would not be apparent except in their immediate vicinity. It is therefore well, during these early years, to arrange for what might be termed "secondary wind breaks," preferably of single or double rows at convenient distances within the main belt. They are only intended to serve a temporary purpose and are to be cut out as soon as they have outgrown their usefulness.

Danger of snow break—An outside wind break of one or two rows is most desirable in connection with the main shelter belt. Until the trees in the main belt have reached a fair size they are quite liable to be broken down by the weight of snow they themselves collect. This can be avoided if an outside row of one of the shrub varieties having a dense growth is planted a few rods back from the main belt. For this purpose a row of Caragana is most suitable, the plants of which should be placed from one foot to eighteen inches apart.

the legislatures of the several provinces and through faithful administration by the Governmental authorities.

The means for adequate forest perpetuation must necessarily be supplied at public expense out of the revenues derived from the sale and utilization of the forest resources.

Public enlightenment on the subject is the first essential. The newspapers of Canada, in addition to the national in-

terest involved, have a direct personal concern in the subject. Their raw material is dependent upon the continued and uninterrupted supply of pulpwood. Today's paper prices, onerous as they may appear to the newspaper publishers, will fade into insignificance compared with what the future prices will be if Canada's pulpwood forests are allowed to be consumed indiscriminately and without provision for their replacement.

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Canada's forest resources constitute one of the Dominion's chiefest and most valuable assets. They contribute to the trade of Canada upwards of \$200,000,000 a year. They play an important part in our external commerce. They are a source of inestimable national wealth.

Under proper management and control, they can be made to contribute to the national wealth of the country indefinitely. Without such management and control they are doomed to diminish rapidly and, within a comparatively few years, to become extinct.

Proper forest control includes the enforcement of sensible cutting regulations under official superintendence as well as adequate provision for a continuity of wood supply. The last is the more important. These can only be obtained through intelligent action on the part of

New Plan to Stop Forest Fires

The establishment of a permit system whereby all sportsmen, surveyors, trappers, prospectors, lumbermen, and others, intending to pass over land leased by the Provincial Government as timber limits, be obliged to obtain a permit, was one of the subjects discussed at the Forestry Conference of the Quebec Forest Protective Association, held at Montreal, January 25th.

The discussion followed a paper read by Mr. R. P. Kernan, president of the Laurentian Forest Protective Association, Quebec, who in opening his address, emphasized the enormous area now devoted to forest reserves in the province of Quebec, the Government having established forest parks, the extent of which exceeded 165,000 square miles, exclusive of the Laurentides National Park, the entire acreage including this park being almost 110 million acres.

Statistics of known losses through forest fires during recent years were then reviewed. Reports of various forest protective associations which patrol 50,000 square miles of leased timber lands showed that during the period from 1917 to 1920, 2,902 fires were traced within the area so patrolled. Of these 325 were caused by locomotives and 328 by lightning, the other 2,300 fires being attributed to carelessness of sportsmen and workmen. These 2,300 fires swept over approximately 577,000 acres of which at least 273,000 acres were estimated to be green timber and young growth. It has been further estimated that 13 per cent of the territory patrolled was devastated and 6.7 per cent of green timber and young growth destroyed.

Mr. Kernan pointed out that one fire which found origin in a fisherman's carelessness last summer, burned over a tract of 112,000 acres in the St. Maurice valley. The speaker also pointed out that although no figures were available for unpatrolled sections of the forest, it was known that losses were even greater there.

Blame Distributed.

The speaker attributed much of the carelessness of sportsmen, lumbermen, and other workmen to an absence of any feeling of responsibility insofar as fires were concerned. The same condition had prevailed before the introduction of legislation dealing with brush fires, but since the enforcing of the permit system for brush fires, forest fires from that source had diminished to a minimum. In the opinion of the speaker the introduction of a permit system for all persons entering timber limits for any purposes whatsoever would have the same effect.

Among the methods suggested for the operating of the permit system would be

the issuing of permits by forest rangers and inspectors of the Government and the protective associations, the agents of the limit holders, the officers of fish and game clubs, and all persons authorized to issue fishing and hunting permits. It would be necessary, of course, to make it as convenient as possible for the person desiring to enter timber lands to obtain the required permit. Permits could show name and address of the holder, locality,

period and purpose for which issued, and a warning regarding fires.

It was generally recognized, said Mr. Kernan, that the permit system could not be enforced without legislation from the Government and that in the enforcement of such legislation there would have to be close co-operation between the Government and the protective associations.

