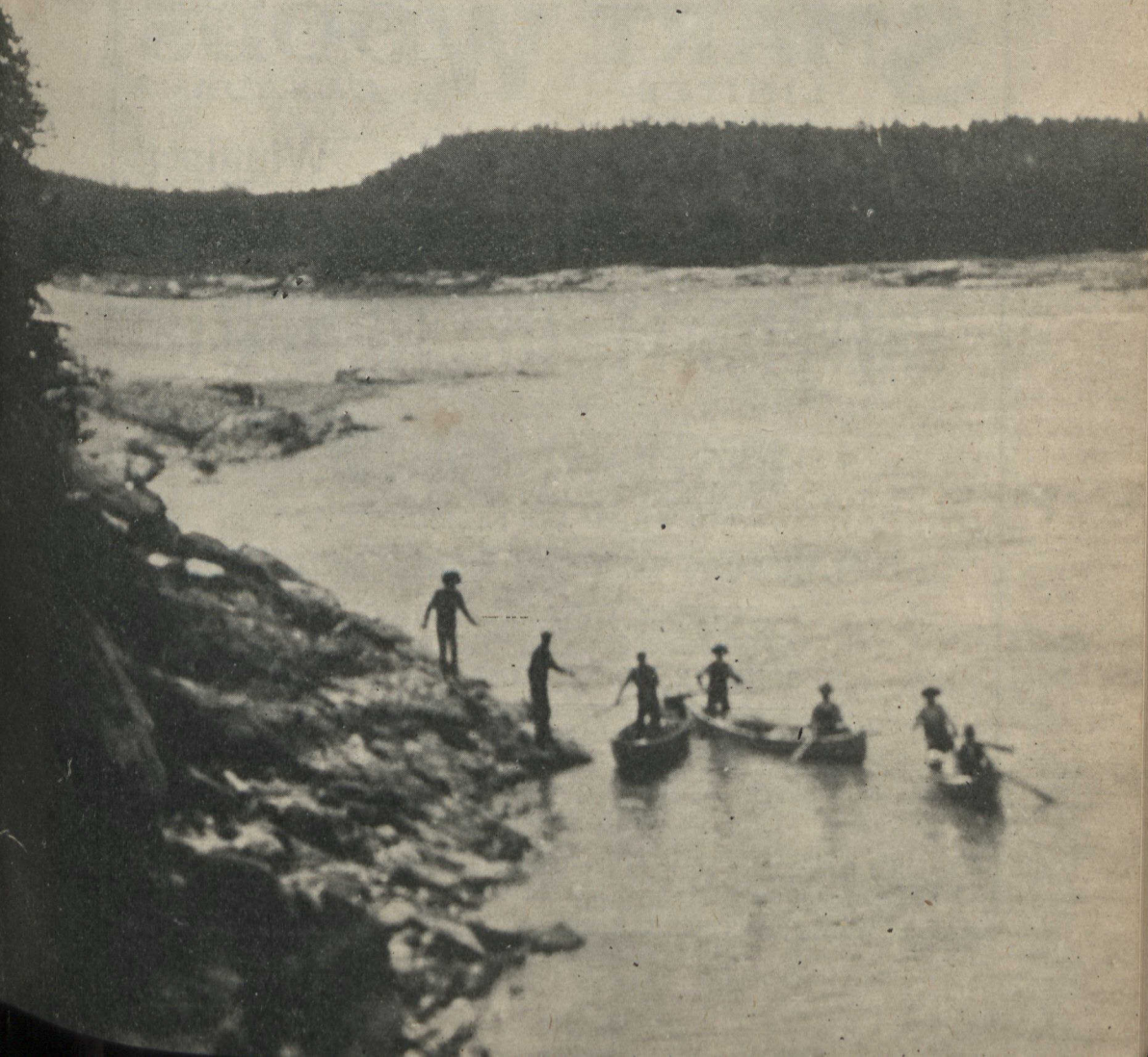


Canadian Forestry Journal

MAY, 1916.



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Forests and the Prairie Provinces

The Imperative Problem of the Future Wood Supply of Canada
West Told From a New Angle.

[Reproduction of a brochure written by the Secretary of the Canadian Forestry Association and presented to the members of Western Boards of Trade, etc.]

To the People of Western Canada:

This brochure talks of forests. Forests and the things they provide are as much the foundation of prosperity in Manitoba, Saskatchewan and Alberta as in Ontario, Quebec and New Brunswick. Most of us have thought that the prairie provinces had little to do with forests, but that is mostly because forests do not advertise.

You know your own town!

The buildings are made of wood. The trimmings and floors are wood. You kindle your morning fire with wood, you stand before a wooden dresser, open a wooden door, seat yourself on a wooden chair at a wooden table, read a newspaper made of spruce, balsam, poplar, scanning despatches that leaped across thousands of wooden poles, spend five minutes in the garden with a wood-handled rake, walk along a tree-shaded avenue to catch a half-wooden street car, enter an office lined and furnished with wood, take your place at a wooden desk and prepare to write with a wooden pen.

And yet you sometimes wonder what interest the Western town has in its native *wood crop*.

The Farmer and His Wooden Farm.

You are obliged to make a journey. The railway coaches are mostly wood, and run over wooden ties, past stations constructed mainly of timber. You leave the train, cross a wooden platform, and drive in a wooden democrat to a farmer's wooden home. Two hundred acres he has hemmed in with wooden fence posts procured at little expense from nearby woodlands. Great wooden barns that in due season will receive the harvested wheat! In the fields the wood-and-steel binders whip merrily into the standing grain. On the next concession a wooden threshing outfit is clattering northward. Secure from the weather, three plows, a hay rake or two, a grain wagon, a buggy and a spare wagon tongue are crowded

against a wooden wall; you imagine you see the scores of implement factories carefully fitting these pieces of ash and maple and elm to their casts of steel.

Surely, you say, this is an age of *wood*. What railway could move, what farmer could sow or reap, what townsman could more than eke out an existence without the helping hand of forests?

You are on the train again. That thought about the wood supply of the Western Provinces for farm, for home, for transportation, has temporarily been laid aside. The engine whistles shrilly. Here evidently is a coal mining town. Hundreds of homes are spread about; there is a winding street of stores.

More Than a Localized Question.

A mine manager steps aboard. He is an old acquaintance and you soon have him in conversation. It does not take long to announce your speculation about the need of wood to carry on the business of Canada West.

"Of course," you say, "this is a farmer's and a merchant's question. You mining men doubtless see nothing to get alarmed about."

"Nothing, eh?" his face lightens up with surprise. "Let me tell you. To get a single ton of coal out of the ground requires two lineal feet of timber for pit props. Where do we get it from? Right at the doorstep of the mine, so to speak, for mine timbers cannot be hauled long distances, or the price of coal would be prohibitive.

"Thirty years ago Alberta and Saskatchewan turned out about 1,600 tons of coal. By the last returns, Alberta alone is producing yearly over three million tons and Saskatchewan over 175,000 tons. *That means we need about six and a half million lineal feet of timber a year.* Do you know where we're going to get it?"

You confess that you hope the country has sufficient to keep the coal mines running.

"But that is not meeting the problem fair and square," opposes the mine manager. "The Geological Survey says that Alberta possesses a million million tons of lignite coal, Saskatchewan over 59 billion tons, and Manitoba 160 million tons. Wonderful resource, say you? But wonderful and valuable only as it can be set to work. What sets it to work? an abundant and cheap supply of mine timbers in the neighborhood of the mines. The biggest perplexity of many of our Western Canada coal mining companies is not market or transportation or tariff, but the future supply of near-at-hand mine timbers."

New Industries Demand More Coal.

"The huge increase in coal consumption in our Western Provinces is due not only to the advancing population but to the incoming of new industries and extension of railways. Indeed the coal production is out of all proportion to settlement. In thirty years, population in Alberta and Saskatchewan multiplied over twenty-three times, while the output of the western coal mines multiplied 2,000 times. In a very few years the present coal mining plants will be taxed to their utmost capacity. What follows? They add to their plants, of course. But can they lay their hands on local supplies of mine timbers as easily as they can get boilers and conveyors? I very much doubt it. The mine managers and shareholders and workmen also doubt it. This business of mine props is staring the West in the face. What are we going to do about it?"

You return to your home in the prairie city, resolved that the matter must be sifted further. You seek information in very many quarters. This is about how it works out:

If Manitoba, Saskatchewan and Alberta are to produce goods—agricultural or industrial—at the least possible cost, the expense of raw materials must be held to the minimum.

If the farmers of the three provinces are to reap higher profits from their investments and labors, not only must their produce be sold high, but their costs must be kept low.

If the towns and cities are to attract new industries, such as lumber, saw mills, pulp and paper, box-making, cooperage, furniture, etc., etc., raw materials must be procured abundantly and cheaply with the shortest possible freight haul.

If the magnificent coal mining industry is to realize on the great stores of natural riches the *costs of mining must not be unnecessarily multiplied*.

Forest products are a Western *essential*. No one looks on cheap fence posts, cheap lumber, cheap fuel as a luxury. The West *must have them*, and at the lowest possible cost.

Look After the Foundations!

The towns and cities reasonably expect to secure thriving industries utilizing wood products. The spruce and poplar of the prairies are the best species for making pulp and that manufacture opens up a field for many varied products and industries. Most municipalities of the West are looking forward to the day when industries will add to their population and prosperity. But what will give support to the industries if forest products have been blotted out?

The West possesses enough water powers to over-supply a populous nation. Water power development is possible in almost all parts of the country and is the keystone in any scheme of large industrial expansion. Irrigation is bringing millions of otherwise arid acres under revenue-producing crops.

But water powers, whether for turbines or irrigation ditches, are not self-contained. They measure their value by their uniformity of flow. That uniformity is largely a question of abundant forest growth on the watershed of the streams. A stream without heavy forest growth to act as a natural storage reservoir is not dependable and loses a big part of its commercial value. The forest growth of Western Canada is not only a source of rich raw materials for immediate and future use, but represents the commercial availability of the water powers and irrigation projects.

What Future for These Reserves?

What, then, of the ability of the forests of Western Canada to meet the demands of present and future?

The forests of Alberta, Saskatchewan, and Manitoba gathered up in the Forest Reserves under the Dominion Government amount to over 25,000,000 acres. These reserves have been racked by forest fires in the past, but are now receiving protection. Those that are denuded of trees will be reforested as soon as possible and on those covered with trees steps will be taken to introduce more valuable species where advisable. The reserves are a valuable source of supply for fuel and small timber. *They must be carefully protected and developed for years to come* if they are to play their logical part in the commercial future of Western Canada. Ultimately, their contribution to the public service will be supplemented by the matured woodlots of the prairie farmers, for which four million trees are now being distributed annually by the Dominion Forestry Branch.

The Part You Should Play!

If the prairie provinces are going to have the timber that they will require in the future for the buildings of the towns and villages and for the supplying of wood using industries, it is necessary to begin considering *immediately* where the supply is to come from and where it is to be located. If there is no local supply of lumber there will be nothing to regulate the cost and almost any price may be charged by the importer. The time to make sure that the future prices and supply of lumber will be kept under control is now. A crop of trees cannot be grown in one year like a crop of wheat, and it is necessary to decide a long time ahead what particular piece of land is going to be kept for producing timber. Fortunately timber will grow where nothing else will and the decision as to the lands on which the timber crops should be grown should be easy if it is once realized that the timber crop is essential and that a fair proportion of the land must be used for that purpose.



Photo by J. C. B.

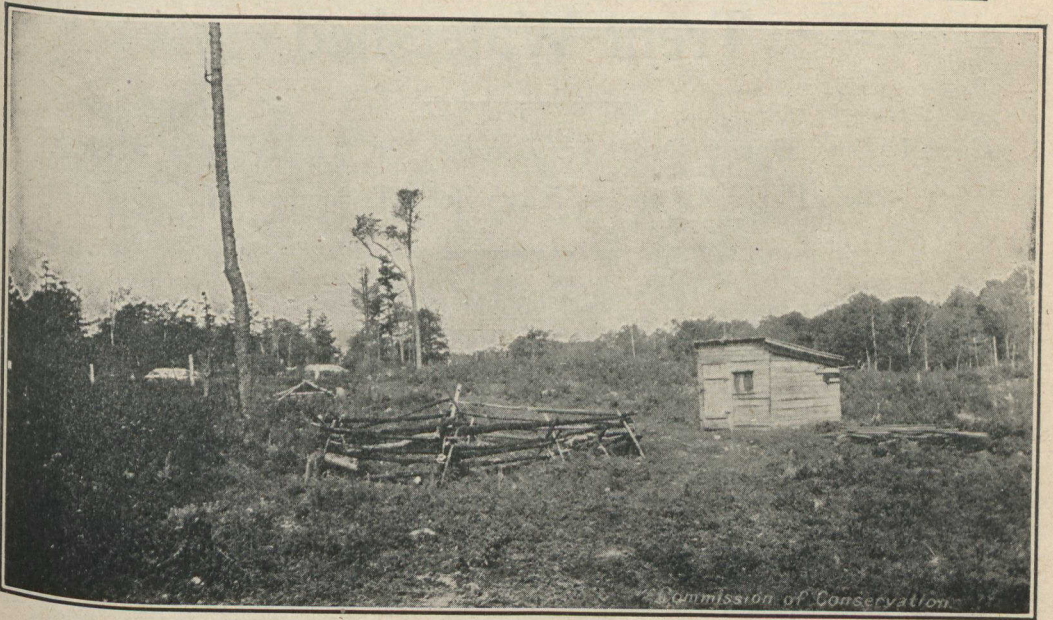
Scores of islands and points are covered with spruce pulpwood. There is evidence that formerly much greater areas were similarly covered... A great fire some fifty years ago swept away the forest. The land, composed of rocks, is now covered by a growth inferior. Taken at Little Shell Lake, Churchill River Basin.

Your Decision—Then Your Action.

The thing to do is to decide now and set apart the lands required for growing timber, and to provide for protection, good management and reforestation where necessary. For proper protection of the valuable public property in forests men who are well qualified and reliable should be selected and the inefficiency and carelessness of officials should not be allowed to waste the public wealth.

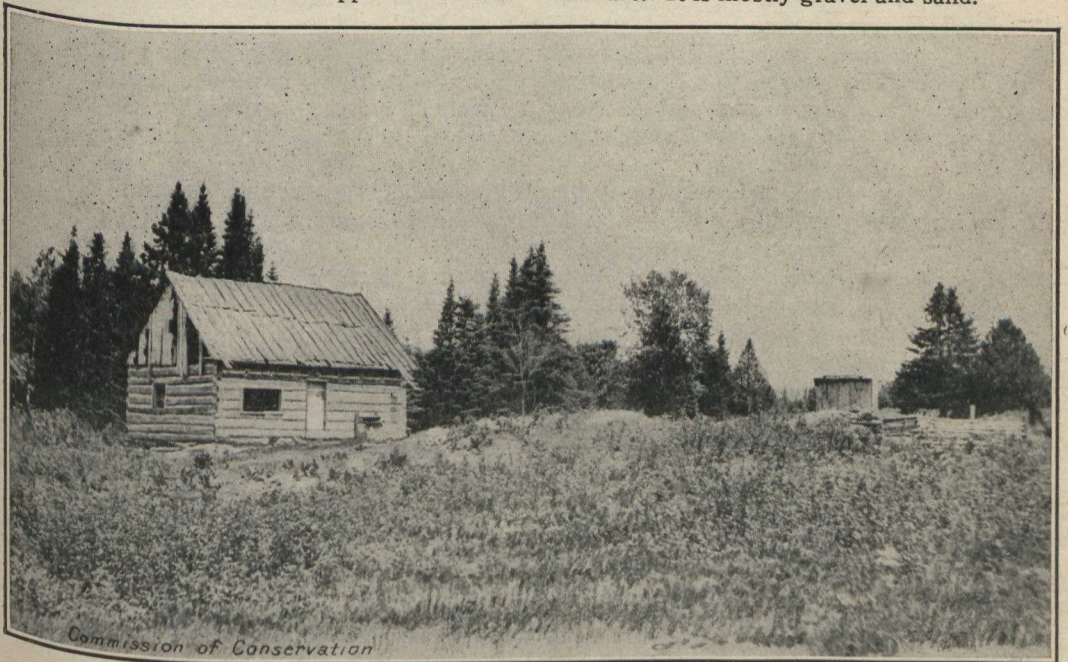
If you conclude that as a business matter this is one well deserving of your attention in the interests of the present and the future of the community you can best assure the carrying out of such a policy by laying your views before the authorities which are concerned with forest administration or before the representatives for your district.

Tragedies of the Trent Watershed



THE BEGINNING.

With the exception of patches containing a few square feet, there is on this prospective farm no soil that approaches a loam in texture. It is mostly gravel and sand.



THE END.

One of the many abandoned farms in the Trent Watershed. The amount of human energy expended in attempting to make a living from such areas has been and still is, enormous.

Why Action is Needed on the Trent Watershed

Canada has Spent Over \$14,000,000 on Trent Canal Project
While Basic Resources Have Been Turned to Waste.

Condition of the Trent Watershed.

Of the 1,171,614 acres in the lower watershed,
Eighty-three per cent. are still forest covered but only 700 acres are
virgin forest.

Less than 90,000 acres have been moderately culled.

The rest have been severely culled and are therefore in unmerchantable
condition.

Nearly 60,000 acres are waste lands, the results of fires.

Some 580,000 acres are covered with young and second growth trees.

Less than 12 per cent. are farmed.

What is Recommended.

The bulk of the country involved should be placed in, and managed as,
a permanent forest reserve for the growing of timber.

The Provincial Government still controls about one-third of the area,
partly under timber licenses, partly in cancelled and abandoned lots.

The municipalities are naturally closely interested in seeing as much
of their land as possible put to profitable use in order to reduce the indi-
vidual tax assessments and at the same time to permit of a higher degree
of civilization through increased industrial activities and educational
facilities.

Private landlords will be benefited by better protection. Permanent
manufacturers can be established, industrial development will increase, and
the public at large will gain in prosperity.

Co-operation of the three administrative agencies, the Dominion, Pro-
vincial and Municipal governments is especially needed to develop any-
thing like a permanent forest policy.

The policy then should be to bring all the lands which are not strictly
farm lands as rapidly as possible under the control of one or any of these
three agencies.

Readers of the Journal will obtain from the foregoing excerpts of the
Commission of Conservation's report on the Trent Watershed Survey, a
glimpse of the problem which seems no nearer solution to-day than in the
months of 1913 when public opinion was first shocked by the statements
and deductions.

In these days of war, every energy of finance departments is bent upon
the discovery of new forms of taxation. Millions are laid aside for the
development of Government railways, oblivious to the fact that the absence
of forest protection on these same Government roads is knocking the bot-

tom out of future freight revenues from forest products. Cautions are issued to the public to avoid waste, when one of the most flagrant forms of waste under all governments is the sacrifice of priceless timber, for lack of the elementary protective systems which are in force in nearly every part of the world outside Canada.

Over fourteen millions of dollars have been spent by the people of Canada on the Trent Canal, and yet the foundation of future revenues from local freight has been almost wholly demolished by the refusal of Dominion and Provincial Governments to place the remnant of unwasted timber under some system of protection.

Into the Trent Canal project fresh millions are directed annually. Yet the only hope for justification of these heavy expenditures is an abundant and controllable flow of water. "This factor," remarked Dr. B. E. Fernow in his report on the Trent Watershed question, "is of paramount importance to the canal. Engineers have sometimes thought that dams alone may effect the satisfactory regulation of the waterflow but the wiser ones have recognized that for the best service, dams need to be supplemented by a forest cover such as a watershed furnishes."

The subject as outlined in the following paragraphs from the Commission of Conservation report will give many readers hitherto unfamiliar with the grave situation along the Trent Canal a basis from which they can urge public action.

Eighty-five Years in Building.

"The Trent Canal project has been a subject of public criticism and often of ridicule, ever since it was conceived, 85 years ago. The criticism and ridicule are not, however, deserved by the original project but only by the irrational, slow manner in which it was executed. The canal project, in fact, has been subjected to precisely the same kind of management as the territory through which it passes. The chief value of a canal lies in connecting markets and resources, and, therefore, depends mainly on its outlets. The first outlet of the canal, the one into Lake Ontario, is now, after nearly a century of dilatory work, being completed; the other, which affords access to Georgian Bay, still hangs fire. So long as the outlets to larger markets or for through-traffic were lacking, only a very limited local traffic could develop. Since the principal resource of the region it serves was timber—a staple which needs more than local markets for a profitable and rational development—the value of the incomplete canal was limited indeed. Since this outlet was unavailable,

the timber, owing to the expense of transportation to market, was cut in a more or less wasteful manner. As a result, the government derived scarcely any profit from this industry, and the returns to the lumbermen were also relatively small. If the cheap transportation which a canal furnishes had been in existence earlier, much more conservative logging operations could have been carried on; much closer utilization of material could have been made by mills situated along the route; much more profit could have been secured from this resource by both operators and the people, and, moreover, the source could have been managed for perpetuity, as a basis for manufacturing industries. As it is, the principal local freight, that from the timber-lands, is almost exhausted, and a large part of the usefulness of the canal has gone, at least in so far as local development is concerned. Outside of the water-power which it supplies, through traffic, which may follow upon the completion of the two outlets, can alone justify its existence for the present; unless by careful planning and management a revival of the in-

dustrial activity, to which, at one time, the lumberman gave rise, can be secured.

Forest and Waterflow.

Meanwhile, another important factor in the problem, which is closely connected with the timber question, has been entirely lost sight of, namely, the securing of adequate water supplies for canal and power purposes by the conservation of a forest cover on the watersheds. Indeed, this factor, the conservation of water supplies, is one of paramount importance to the canal. Whatever may be said regarding the influence of deforestation on climate, an influence which, it must be admitted, is only imperfectly understood, there can be no question as to the influence on waterflow which a forest cover exercises. That such a cover prevents extremes of low-water and high-water stages, and generally regulates and equalizes waterflow, has been proved both by experience and experiment in all parts of the world.