In the discussion which followed the paper, Mr. J. Pressman, of the Wayagamack Pulp and Paper Company, Limited, described a system already in use by his

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firm whereby every man on entering timber land was furnished with a numbered brass check, for which he gave a deposit, and which he returned on leaving the company's employ or the locality. It was suggested that all lumbermen could be issued permits in this form, while other speakers suggested that the membership cards of members of fish and game clubs could serve as permits. The principle of the permit system was unanimously approved, the executive being requested to take the matter up with the Government.

Service by Railways.

"The Railroads and the Question of Forest Protection Against Fire" was the title of a paper read by Mr. Avila Bedard, assistant chief of the Forest Service of the Province of Quebec, Mr. Bedard paid a tribute to the railroads for the progress in forest progress against fire from locomotives. He referred to the enactment of general order 107 of the Railway Commission, specifying the precautions to be taken against fire dangers, and declared that, no matter how excellent the order might have been, its value would not have been fully realized had not the railways entered into the spirit of the movement and co-operated in the fullest extent.

"The railway companies did not only show their competence and render great services in fighting and extinguishing the

fires occasioned by their locomotives or their employees," said Mr. Bedard, "but also in co-operating with the associations and the members of the forest service in the difficult task of fighting the fires started through the negligence and lack of foresight of settlers, campers, fishermen and hunters. They have been of great assistance in transporting to the spots where they were most needed, the numerous fire fighters and their equipment."

Papers also read by Mr. R. H. Nisbet, forester in charge of the aviation service of Price Brothers and Company, Limited, an "A Brief Account of the Works of Our Aviation Department and the Difficulties Encountered," and Mr. F. C. Craighead, of the Division of Forest Insects, Entomological Branch, Ottawa, on "Possibilities of Preventing Losses from the Spruce Bud Worm." Mr. S. L. de Carteret presided.

FACE POWDER AND FORESTRY.

The Canadian Forestry Association, a voluntary organization, collects and spends on nation-wide campaigns for protection and better management of Canada's forest resources about \$50,000 a year, with another \$15,000 of contributed materials and free services, about \$65,000 in all.

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"CANADIAN SPORTSMEN'S ASSOCIATION"

Editor Illustrated Canadian Forestry Magazine:

Sir,—In response to your note following Mr. J. Moffatt Ross' suggestions re above organization, inviting comments, I should like to express my views in favor of its formation and development as the obvious means whereby the only qualified opinion in the country upon the subjects within its scope, may exercise a proper leverage upon the State.

Obviously in such a country as Canada there will be wide differences of opinion with regard to many things pertaining to questions affecting sportsmen from the Atlantic to the Pacific, but there cannot be other than practical unanimity upon the vital principle of conservation of our natural resources of forests, fish and game by every possible effort of individual and State. In my own Province of Nova Scotia sportsmen's societies were active for many years in conservation of game. The old Nova Scotia Game Society did excellent pioneer work and was followed by the organization known as "The People's Game, Fish and Forest Association," which did something to develop public sentiment in favor of its ideals. I am not proud of the fact that I was president of the latter at the time of its decease, but its functions were supposed to be assumed by a body of government commissioners, and later by a commissioner of forests and game who does the best he can with the limited funds at his disposal. It is hoped that the recent big game gun license fee will augment the sum available, and that our forests and game will be better protected than ever. The Federal and Provincial Governments seem to be slowly awakening to a realization of the incalculable value of these natural resources, but they need a strong "bisatergo" to keep them moving. I have no fault to find with the title Mr. Ross has suggested but possibly the title of "The Canadian Forest, Fish and Game Protective Association" might appeal to a larger number of people. Certainly it might be promoted by the Canadian Forestry Association and logically come under its jurisdiction as the three are practically inseparable. So far it seems to me that governments have only tinkered with the whole question, and seem to have had no effective grasp of it commensurate with its importance. If one-tenth of the millions squandered for so called public works, railways, and for political exigencies, had been applied efficiently to the conservation of the forests, fish and game of the country, Canada would have been infinitely better off to-day. Mr. Ross is correct in his denunciation of the wild shooters of wild game, but the cure is not obvious. However, I am going to inflict something upon the readers of "Rod and Gun in Canada" in that line, and in your journal I shall confine my views as to destruction by fire. A short time since I went over many miles of country formerly covered with beautiful foliage, and the music of "the murmuring pines and hemlocks" mingled with the singing oaks and the music of the birds, and it was the home of the moose, deer, grouse, woodcock, snipe, and wild ducks, song and insectivorous birds, and yet to-day a barren desert, with neither fish, flesh nor fowl, and its eroded soil deprived of reproductive power for generations. I could write pages on the tragedies of the wild from fire, the moose,