Engineers have sometimes thought the dams alone may effect the satisfactory regulation of the waterflow, but the wiser ones have recognized that, for the best service, dams need to be supplemented by a forest cover such as a watershed furnishes. Especially for city water supplies the practice of forestation of the watersheds has now been generally recognized as essential, mainly for the reason that erosion and the filling up of water reservoirs is thereby prevented. These explanations of the importance of the forest influence may perhaps serve to show the bearing of this survey on the Trent Canal.

Causes of Deterioration.

At the present time, the pine timber, at least, is practically gone from this watershed. A forest cover still exists, but, with the present commercial value almost entirely extracted, interest in its condition is

gone; fires have swept through it repeatedly, each time causing further deterioration of the forest cover, until, finally, the bare rock condition or man-made desert is the result. At present only beginnings of these conditions can be seen here and there, yet in the three townships of Metheun, Anstruther and Burleigh alone, nearly 150,000 acres of such desert exist. And, if the present policy of indifference and neglect continues, what might have been a continuous source of wealth will become not only a useless waste, but through the changes which the water conditions will undergo, may also prove a menace to industries which have been developed to utilize the waterpowers of this watershed.

Here is a sample area of thousands of square miles in other parts of the Eastern provinces, and the conditions in this watershed are by no means extraordinary. They repeat themselves wherever axe and fire have been permitted to destroy the original growth in the Archean rock country, that is to say, wherever lumbering under the license system has been permitted, without safeguarding the property as a producer. The sequence of this mismanagement is everywhere the same. The removal either of the best or of all the timber, without disposing of the debris, leaves a slash which is invariably subject to fire; after this, a loss of interest takes place on the part of the licensee and, what is still worse, on the part of the government. Nature then attempts to reproduce the forest and this is followed by a repetition of the fires, which kill the seed trees and seedlings of the better kinds. The ground is then re-covered by aspen and birch for a time; but, through repeated conflagrations, it is finally rendered useless for any productive purpose. A similar sequence takes place in connection with the small-farm portions: at first, through the home market made by the lumber-

men, a fair living may be made by the occupant; gradually this market vanishes and the soil becomes worked out; the surface wears away, the rocks are exposed, and the people are left destitute and miserable.

The Farming Population.

There is still another reason for the prosecution of the survey and that lies in the fact that a portion of the population of this region occupies farms unfit for sustaining civilized conditions. Not only have many farms been abandoned by the removal of their occupants to more hopeful conditions, but a considerable number that ought to be abandoned remain occupied by those who

lack the means and energy to move, thus forming a poverty-stricken community. A far-reaching policy for the management of this region must include a plan for the removal of this degenerating population.

The problem presented by this region requires the formulation of a broad and far-reaching scheme of development and recuperation. The water-flow should be safe-guarded, and industries should be developed to utilize such small resources as are left, and to contribute freight to the canal, thus assuring a better future for this area than can be anticipated under the present policy of indifference and neglect."

British Columbia Forest Club

At a Club meeting and dinner held recently in the Blue Room of Hotel Vancouver, Mr. O. P. M. Goss, consulting engineer of the West Coast Lumber and Shingle Association, Seattle, delivered a most interesting address on the uses of creosoted fir lumber. About thirty members of the Club were present, Mr. R. D. Craig, vice-president, occupying the chair. The after discussion proved profitable, Mr. Aird Flavelle bringing out some new points by judicious questioning.

The annual meeting of the Club was held in Vancouver on April 6th, when the following officers were elected for 1916-7: President, W. J. VanDusen, Forest Branch, Victoria; vice-president, R. L. Morse, Howe Sound Timber Company, Limited, Vancouver; programme secretary, Dr. Judson F. Clark, Vancouver; secretary-treasurer, John Gilmour, Forest Branch, Victoria; executive, M. D. Rector, International Timber Company, Limited, Vancouver; A. D. Flavelle, Thurston-Flavelle Lum-

ber Company, Limited, Port Moody; R. D. Craig, Commission of Conservation, Vancouver.

An effort is to be made to increase the usefulness of the Club by arranging for more frequent addresses by men who are prominent in the various departments of the lumber industry. In line with this intention a hurried meeting was called for Monday evening, April 17th, at the Terminal City Club, Vancouver, to hear Mr. J. A. Newlin, of the United States Forest Service, who in the afternoon addressed the members of the British Columbia Lumber & Shingle Manufacturers, Limited, on the proposed scientific grading rules for Douglas fir, now being widely discussed by the manufacturers of Washington and Oregon. Later in the season the Club will be addressed by the chief of the testing department of the United States Forest Laboratory at Madison, Wis., on the subject of the strength of Western timbers, and by W. D. Starbird, of Portland, Ore., on "Log and Lumber Flumes."

Proper Care of Shade Trees

Count Up the Points Your Trees are Entitled to—Expert Instructions Simple to Follow.

By

Carl Bannwart, of the Newark Shade Tree Commission.

Examine your tree for points every month and see what percentage it will have out of a possible one hundred. Each of the following, if answered unequivocally, "Yes," gives your tree 81-3 per cent. toward the one hundred. These questions are put in order of their importance.

1. Is the opening around your tree of standard size? Standard size is: 4 feet square for a tree of 6 inches (or less) diameter; for every 1 inch increase of such (6-inch) diameter, an increase of 1 square foot in area of opening.

2. Is the ground in this opening well-loosened to admit air and water?

3. If the tree is surrounded by grass, is the sod open around the trunk?

4. Does the tree get a good proportion of the rain which falls on the sidewalk, or does the water run over the curb into the gutter?

5. Is the tree protected with a tree-guard? Guard must be six feet high and not too tight. Tree must be protected from chafing by guard.

6. Is the tree free from borers? Borers can be detected by sawdust coming out of holes in the trunk. Watch for the borers from April to November.

7. Are the trunk and the branches cleared of all cocoons, egg-masses, larvae, caterpillars, beetles, scale?

8. (a) Is the head free from all deadwood, has it been pruned by an expert, and how do you know he is an expert? Find out how a tree should be pruned. Are all the cuts painted? (b) Does the tree stand perpendicular and is its present place intended to be its permanent home?

9. Have the scars from horse bites or other injuries been cleaned out and painted to prevent harbouring insects and to stop decay? If there are large cavities these should be filled with cement.

10. Does the tree remain green and in full leaf to the middle of October?

11. Have you put as much nourishment into the soil as the tree needs for the year? Give it a treat; dig in wood ashes, ground bone or well-rotted manure.

12. Are any wires interfering with your tree either by swaying or by electric current? Are there any gas leaks?

"Here are twelve points of a good street tree. The total percentage if below par reflects on the man, not on the tree. The tree always does its best. Man forgets that he has taken it out of the God-made forest where it could and did care for itself, and has placed it in a man-made city where it is dependent on man's care for thrifty growth."

St. Maurice River Storage Dam

By

O. Lefebvre,

Chief Engineer, The Quebec Streams Commission.

The St. Maurice river has a drainage area of 17,000 square miles. It takes its rise at a distance of about 360 miles north of Three Rivers. Its head waters are from numerous lakes whose elevation is about 1,300 feet above mean sea level.

The river is remarkable for its numerous falls and rapids,—two of which are fully developed and a third utilized only partially. Of the two developed, one is at Shawinigan with an available head of 150 feet and the other is at Grand Mère with a natural head of 40 feet, and a possible head of 75 feet to be available as soon as the dam, now being erected, is completed.

The flow of the St. Maurice river varies from 200,000 cubic feet per second during highest water, to 6,000 cubic feet per second at low water. The low water stages occur usually during August and September and the winter months, this being the cause of heavy losses by the industrial companies. It is proposed to remedy this condition by the storage of water in the upper part of the river.

In the summer of 1912, surveys were carried out and a dam site chosen immediately above the La Loutre falls at a distance of 240 miles, by the river, from Three Rivers, of 50 miles above the mouth of the Manouan river, a tributary of the St. Maurice, and about 40 miles due east of Parent Station on the Transcontinental.

This dam will store the waters from a drainage basin of 3,650 square miles. The water thus stored will be sufficient to regulate the

minimum flow at Shawinigan to 12,000 cubic feet per second. It will decrease the power at Shawinigan, Grand Mère and La Tuque by 67,000 horse-power-years.

The dam will be of the type known as gravity section, of cyclopean masonry. Its maximum section will be 80 feet above the bed of the river, 60 feet wide at the base and 20 feet wide at the top, the upstream face being vertical.

The water at the dam site will be raised 47 feet above the present low water. The area of the flooded lands will be 95 square miles, all Government property.

The crest of the dam will be about 1,700 feet long at elevation 1,335 above mean sea level. The weir is 840 feet long at elevation 1,325. The dam is provided with 10 bottom sluices 12 feet by 7½ feet wide and a log sluice. When the reservoir is full it will have a surface area of 300 square miles.

While the dam is being built for power purposes it will benefit largely the log driving operation on the river St. Maurice.

The storage dam is now under contract which calls for the work to be completed by the 1st of January, 1918. The Quebec Streams Commission, acting for the Quebec Government, has contracts with the Shawinigan Water & Power Company, the Laurentide Company and the Brown Corporation for the use of the storage water. The annual revenue from these contracts will leave a surplus after deduction is made for interest, sinking fund and maintenance.



Photo by J. C. B.

The hope of the future generation in the north. Indian girls at La Plouge Mission.

On a Winter Survey in North Saskatchewan

A Newsy Sketch of a Forest Engineer's Travels in a Land That
Needs Protective Treatment.

The Commission of Conservation has made plans for an investigation of the forest resources of Canada. During the past three years, work along this line has been under way in British Columbia and Saskatchewan, in co-operation with the B. C. Forest Branch and the Dominion Forestry Branch, respectively, assisted by information secured from private concerns. In both provinces, the field work has been finished, and the reports are now in course of preparation, and will be published later.

In Saskatchewan, this work has been carried on by J. C. Blumer, who has recently made a trip, under

winter conditions, into a portion of the North Country, concerning which but little information is available to the general public. On account of the very interesting character of the progress report made by Mr. Blumer, on his return from this trip, permission to publish the following extracts has been given.

Prince Albert, Sask.,

March 30, 1916.

Dear Mr. Leavitt:

The following is my final field report:

Taking advantage of the fine weather, I started for Lac la Ronge on February 19th, hiring Ranger

Lee with his team and bobsled for the purpose. We drove out to his place, 20 miles, during the evening. Loading hay and feed and outfit, we drove to Angling Lake the next day. At Shoal Creek we saw logs being loaded by means of "caterpillar" engine and sleighs on iced road. A large cut is being secured by the Prince Albert Lumber Company, despite the unfavorable winter.

Next day we drove fifty miles to Montreal Lake, arriving at 8 a.m. East of Waskesiu Lake a tract of land is nearing the prairie stage. It was formerly spruce forest. Something over a mile of very good Indian timber is passed through before reaching the lake. Their wasteful methods of cutting show that they need a forester to look after their holdings.

By request of Chief Fire Ranger Thompson, I looked up a site for a ranger station with Lee, who will be sub-chief for the coming season. We drove to the north end of the lake to-day, it was a very fine day, the temperature going from zero at sunrise to 40 above, but in the afternoon the snow softened and the horses went through at each step. A good view of the timber belt on the east of the lake was obtained.

Action Needed Here.

The horses here had to stand out with five other teams, and we camped in a very small cabin with eight freighters, all sleeping on the floor, as usual. Snow fell during the night, and the next morning good weather was at an end. However, we had a start, and were across the lake. Facing the wind, which bothered in open places only, we made a noon fire in falling snow and reached Hooper's cabin in the evening. A 30-mile stretch of 40-year-old timber here merits protection and should be included in a reserve before it burns down again. On the trail between Montreal Lake and Lac La Ronge there is less than one percent of spruce saw timber, and

none of pine. The next day we crossed Pine River and Potato Lake and had a windy noon fire. The horses could not go faster than a walk, for at nearly every step they would sink into the deep snow beside the narrow road. We arrived at Lac La Ronge at dusk, putting up at the Hudson's Bay Company. Angus McKay, who is in charge, was seen here. The distance of practically 200 miles from Prince Albert was made in five days from time of starting. A wild gale blew on Lac la Ronge to-night, but it was almost warm, 32° above.

Travelling by Cariole.

On Monday morning the mercury stood at 30°. I walked back to Revillon's, making preparation to start west by dog train next morning. That night it grew very cold, and in the morning, the last day of February, the instruments showed 53° below zero. The start was postponed till next morning. The glass still stood at 30, but at 10 a.m. we started with two sledges, 9 dogs, and a second driver. We made a run of one hour, the first of my experience in a cariole. The wind on Bigstone Lake was very cold. After crossing it, we had to wait half an hour for the second train to come up. When it arrived the kettle had to be boiled, after going about five miles. This was discouraging. In the next few miles the trail in the muskeg frequently became drifted full and progress was slow. The second train still lagged behind. The driver now said the journey could not be made in less than 8 days. For all I knew it would be 10 or 20 days. The snow was knee deep and more everywhere, except on the lakes. The trail was chiefly open muskeg, the driver said, which is the worst to drift. A cold night and camping out were certain. We turned and got back to Lac la Ronge that evening. I now regretted that I did not return with Lee. However, empty freight teams were likely any day to

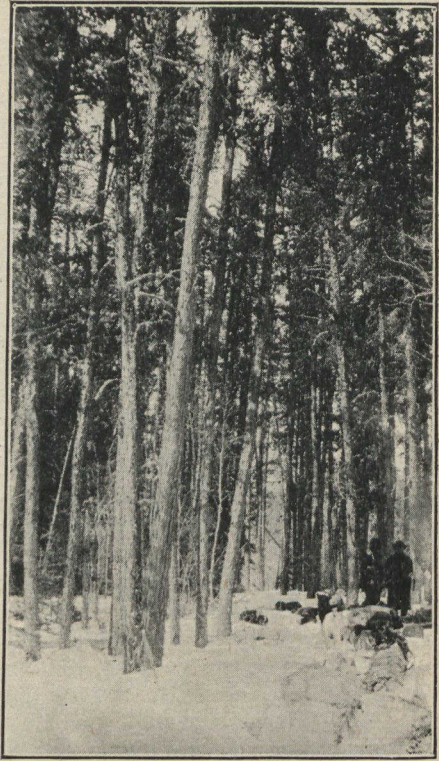
be going to Prince Albert. The next morning a furious gale blew which continued all day, with temperature below zero. It was a real blizzard; one of the worst days of this severe winter. The Indians were as glad as I that we had turned back.

On the following day I made a round trip of 13 miles on foot, part of which gave me a very good cross-section of the types covering the Archean rocks which cover a great area in this part of the province. The timber is nearly all second growth, about 50-60 years, and slow in growth, as may be expected on granitic rocks.

The Indian population tributary to Lac la Ronge and Stanley is given as 600 souls. There are probably a dozen white trappers in addition to the traders and the 3 or 4 fire rangers. The freight coming into the district this season is about 140 tons. The catch of fur is remunerative, that of foxes alone being around \$10,000 for the present season.

The Comforts of Home.

After one or two more vexatious delays I made another start. The cold snap had continued all the week was broken. My second train of four dogs was now replaced by a better one of five. This made 10 dogs and 2 drivers, with an additional man to break trail. The wind was still cold on the lakes. At 10.30 a.m. we halted to boil the kettle. At noon on Nemeiben Lake, I met Inspectors Barker of the Hudson's Bay Co., and Cowper of Revillon Freres Co., travelling together with five men, 4 sledges and 17 dogs. They had come from Isle a la Crosse via Snake Lake, and our trail was now broken. Upon reaching Morning Lake in the evening I dispensed with my third man. He desired to accompany us without pay, to which I agreed. We had plenty of food at the time, which is apparently more consideration to an Indian than cash. Also, the young fellow wish-



Had it not been for fire, many millions of railroad ties would now be cut from forests like this. Fire prevention will secure them for the future. Near Snake Lake, Churchill River Basin.

ed to accompany his brother and see the country. He changed off with his brother, one running ahead all the time, and thus the dogs travelled better. We camped in an Indian house about 11 x 12 feet with no floor and were treated (?) to caribou meat. The Inspectors and their men had cooked and slept here with one Indian family of three the night before. This night another Indian family had arrived and eleven people, one more than the night before, comfortably (!) filled the floor.

Poplar Replacing Birch.

During the evening very high wind prevailed and the northern lights covered nearly the entire heavens. In the morning at sunrise the temperature stood at 17° below

zero. We travelled across the remainder of Besnard Lake, crossed several other lakes and finally Snake Lake to the village here, located under unusually large birch and poplar. Behind the broad cobblestone beach of Snake Lake, we encountered some snow drifts 6 to 8 feet high. Otherwise the lakes were good travelling but somewhat rough and the 30 or more miles a day were easily made. Since leaving the Trout Lake village we had left the rocky country and the topography was lower and smoother with poplar replacing birch. Two hungry looking drivers and still hungrier dogs had attached themselves at Trout Lake village and travelled with our outfit to Snake Lake. We had started with sufficient dog feed to take us through but it was necessary to procure more feed here. The men had started from Lac la Ronge with 15 bannocks but at this point, not much over half way, had but one left. Feeding the population along the route can not well be avoided. Give an Indian a full supply for a week's trip, he will eat it up or give it away the first day or two and mayhap starve the remaining distance. From here on I handed out some of my reserve bannock, but the men got no fresh supply. I camped with one Indian family, the men with another.

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A Meal of Lynx.

The route now led overland through a succession of jack pine ridges and muskeg. With the lake the poplar and birch was left behind. The trail had fresh snow on it. Making the usual two stops during the day, we crossed Pine river on whose banks drifts were piled, and came to the first small lake in the evening. Here the leader got on a wrong trail. We made three extra miles, and camped out on this lake. The dogs were tired to-night. During the night some more snow fell, making the trail still heavier for the

next day. The weather was mild. The trail scarcely wide enough for the cariole, wound its way through a great deal of very dense, snow-laden young growth. The trail in places being highest in the middle, it was hard to keep the balance and occasionally I tipped over. One was never sure of steering clear of trees at the turns. Keeping the time tally of types at the same time was rather a nerve-racking experience. At the forenoon stop a lynx taken from a trap made a large part of the meal. I cooked my own meals, the Indians theirs, but the lynx could not be resisted. It was good. Crossing several lakes and taking another lynx during the day, we emerged upon the estuary of Beaver River about 5 p.m. Making another "portage" we reached Isle a la Crosse Lake shortly, which had yet to be crossed. A storm had risen on the lake so that no land was in sight and it was getting dark. We were able to get some dog feed here so I decided to camp for the night at an Indian house though the men were willing to go on. Once more there were eleven of us.

Types of Timber.

The type of country from Snake Lake to Isle a la Crosse Lake was very different from that eastward. It lies south of the rocky belt and the water surface amounted to only 9 percent. A very good overland cross-section is obtained, for the few lakes and ridges are crossed at right angles to their long axis. With the exception of a few open muskegs, the whole distance of land is densely wooded with jack pine, birch, spruce and tamarac. But the timber is nearly all small. The jack pine of tie size makes up less than one percent of the distance. There is no other saw timber.

Having made the trip from Lac la Ronge in good shape, I wanted to go north to Cree Lake and return, covering at least a part of the journey I had previously planned. But

I was advised against it. I learned that for the first time in many years the reindeer had not arrived at Cree Lake, that people were starving, that fish for dog feed were not obtainable. One man had gone hunting leaving his family with a moose hide to eat. A trader had sent some dog trains with provisions but after six days travel, owing to the heavy snow, they were yet a long way from their goal and were obliged to cache their loads and return to Deep River for more dog feed. They then returned and brought their loads back never reaching Cree Lake. The trail for the first 100 miles or so from Isle a la Crosse led over the same route I had already covered last summer. This was, of course, a water route and there was no other return route. The season was getting late and typical March weather prevailed, storms succeeding thaws. On Monday morning a string of freight teams arrived returning to Big River immediately. So I reluctantly gave up the northern trip to return with the freighters. I settled with my men and bought them and their dogs a return allowance of feed.

From all I could gather the types of country and amounts of timber for the whole western part of the trans-Churchill region are essentially the same as in the Portage La Loche and Island Lake section secured last summer and the Isle a la Crosse,—Snake Lake section now obtained. It is in certain sections of the extreme northeast where there is apparently a close approach to the "Barren Lands."

(Sgd.) J. C. BLUMER.

Mr. Clyde Leavitt,

Forester, Commission of Conservation,

Ottawa, Ont.

An Entire Colony Needed.

In a report of an address given to the Women's Canadian Club of Hamilton, by the Secretary of the Canadian Forestry Association, one of the newspapers referred to the speaker's condemnation of Governmental laxity in building up a sound system of forest protection and the reporter concluded with this paragraph:

"As they left the hall, the members signed a petition to the government in favor of the establishment of colonies for the segregation of the feeble-minded."

J. R. Booth's Birthday

Mr. J. R. Booth, the veteran lumberman of Ottawa and Hull, has just celebrated his ninetieth birthday. Despite the fact that he is now twenty years past the allotted three score years and ten of the Psalmist, Mr. Booth continues to take a very active interest in all his company's interests. He was born in Shefford County, P.Q., and as a young man went to the United States, where he worked on railroads and in various lumbering camps. Ten years before Confederation he moved to what was then Bytown, a little lumbering village on the outskirts of civilization, and commenced in a very small way to manufacture lumber. Later he built the Canada Atlantic Railway between Ottawa and the United States border, in order to provide an outlet for his products. Today John R. Booth is the largest owner of timber limits in the Dominion, and one of the most extensive manufacturers of lumber, pulp and paper, and other wood products.

Forest Conservation as a War Measure

“Natural Resources Lie at the Foundation of all Preparedness
Whether for Peace or for War.”

By

Clyde Leavitt,

Forester, Commission of Conservation; Director, Canadian Forestry Association.