deer, and birds innumerable, rushing out, and bewildered, rushing back to be destroyed, and in most cases the result of so called "freedom of democracy," for which we have fought and suffered beyond description. Truly "freedom" to destroy the property of others, and the most valuable resources of the State, should be checked, and clearly uncontrolled democracy is not an unlimited blessing. To-day the hoodlum and the pauper as well as the profiteer and millionaire can ride through the country in a car to the fishing or camping grounds, throwing his burning cigar or cigarette butt into the tinder like leaves by the wayside, and leave his camp fire to destroy the country, with no apparent limitations to his "freedom," rarely detected, and still more rarely punished. Your journal is educative and the Forestry Association of great value with its cars and slides and lectures, etc., to educate both young and old, but it is not permissive, and it takes more than moral persuasion or education by voice or pen, or eye, to bring home to these "Fool Devils" any sense of control of their "freedom." Something dramatic is needed to impress them. My opinion of the effective solution of the problem is that in every province efficient fire detective agencies should be established by the government, and that these criminals should be apprehended with as much certainty as others, and punished with both fine and imprisonment to fit the crime.

I have preached "game sanctuaries" for years, but the first thing to do is to stop preventable fires. In my own profession of late years the words ascribed to the late King Edward have had a practical application in efforts made to prevent diseases, and may well be applied to the fire menace. "If preventable why not prevented."

W. B. MOORE, M.D.

Kentville, Nova Scotia.

Montreal, Que., Jan. 18, 1922.

To Canadian Forestry Magazine:

Dear Sir,—I read with much interest letter from J. Moffatt Ross, regarding an association for the conservation of wild animals, birds and fish. This same thought occurred to me last Fall, while on a fishing trip in this Province.

It was surprising to find that lakes within a short distance of the railways were fished out, and to get any fishing one had to go back into the bush. This condition is due, in a sense to the fact that there is really no limit on the number of fish taken, as long as they are taken in season, and one place where I fished, I found a native who made it his business to be in a certain spot (which I afterwards learned was a spawning ground) every day, and it was not unusual for him to take out one hundred fish. It must be understood that no man is fishing for the sport of it when he is taking such a great number every day, and it is such men as this, and others who have no idea but to get as many fish as possible, without regard to the method of getting them, that make it necessary for some means to be sought to curtail their activities.

I was also sorry to note that the great majority of trout taken out of the lakes in early September were full of spawn,

and it naturally follows that this cheats the fishermen of a few years hence from having any sport. If this condition continues, it will be necessary, in order to secure a good day's fishing, for one to travel back in the bush for a couple of days. In the section of the Laurentians in which I was this year, had to go thirty to forty miles into the bush to get a good day's fishing. There are more accessible places but they are either private preserves or fished out.

I feel, like a good many other sportsmen, that hunting and fishing should be conducted as a sport, and not as a slaughter, and any association that would tend towards improving conditions would be of great benefit to the sportsmen throughout the Dominion.

Yours faithfully,

E. J. WALSH.

(Editor's Note:—Mr. Walsh is manager, Eastern Provinces Branch, Canadian Surety Co., Montreal.)

Jan. 20, 1922.

To the Canadian Forestry Magazine,—

In the December number of Canadian Forestry Magazine, a letter from Mr. J. Moffatt Ross, under the heading, "Is the Time Ripe for Canadian Sportsmen's Association," was read with a great deal of interest by the writer, who has communicated with Mr. Ross, drawing his attention to the fact that the sentiment expressed by himself is one that is agreed with throughout the country, only lacking leadership and co-operation to establish sporting ethics that cover Mr. Ross' observations.

I am enclosing you a copy of the Constitution, Rules and Regulations of an Organization formed in Ontario last year. The name, as you will see is The Ontario Sportsmen's Game and Fish Protective Association, Inc. We shall be glad to have your comments on this. We welcome criticism and we welcome suggestions for the betterment of preservation, conservation and propagation of the desirable wild life of this Dominion.

I am also enclosing you a copy of resolutions that were passed at our Annual Meeting. As I have stated to Mr. Ross, these have not been forwarded to the Government and any suggestions of improvements or additions will be gladly welcomed, in fact appreciated.

Conservation of the Game goes hand in hand with conservation of the Forests. Without the forest the game must go, and without the game and the forests much of our territory is worthless.

Sincerely yours,

The Ontario Sportsmen's Game and Fish Protective Association.

SAM HARRIS, President.

There was a young lady of Kew,
Who ran for a train at 2.2;
When the guard saw she hurried,
He said, "Don't be flurried,
There's a minute or two to 2.2."