“Natural resources lie at the foundation of all preparedness, whether for peace or for war.” These are the words of Gifford Pinchot, the foremost advocate on this continent of the better conservation of natural resources.

This statement by Mr. Pinchot is no less true for Canada than for any other country. Its truth is obvious, so far as the great world-war is concerned, since a moment's thought will demonstrate that behind the production of munitions and of all the multitudinous articles of equipment and supplies essential to warfare, there must be great supplies of the natural products of the earth. Of these, the metals and other minerals, and the various woods, come first to mind. All food supplies, including meats as well as grains and vegetables, are dependent upon the productive capacity of the soil, which is the most important of all natural resources, aside from human life itself.

Considering this latter element, human life, it is obvious also that the capacity of a country to sustain population must depend primarily upon either agriculture or manufacturing or both, and the extent to which these can be developed depends absolutely upon the extent of the natural resources available, of

which the soil, the metals, the forests, and the water-powers are the most prominent examples.

In time of war, the financial credit of a country is a factor the importance of which can scarcely be over-emphasized. The degree to which this can be realized upon depends to a very large extent on the degree of development of manufacturing industries. Since these, in turn, depend directly upon the extent of natural resources available, the connection between national credit and natural resources is obvious.

Thus we see clearly that natural resources are the determining factors, not only with regard to the production of munitions and supplies, and of credit, but of men as well, who constitute the most essential element in any programme of national defence.

Agitation a Necessity.

The relationship above outlined for war conditions is equally true in times of peace. Practically every form of human activity is directly or indirectly dependent, either immediately or ultimately, upon the utilization of some natural resource. All agriculture and all manufacture are directly so dependent, as has been shown. Only the boundless natural resources of Canada—her lands, her forests, her minerals, her water-

powers—have made it possible for her to attract so large a population from other countries, and with future possibilities in this direction which are as yet almost undreamed of by the average citizen.

These fundamental relationships are as yet realized only in small part by the great public-at-large, and that is the real reason why progress toward better methods of utilization is so slow. A vast amount of agitation is almost always necessary, as a preliminary to the adoption of reform measures, and this is as true of the conservation movement as of any other.

Contrary to the popular concept, conservation does not mean the present locking up of natural resources for the benefit of a distant future. On the contrary, it simply means the avoidance of all unnecessary waste; in other words, it means wise present use, with a view to making non-reproducible supplies, such as coal, iron, etc., last as long as possible, and to so using the reproducible resources, such as the forests, as to make them self-perpetuating.

Would Pay War Charges.

Everywhere, among the nations at war, the avoidance of all forms of waste is being strongly advocated as a war measure. One aspect of this broad movement, which is receiving less attention than it deserves, is the need for better conservation of our forest resources. It is estimated that the average annual loss by forest fires in Canada is sufficient to pay the interest upon the recent Dominion loan of \$100,000,000.

The importance of the forest resource in the internal economy of the country is shown by the fact that the estimated total value of forest products for Canada in 1912 was \$182,300,000, or an annual wealth production of \$25.68 per head of population. In 1913, nearly eight million dollars was derived, by the Dominion and provincial govern-

ments, directly from the sale or lease of cutting rights to publicly-owned timber lands and from royalty and stumpage payments made upon timber so cut.

There are in Canada some 5,000 wood-using industries. The permanence of these industries depends directly upon the perpetuation of the forest resources of the country. It is perfectly obvious, for instance, that, no matter how large its timber limits may be, any large pulp mill must ultimately exhaust its resources of wood if the virgin forest be continuously drawn upon without adequate provision for its replacement on cut-over lands. Yet this is exactly the direction in which many concerns are heading. Pulp and paper mills represent very large investments of capital, and dividends are bound to fail in the course of time unless necessary provision is made for the perpetuation of the wood supply.

Better methods of protection from fire is the crying need of to-day, so far as the forestry situation is concerned. Great improvements have been made within the last few years, but the situation as a whole is still far from satisfactory.

"Mining" the Forests.

In actual practice, the forest has only too generally been treated like a mine, and gutted, with no thought of the future, rather than like a crop, which it really is. The ordinary method of unregulated lumbering followed by fire, as has only too generally been the practice in the past, is gradually but surely turning vast areas of non-agricultural land into a desert and non-productive condition. Timber is the only crop, aside from game and fur-bearing animals, which these lands are capable of producing. They are, however, capable of continuously adding very great wealth to the country, provided fire is kept out and other necessary measures adopted for the perpetuation of the forest as a forest.

The difficulty arises in securing practical realization of the fact that the forest is a crop, and that its utilization, on non-agricultural soils, should always be so regulated as to provide for the establishment of a new crop, and of successive crops, indefinitely.

This is particularly important as to the lands which have thus far received least consideration, namely, those which, because of their greater accessibility to transportation, have been logged off first. On such lands, stumpage values will always be higher than on lands less accessible, and it is therefore especially desirable, from every point of view, that the natural reproduction should be protected from fire and given an opportunity to reach maturity. Instead, the opposite has been the general tendency, and not only individuals, but the country as a whole must in the long run pay the penalty. To a far greater extent than is the case at present, we should be drawing upon interest, in the form of natural forest growth, rather than upon capital, stored up in the virgin forest. If this were done, our great forest resources could never be depleted.

The Menace of Brush.

Brush-disposal, as a fire-preventive measure, is a feature to which some attention has been given, particularly in the west, and some progress has been made. However, the lumber industry as a whole is still suffering from depression, and the general level of prices is still too low to permit general attention to the matter of brush disposal over the country as a whole. It is believed, however, that even at the present time, particularly in the east, it is practicable to a materially greater extent than is conceded by most operators. At least a beginning could be made, in many cases, by a more thorough clean-up of inflammable debris in the vicinity of settlements, camps, railways, wag-

on-roads, logging roads and streams, and along the edges of cutting areas. Such action would greatly reduce the danger of fires causing material damage, and would afford vantage points from which to control fires of accidental origin.

One of the most essential features of a forest-protective organization is adequate supervision over the fire-ranging staff. Taking the country as a whole, there is no question but that a very great deal of money is being wasted through failure to provide enough supervision, and of the right kind, to ensure that a dollar's worth of protection is secured for each dollar expended on the fire-ranging staff.

A Co-operative Model.

In this connection, the provincial governments of eastern Canada, and the great majority of limit-holders as well, should take careful note of the admirable results that have been secured by the St. Maurice and the Lower Ottawa Forest Protective Associations, and should profit by their example. These two Associations have been able to secure the best degree of protection against fire that is to be found over any large area anywhere in eastern Canada. These results have been secured by the adoption of a thoroughly business-like administration, of which close supervision at all points is considered as absolutely essential feature.

Beyond any doubt, also, the matter of securing a thoroughly competent personnel in the fire-ranging staff is of the utmost importance. It is hardly conceivable that any one should seriously question this. Yet, in no single government fire-ranging service in all of Canada, so far as is known, are the appointments of fire-rangers clearly and definitely based upon the one ideal of merit and fitness for the position. In every single one, Dominion as well as provincial, the patronage system holds the reins, and party advantage is, as

a rule, the primary consideration, with merit and fitness of the applicant secondary. Undoubtedly, many thoroughly competent men are appointed under the patronage system, but the exceptions are too numerous, and the tendency of such a system of appointment is far from being conducive to proper ideals of discipline and organization, and the development of a wholly efficient service. In this respect also, the St. Maurice and Lower Ottawa Associations are able to set a good example to the several governmental agencies. These Associations, being composed of limit-holders, are able to select their fire-ranging staffs upon the sole basis of merit, and actually do so. On any other basis, the really remarkable results secured would have been impossible to the same degree and at the same cost.

Patronage Patrolmen.

The general tendency of the patronage system was admirably expressed by Sir George Foster in connection with the recent debate upon the estimates of the Public Works Department. His remarks are, however, equally applicable to the several fire-protective services throughout the Dominion. In the discussion referred to, Sir George made the statement that in the whole course of his thirty-four years of public life, he could not point to a single instance where political patronage ever helped the status of the bench, ever helped the status of the Civil Service, ever helped in the economy of their administrations the status of public administrators, no matter what function they performed, never helped a member of Parliament in reality, and never helped a Government in reality.

In view of this strong statement and of the very general chorus of approval with which it met, it would seem that material progress has been made toward hastening the day when appointments to at least cer-

tain of the public services will be based upon merit rather than upon patronage. Certainly, such action would constitute one of the most effective means of reducing the tremendous forest fire loss sustained each year by this country. This action will not, however, be generally taken unless and until those directly and indirectly interested in securing better forest protection make their influence felt in a concrete way, in favor of this proposition. Not only are all lumbermen included in this category, both individually and collectively, but every citizen of every province as well.

Any action that will tend toward better forest conservation will be a step toward better preparedness, for peace as well as for war.

(The foregoing article also appears in the current number of *The Canada Lumberman*.)

Tile Walls as Snow Fences

Successful experiments have been made in Iowa in the use of hollow tile for snow fences the results showing that such barriers will hold back about twice as much snow as the board fences. This barrier is made of six or seven layers of tile, the open ends forming the two faces of the wall, which is slightly serpentine to permit expansion. Wires are used for reinforcement. The tiles are molded in such a manner that air spaces extend through them at an angle of about 20°. The tiles are so laid that all the air passages lie in a plane parallel with the earth's surface but those of adjoining layers lie at opposing angles. When the wind passes through this fence, these diverging openings form conflicting strata of air which neutralizes each other's force so that it is comparatively calm at the leeward side of the shelter. This accounts for the large amount of snow that collects behind these

shelters, which will last longer than wooden ones, and in summer may prevent the spread of fires started by passing engines.—(Popular Mechanics Magazine.)

Cork Forests

The cork oak is a kind of jack at all trades among trees, and its service indicates well the kind of new freedom that trees may give us by their new helpfulness if we will just give them a chance. If the garden of Eden story had been written in Spain or Portugal I think the fortunate couple would have been placid in possession of a cork forest. If a man in either of these countries has a forest of good cork trees you will find him in Madrid, Lisbon or Paris. His cork forest works for him, and he stays in town.

Cork trees grow on the rockiest and poorest land. The poorer the land the finer the quality of the cork. Every eight or ten years the outer bark is stripped from the trees to furnish the ever more highly prized cork of commerce. By dividing the land up into blocks this decennial harvest will produce a fairly regular income.

These same oak trees produce acorns, often heavily, which are sold to some farmer, who drives his herds of lean hogs into the forest, where they harvest the acorns and turn them into salable meat. A Portuguese hog is expected to gain two pounds a day for ninety days when acorns are ripe.

More than this, there is beneath the oak trees some herbage fit for goats to eat. Thus the cork forest owner in Lisbon gets income from three contractors—the cork stripper, the pork raiser and the goat raiser. And with care the forest lasts forever. The individual cork tree is good for a hundred years or more, after which it is a fine big salable tree, with enough young ones near it to take its place when it is gone to market. In Portugal a cork

tree, ready for its third stripping, is considered worth \$25. When in full bearing an acre of these oaks will yield from one to three tons of cork, at a stripping, now worth about \$70 a ton to the grower. Most of this is profit. The pork is profit. It is the common rule that the income from the pasture pays the small cost of caring for the forest.—J. Russell Smith in Country Gentleman.

Canada's Timber Needed

London.—There is at present a shortage of 400,000 cottages in England. Besides this shortage, there are old and unsanitary areas that ought to be cleared away. The building of these new cottages with a view to providing discharged soldiers with work after the war and removing a cause of emigration is the subject of a general scheme devised by the National Housing and Town Planning Council. It also forms another instance of the way the war has dissipated England's indifference to her internal problems.

One of the main causes of complaint among lease-hold farmers and farm hands is the poor housing. Ancient cottages with the lower floor flush with the ground and the roof thatched with straw may be picturesque, but they are damp and a main cause of the rheumatism from which the country people suffer so much. Of the 400,000 cottages, about 120,000 are needed in the rural districts. Families are now cramped into small quarters, living in old and mouldy homes or new and cheaply built affairs that have no modern ideas or improvements.

The provision of homesteads with small holdings and the intensive cultivation of the soil, reforestation, the reclamation of wastes, the settlement of disabled soldiers and sailors on the soil and town planning schemes involving new main roads, playgrounds and open spaces, are a part of the programme of the housing council.

The Russian Forests After the War

Will Germany and Austria be Able to Command the European Market for Timber?

[An extract from "The Forests of Russia and Their Present Importance to the Allies," by E. P. Stebbing in "The Nineteenth Century and After," March, 1916.]

"Previous to the war, Great Britain bought nearly half of the timber exports from all countries, and her voice in the timber markets of the world was supreme. Will this be so at the close of the war? It is difficult to see that it can be, for the simple reason that we shall have other European nations competing against us in these markets, and those nations will be principally some of our present Allies. The devastation in Belgium, in North France, in Poland, and elsewhere will require an enormous amount of building and other timber to make good. These countries therefore, previously but small importers of timber since they depended mainly on their own woods, will have to purchase in the open market. In Belgium not only will building operations have to be carried out on a large scale, but immense destruction has been caused to the forests of the country, and the Germans have added to this by felling areas of woods wholesale and transporting the material into their own country. The wondrous system and marvelous organizing powers of the Germans make the reason of this procedure fairly obvious. Not only are they thus restricting fellings in their own magnificently managed woods, which fellings *du reste* are naturally restricted owing to the want of labour; but we may assume that they have already correctly gauged the position, and that they are, in all

probability, in preparation for the great demand for timber which they foresee must be the outcome of the present destruction, storing up the material so removed in depots for future use.

The Germans in Control.

Germany and Austria sent us small amounts only of forestry products, timber, etc., in the past. They own immense tracts of forest. It is scarcely too much to say that, without care, at the close of the war they will have the timber market at their mercy, and with the Allies competing against one another in this market they will be able to force up prices to an unprecedented level. Nor can we reasonably expect Norway and Sweden and other countries not to take advantage of such a golden opportunity. It will be contended that our Colonies will come to the rescue. Doubtless, but for the most part this will not bring down or keep down prices owing to the extra freight on the materials imported. For it must be remembered that most of the easily accessible timber of the world—i.e., that growing alongside rivers and streams, and therefore transportable by water—has been cut and utilized.

Russia's Position.

We come back to the point then. What will be Russia's position and what her action? With her enormous forest resources it should be possible for her to throw a consider-

able—in fact a decisive—influence into the scale, and that this influence should be exerted in the right manner and at the right moment is for us, and in fact for our Allies, a most important factor. Once this point is fully realized it should be possible for the Allies to come to an agreement having for its aim two chief objects:

(a) To prevent the Allies competing in the open market against one another at the close of the war.

(b) To prevent Germany and Austria from being able to form a "corner" in forestry material and so send up the prices to a prohibitive extent to their own mutual benefit as the outcome of a war made by themselves.

We should face the fact that we, more than any of our Allies, except Belgium, are most concerned with this matter. They have forest resources more or less large at their backs in the shape of the woods untouched by the war, which have been planted and grown for commercial purposes. We in these islands have no such resources with which to influence the market prices or with which to help us tide over the dangerous period. It rests therefore with us to make efforts to safeguard our position in this respect at the close of the war."

Waste in Settlement

(From Cochrane, Ont., "Claybelt Weekly.)

"Save materials from waste"—"spend money wisely" in these two sentences really lies the ultimate success of our efforts to promote production and to exercise thrift.

"Save materials from waste" is an admonition specially adaptable to Northern Ontario. In the abundance of Nature's bountiful gifts, we not only just throw aside what for the moment appears useless to us because we fail to realize its latent values, but we go further and wantonly destroy. For the sake of

cleaning a few acres we burn down miles and miles of virgin forests; we cross our pulpwood and simply burn the bark and shavings when not only possibly but very probably, the bark and shavings could be made to yield an abundance of valuable by-products; we grow the grain and then burn the straw, irrespective of feed and other value; we build up the nucleus of prospective prosperous towns along the new railways and allow bush fires to sweep them off the map in a few hours; and so it goes on ad infinitum. In a mad haste to transform the primeval forest into farms in the shortest possible period, we waste considerable more than the farms can produce for years to come. The arguments brought forth in favor of such ruthless destruction are plentiful but they all are fallacious because they are based on and spring from ignorance which makes it so much harder to combat. If you cannot use a thing yourself burn it—is a pitifully crude way of disposal."

According to the casualty lists, Eric G. MacDougall, of the B. C. Forest Service has been wounded in battle.

The Power of a Dollar

The Association's plans for an extensive publicity campaign in all parts of Canada can be realized only by the prompt remittance of the 1916 membership fees.

The revenues are most limited at best, and the contributions of the members mean the carrying out or abandoning of urgent educational work.

If you have not remitted the dollar fee, try to do so on receipt of this issue of the Journal.



Published in collaboration with the Canadian Society of Forest Engineers.

Messrs. D. A. Macdonald and C. H. Morse, of the Dominion Forest Service, have been elected Associate Members of the Canadian Society of Forest Engineers.

Mr. E. H. Roberts, Acting Inspector for Saskatchewan, of the Dominion Forest Service, reports that the fire season is beginning later than last year and the outlook is more favorable due to considerable rain and snow flurries every few days. A new patrol boat has been placed on the Saskatchewan River between Prince Albert and Cumberland House. The sub-chief fire-ranger in the Montreal Lake country is trying out an "Aerotruss" engine attached to his canoe from which he expects big things. One forest survey in charge of Student-Assistant G. A. Mulloy, assisted by A. W. McCallum, left Prince Albert to examine the territory north of the Fort a la Corne Forest Reserve about the first of May, and will be followed by another party about June first. A reconnaissance party will spend the summer in the interior of the Porcupine Forest Reserve. Three new eighty foot steel look-out towers are being erected to supplement the nine already up and extensive telephone construction work is being undertaken on the various reserves.

A plantation of some fifteen thousand white and Norway spruce, Scotch pine, European Larch, lodgepole pine and jack pine has been

established on the Pines Forest Reserve from stock grown in the Reserve nursery. Small experimental plantations of a few acres are being set out in the Elbow, Dundurn and Manito Reserves from stock grown at the Indian Head Nursery Station and under the supervision of one of their staff.

Mr. J. C. Blumer, of the Conservation Commission completed a very interesting winter trip with dogs and Indian Guides through the northern part of the Province during the month of March. He passed by way of Montreal Lake, Lac la Ronge, Ile a la Crosse and Big River.

Interesting developments are taking place in the Beaver Lake gold fields, numerous prospectors are going into the country this spring and also into the country to the north-east. It is reported that considerable eastern capital is coming in and much work will be done this season.

Mr. G. A. Gutches paid a short visit to Prince Albert last month and expects to return again in the summer or fall.

Coast Lumbermen Give Freely

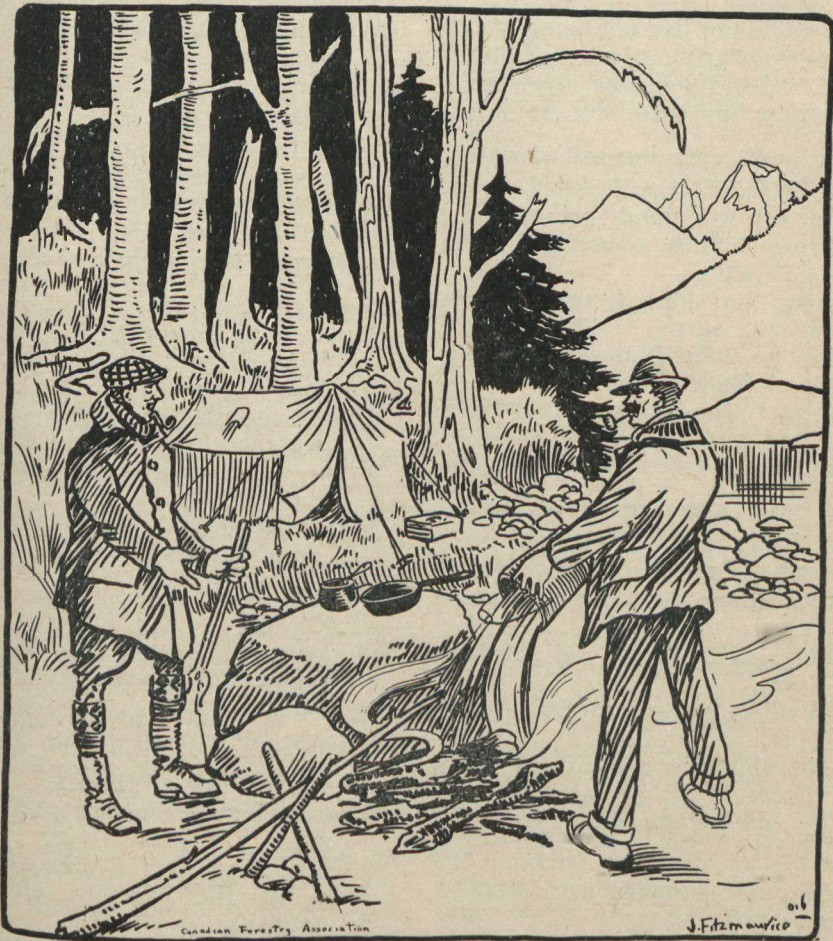
At a meeting of the Mountain Lumber Manufacturers' Association recently held at Calgary, Alta., it was decided that all members of the association should contribute 50 per cent. of their net profits to the Federal Government for patriotic purposes. Another resolution that was

passed was that the lumber manufacturers collect \$1 per head a month from each unmarried employee for patriotic purposes. A delegation was appointed to attend the annual meeting of the Pacific Coast Manufacturers' Association and urge them to adopt similar steps. Various plans for enlarging the market for British Columbia lumber were also discussed.

Planting Trees

Over 1,000 acres of land purchased by the Massachusetts Forest Commission will be planted this spring to white pines and other conifers. During the next few weeks state nurseries in Amherst and Barnstable will send 1,000,000 small trees to portions of the state selected for reforestation.

FROM THE ASSOCIATION'S FREE CARTOON SERVICE NOW
USED BY OVER 300 CANADIAN NEWSPAPERS.



The Amateur Camper: "You certainly take a lot of trouble to put out a camp fire!"
The Guide: "Better to take the trouble now than burn down ten miles of camping sites. Only a greenhorn nowadays fools with fire in a forest."

The Forest Pleaders

E. T. Allen, forester of the Western Forestry & Conservation Association, Portland, has sent the following recitation for six pupils to schools in Oregon and Washington for use in Arbor Day exercises:

First pupil, carrying evergreen branch:

I AM THE FOREST.

I clothe this Western land
With beauty and on every hand
You turn to me in daily need.
Your best friend I have always
stood;
You could not live not using wood.
For your protection now I plead.
Nor do I bid you take my word;
Let these, my witnesses, be heard.

Second pupil, carrying pail of water:

I AM THE STREAM.

From my woodland springs
To river mouth where the white
gull wings
Over the ships from the ends
of the earth,
I flow to your homes and mills
and fields,
And carry the freight that the har-
vest yields,
But shady forests gave me birth.

Third pupil, carrying pet animal:

I AM THE WILD THINGS.

I speak for graceful deer,
And flashing trout in brook pools
clear,
For singing birds and squirrels
pert,
And all the wearers of feather and
fur.
What should we do if no forest
were
To shelter us from fear and
hurt?

Fourth pupil, carrying ax:

I AM INDUSTRY.

To me the forest brings
Reward for labor and all things
That money buys, for in this
state

Over half our wage-earners' pay
Comes from lumbering in some
way.

The fate of forests is my fate.

Fifth pupil, carrying fishing-rod:

I AM PLEASURE.

Happy vacation days,
Camping, hunting, and all the
ways
Of nature in her gladdest
moods,
The forest holds for girls and boys
Who love out-doors and whole-
some joys—
There is no playground like the
woods.

Sixth pupil, strikes match and holds
it burning:

I AM THE FUTURE.

Shall all these pass away?
Must we look forward to a day
Of fire-charred, lifeless, stream-
less slopes,
Where thoughtless match or un-
watched brand
From man's ungrateful, careless
hand
Has destroyed his own chil-
dren's hopes?

All, Future blowing match out,
watch as he drops it, then tramps
it out:

FIRE IS OUR ENEMY.

Won't you help us, then?
Learn yourselves, and teach all
men,
This, the lesson all must learn:
Put out the campfire and the
match;
Careful with slash and clearing-
patch;
Leave no fires in the woods to
burn.

Benefits of Organization in Forest Protection

Northern Protective Association Suffered Small Losses in 98 Fires
—The use of Modern Publicity.

The failure of recent efforts to bring together those interested in a mutual forest protective association in the Upper Ottawa region, can be regarded as merely a temporary shelving of a plan that the near future will see realized. Reports just received regarding the past season's success of the Northern Forest Protective Association of Michigan prove once more the potency of organization and skill in limiting the damage done by forest fires. The American association works on much the same lines as the Lower Ottawa and St. Maurice associations of Quebec which have been doing excellent work on an area equal to one-third of the total forest area of the province.

"The fifth annual meeting of the Northern Forest Protective Association was held at Marquette, Mich., on Tuesday, the 7th of March.

The Protective Association has become fully established in the Upper Peninsula and its work for the past five years has become widely known through its success in limiting the forest fire menace.

Ninety-eight Fires Per Year.

The records of the Association for the past year ending March 1st, 1916, show a total of 98 fires, covering an acreage of 13,090, with a loss of \$8,746.30.

In addition to the fires reported, there were a number of incipient fires on unlisted lands which the wardens put out without making a

detailed report thereof; fires which caused no damage whatsoever.

The causes of the fires were as follows:

Settlers, including one tractor clearing land for settler	19	20%
Locomotives	19	20%
Steam loaders	1	1%
Campers	5	5%
Unclassified—thought to be		
settlers	4	4%
fishermen	4	4%
pedestrians	3	3%
road crews	2	2%
wood choppers	1	1%
farmers	3	3%
logging employees	1	1%
sugar makers	1	1%
smokers	2	2%
stove pipe	1	1%
tramps	1	1%
sportsmen	1	1%
unknown	30	30%

From which it will be noted that the percentage of unknown causes retains its position at approximately 30 per cent., while fires originating from settlers clearing land and from locomotives balance each other at approximately 20 per cent.

There is a constant decrease in the number of fires traceable to campers, fishermen, sportsmen and other woods travelers, which is conclusive proof of the fact that the publicity campaign, which has been the key-note of the Association since its inception, has borne fruit. It is proof also that greater efforts must be made to reduce the number

of fires caused by settlers and by locomotives; and the co-operation which the railroads have given during the past season and the interest displayed in better equipped locomotive stacks is evidence that fires from this source will annually decrease in numbers.

The Benefit of Patrol.

The number of fires on lands listed with the Association numbers but 36, while the balance, 62, occurred on lands not listed for patrol, but which, having occurred, were taken care of by the wardens. The acreage burned over on membership lands totals 4,904, and that of the non-listed lands, 8,186; while the losses to the membership total \$7,064.17 as against \$1,682.13. These figures present an interesting illustration inasmuch as the non-listed lands—although in many cases belonging to members of the Association—are composed largely of plains and slashings, the very localities where fires are most apt to occur. Fires occurring in such locations naturally travel more rapidly owing to the influence of wind, and consequently burn a greater area, with losses very much less, due to the fact, of course, that there is little of value to be destroyed.

Publicity Features.

The publicity features, which have brought so much attention to the Protective Association in years past, have been used and added to in several ways, among the most important being the publication of the report of the annual meeting of 1915 in booklet form, largely as a text book on spark arresting devices; the posting of notices of new design, the distribution of several thousand pamphlets of the Game & Fish laws with proper forest fire notices, and the preparation of a course of ten lectures on Forest Fire Prevention to be issued to a mailing list of practically one thousand woodsmen.

The Secretary-Forester advocated the addition of a number of cars

for Association service and showed by comparison with other places the feasibility and economy of such a course.

Equipment of Forestry Battalion

When the 224th Overseas Battalion paraded recently in Ottawa, for inspection by his Royal Highness the Governor-General, the equipment carried by the members of the battalion created considerable discussion among lumbermen in Ottawa and elsewhere. We have heard several lumbermen discussing this matter and in order to explain the affair we have made enquiry of the Officer Commanding. It will be recalled that, upon that occasion, the Forestry Battalion paraded with various implements, among which were broad-axes. As broad-axes are used for squaring timber, and as the Forestry Battalion will probably be employed chiefly in the felling of timber and have little or no squaring to do, there was some criticism about this equipment, a few lumbermen going so far as to intimate that the carrying of broad-axes laid the battalion open to ridicule.

The officer commanding, referring to this subject, says:—"Your information as to part of the implements which our battalion carried during this parade is quite correct, but they carried also peavies, camp-dogs, cross-cut saws, etc. This parade was not intended to show what implements they should carry, but merely for inspection by his Royal Highness the Governor-General. Our equipment altogether will be that used in the lumber industry in Canada and therefore, this parade cannot be taken as affording any example of the equipment we will carry abroad."

The 224th Forestry Battalion has made quite a record in recruiting, having, in about one month secured some 1,800 men.—(Canada Lumberman.)

The Secretary's Page!

Attention, Game Clubs!

The Secretary of the Canadian Forestry Association, Booth Building, Ottawa, has been in communication with several of the larger game clubs, and tourist organizations with a view of encouraging co-operation in the matter of forest protection. He has a special proposition to submit to the members of all such bodies and would be obliged for the names and addresses of secretaries.

Free Public Lectures

The Secretary in the month of April gave illustrated lectures to large audiences in public halls of Brockville, Marmora, Sault Ste. Marie, Prescott, and Hamilton. The lectures were accompanied by quite extensive newspaper publicity and the cause of forest protection thereby aroused valuable local attention.

In Our Mail Bag

"I wish to thank you for the copies of the Boy Scout Forest-Book which you sent to me to use in the classes in my school. We have had some very pleasant half hours together reading and speaking, discussing, etc., already, and expect to have more. It is such a beautiful book, so instructive and so suggestive that I wish it could be in the library of every school in the province."—Chas. G. Fraser, Principal of Manning Ave. School, Toronto.

"I can more than emphasize the education usefulness of the Association. I endorse it in the largest way."—J. L. Englehart, Chairman, the Temiskaming and Northern Ontario Railway Commission.

"We think your booklet the best thing we have seen so far on the subject of conservation."—Philadelphia Headquarters of the Boy Scouts of America.

"The education of our children in the beauty and value of our timber, trees and forests has been actively carried on by the Canadian Forestry Association. Twenty of their booklets have been distributed in the schools of Lillooet and twenty more to the older boys. The information contained is both entertaining and instructive."—Lillooet, B. C. 'Prospector.'

The Door of Opportunity.

Of scores of letters received by the Secretary of the Association asking for new supplies of publications on forest topics, the following is typical:

Hazleton, British Columbia,
May 5, 1916.

"We were greatly impressed with the Association's last booklet and with the idea.

"Passing it along to the school-teacher was the source of many inquiries from the kiddies themselves. Thus realizing the amount of interest that one copy created, we are under the impression that if you could favor us with a half dozen or dozen copies, the interest would be increased in an almost relative proportion."

The Association's very limited funds cover the widest possible educational field. **Every dollar** of the membership fees is required to keep pace with opportunities for good service. **Have you sent in your 1916 fee yet?**

B. C. Fire Prospects

Victoria, B.C.—Advices to the Minister of Lands from the Southern Interior of the Province mark the beginning of the fire season, small fires being reported from the Cranbrook, Nelson and Vernon forest districts. In the first-named district the late spring is retarding the growth of vegetation so essential as a check upon fires running along the ground and burning the carpet of pine needles, twigs, dry leaves, etc. A hot and dry wind from the south is drying up the vegetation in the Okanagan and Similkameen districts, while hot weather prevails throughout the Vernon district generally. Farmers and settlers are reminded that permits are required for all fires set from the beginning of May, for which application should be made to the local fire wardens. Campers, sportsmen and travellers are urged to exercise every care in extinguishing camp fires, and the co-operation of all sections of the community is desired, in order that damage to property may be avoided. It is worthy of mention that in 1915 305 fires out of a total of 1,031 outbreaks, were traced to campers and travellers; while 267 were caused by land-clearing operations. Damage by fires to the timber in 1915 amounted to \$109,000, and other property, viz., logging equipment, farm houses and buildings, etc., \$58,000. The majority of all fires in 1915 were, as usual, due to human agency, and were, therefore, preventable. Particularly this season, when the Empire is engaged in a vast and wealth-destroying war on a scale hitherto unthought of, it is the duty of every citizen to assist in preserving our resources from avoidable destruction.

Fewer Forest Fires in U.S.

The damage done by forest fires on the national forests of the United States in 1915 was much less than

the average for the past five years, according to official figures just compiled. This is in spite of the fact that the season was an unusually dry and hazardous one.

Of the total of 6,329 fires only 346 did damage to the amount of \$100 or more. The average damage done by each fire was kept down to \$60.41, which was less than the average for the past five years. The average cost of fighting each fire was lowered almost \$21 below the average for the past five years.

Fire on the national forests in 1915 destroyed \$190,000 worth of mature timber. The damage to young growth, forage and stream flow cannot be calculated but was much greater.

Among the causes of these fires, lightning as usual holds first place, with 28½ per cent. The carelessness of campers, responsible for more than 1100 forest fires, comes second. In California, however, fires caused by campers heads the list, with a percentage of almost 25 per cent. of the fires in the State; lightning comes second with almost 20 per cent.

The railroads were responsible for only 9 per cent. Sawmills and logging operations caused less than 3 per cent., and the causes of 15 per cent. are unknown. Nearly 11 per cent. of the total were of incendiary origin.

Forestry Farms

"Saskatchewan requires more Forestry Farms. Then there would be at least two lectures continuously on the road to hold meetings, giving lectures on forestry, shelter-belts, etc. The gospel of tree-planting should be brought to farmers. These lectures could take the names and locations of farmers who are anxious and ready to plant trees, send in the lists to the head office in the province, and inspectors should be sent out to examine each farm, so as to advise farmers where

to plant, and how to prepare the ground for the following year's planting. It is all right to expend money on the general Conservation Commission to enthuse citizens the Dominion over on what our natural resources are and how they should be conserved, but the practical working end of the problem should not be neglected. Give Saskatchewan forestry farms and practical men to meet progressive farmers, and in a few years the treeless, wind-swept prairies would be changed to a park-like country, with trees on every farm."—Saskatchewan Farmer.

Does Skilled Protection Pay?

During 1915 there were 1,031 forest fires reported by the Forest Fire Protection Staff of British Columbia. Of these, only 317 were classified as "cost fires." This is a considerable reduction as compared with the previous season when there were 639 "cost fires." The average cost of each "cost fire" was \$61, whereas in 1914 the average cost was \$219. About two-thirds of all fires originated on privately owned lands not classed as timber lands. The most prolific source of forest fires was carelessness by campers and travellers which accounted for 305 fires, or 29.6 per cent. of the total. 160 fires, or 15.5 per cent. are classified as of "unknown cause." Brush-burning accounted for 267 fires or 29.9 per cent. Railway operations were responsible for only 82 fires or 7.9 per cent. Lightning started 100 fires or 9.7 per cent. Railway construction was responsible for 17 fires or 1.7 per cent. 28 fires are classified as of incendiary origin being 2.7 per cent. of the total. Forest fires during the year covered an area of 30,310 acres as compared with 42,549 acres during 1914. They destroyed 144,220,000 feet of timber as compared with 102,804,000 feet B. M. during 1914. The damage during 1915 is estimated at \$88,043, as compared with \$52,852 during 1914.

Origin of Wood Pulp Paper

A writer in the "Newcastle Chronicle" says that an old hornet's nest caused Dr. Hill, of Augusta, Maine, to make the discovery. A friend and neighbor had told him there was not enough cotton and rags in the world to supply the newspapers and other publications with their raw material. That was about forty years ago, and Dr. Hill took a hornet's nest to the superintendent of a nearby paper factory and asked him, "Why can't you make paper like that?" They sat down together, took the nest apart, analysed it carefully, and decided that if a hornet could make paper out of wood, man ought to be able to do as much. The doctor discovered that the hornet first chewed the wood into a fine pulp. They decided to make machinery and water do what the hornet's mouth did. Such was the beginning of the wood pulp industry.

Spring Fires

Midwinter is the most dangerous time in regard to fires in buildings but so far as our forests are concerned, spring is one of the worst times. The dead leaves of last season and the dead twigs and branches on the ground are more brittle and dry in the first few days of spring just after the snow leaves than at any other time in the year. Those who go into the woods for any purpose are, therefore, cautioned to be careful with their camp fires and with matches. They should also see that any cigar or cigarette stubs are dead out before they throw them away. Observance of these precautions will do more for conservation than many meetings and conventions ten years from now and this duty is urged on all patriotic citizens. The fact that Canada is at war makes this duty all the more important.—(Publicity Bulletin of Dominion Forestry Branch.)

New Brunswick's Forest Survey

The sensible determination of the New Brunswick Government to have a definite survey of the timber resources of the province is given an interesting testimony in the 1915 returns of the quantity of lumber cut.

In 1905 the total was 107,705,676 superficial feet. This increased gradually until it reached 149,510,471 feet in 1907. During 1909 it jumped to 205,761,583 feet, and in 1910 made a still greater gain, reaching 281,716,402 feet. During the following year, 1911, the high level was reached for the ten year period from 1905 to 1915, viz., 309,883,428 feet. During 1912-13-14 the amount declined, reaching 270,221,155 feet in 1913. Then in 1915, on account of the demand arising out of the war, it increased again and reached 290,120,823 feet.

The latter figure is said to be a little in excess of the estimated annual growth on the Crown Lands of the province. Mr. P. Z. Caverhill, late of the British Columbia Forest Service, has been placed in charge of the survey work and will probably have three or four field parties out this summer, comprising thirty or forty men. The number of field parties will gradually be increased to eight or ten and the whole work

will probably occupy from four to five years.

The revenue to the Government from the lumber industry for the year ending October 31, 1915, was the largest on record:

From the Canada Lumberman.

"Under these conditions it becomes imperative for the province to undertake a definite survey of its timber resources, so that its cutting policy may be directed along safe lines. Because the quantity cut may be the same as the quantity shown to be the annual growth, does not mean that the forests are being cut in a safe manner. The important thing is to make sure that the proper trees are being cut, those which are mature and those which, being cut, will give others a better opportunity to reach maturity. The indiscriminate cutting of small logs is a mistake, so far as the welfare of the forests is concerned, and the government of New Brunswick must pay special attention, under the conditions which exist to-day, to the proper regulation of cutting, so as to get the best results out of the forests and at the same time give reasonable encouragement to the lumber industry."

The Use of WoodFlour

More than twenty thousand tons of wood flour, valued at \$300,000 are used annually in the United States in two widely different industries, the manufacture of dynamite and the manufacture of inlaid linoleum.

Wood flour is also used in making composition flooring, oat-meal paper, and in several other industries. It forms one of the means by which the huge waste product of our lumber mills is beginning to find some better means of disposal than the burner. Since a total of 36,000,000 cords of such waste is produced each year at sawmills, in the United

States, of which about one-half goes into the furnace as fuel, while the rest is burned as refuse to get rid of it, there is no lack of raw material for industries which can develop ways of burning this waste to account.

All wood flour-using industries require a white or very light cream-colored flour having good absorptive powers. The wood species that may be used are confined to the light, non-resinous conifers, and poplar are the species most used. Mill waste, free from bark, furnishes much of the raw material for making wood flour.

Government Railways and Proper Patrol

In the following extracts from Hansard, readers of the Journal will recognize the difficulties facing the limit holders of Quebec Province in securing that co-operation from the Government railways which is freely accorded by the private-owned systems. The strange anomaly of Government-owned roads balking the cause of forest protection in a region where their future freights will depend almost entirely on the products of the forest is difficult for the average reader to comprehend. Hon. Jacques Bureau brought up the question of maintaining a proper patrol on the lines of the Transcontinental through the limits included in the St. Maurice Forest Protective Association, and the sharing of the expense by the Dominion Government.

[Extract from "Hansard" for April 5, 1916. (Page 2699.)]

"Mr. Bureau:

There is another matter that I desire to bring to the attention of the minister in connection with that part of the Transcontinental railway. The St. Maurice lumbermen have formed an association known as the St. Maurice Forest Protective Association, which has for its object the preventing of forest fires. They have built telephone lines and towers; they have fire-rangers, and they do all in their power to protect the forests in that region from fire. I understand that they have been corresponding with the Minister of Railways, and that they have never been able to get any satisfaction, some of their letters remaining unanswered. The correspondence had the object of requesting the Department of Railways to co-

operate with the lumbermen in protecting the forests by keeping the right of way of the Transcontinental clean and by taking such action as might be necessary for the protection of the forests. I should like to know if it is the intention of the acting minister to defer action in this matter until the minister returns, or if instructions are to be given with a view to arriving at an understanding between the Government and the St. Maurice Forest Protective Association is the matter of protecting their limits from fires started by the Transcontinental railway?

Government Road to Blame.

"I understand from the secretary of the association that in the St. Maurice region last year the greatest cause of loss was fires set by the Transcontinental. I do not think it is right that the Government should not pay its share to help along this association in its work of protecting the forests. If the railway does not haul timber in that part of its line I do not know what it will haul, as it is a mountainous region where there are no other products.

"Mr. Reid (Acting Minister of Railways and Canals): The case of the St. Maurice Fire Protective Association has been brought before me. This association have limits along the line of the railway, and it is their custom to maintain a large staff of employees to protect their forests from fire. They receive some assistance from the Quebec Government. They want us to contribute \$3,500 or \$4,000 per annum towards the protection of their limits. I have not gone into the matter fully, but the thought that came into my mind is that between Win-

nipeg and Moncton, on the Transcontinental, there are a great many miles of forest owned by other parties, and if we pay the St. Maurice Association \$4,000 to protect their limits we will have to do the same thing over the entire line from Winnipeg to Moncton. Of course, we know that all of the railways now maintain tank cars, which are filled with water and kept at convenient points along the road, so that in the event of a fire one of these cars can be brought to the spot within a short time and the fire can be extinguished. That system is working well. Everything should be done by the railway, but it struck me that it was hardly fair for a private company owing limits along the railway to say: we are going to maintain our own men to watch our own limits, but we want you to pay a portion of the expense. The matter came before me during Mr. Cochrane's absence, and that is the position I took. I referred it to the management at Moncton to get their opinion as to what should be done, and also suggested that whatever was done would have to apply to the whole system; there must be one policy throughout the system.

The True Position.

"Mr. Bureau: From the minister's statement one would believe that the St. Maurice Protective Association was going begging for the \$3,500 from the Government. That is not the fact. The fact is that the Transcontinental Railway Company,

like other railway companies, under the law is obliged to keep its right of way clear to prevent forest fires. The Transcontinental railway does not do it. It is complained that the Transcontinental railway, through the neglect of its officers, was exposing the forest to be burned. Fires did catch from the engines, owing to the lack of proper precautions, and these fires cost the association from \$3,500 to \$4,000. They ask the Government to recoup them the money they have been obliged to expend owing to the negligence of the Government. That is not a question of policy, but a question of fair dealing as between man and man.

A Promise of Reform.

"Mr. Reid: I did not understand that there was any claim. I thought the representations were with reference to future operations. There is no doubt at all that if the management is not doing its duty in protecting that part of the road as the law requires, and as it is protected in other parts, I will bring it to the attention of the management and see that whatever is necessary to put the Transcontinental in exactly the same position as other roads, so far as protection is concerned, is done.

The Cover Picture

The photograph reproduced on the cover of the Journal this month was taken on the Nelson River, Canada, and shows a group of fire rangers.

From HON. JULES ALLARD, Minister of Lands and Forests, Quebec, May 2, 1916: "I have no hesitation whatever to state that the Canadian Forestry Association has rendered the greatest services to the country and that the work it has done has contributed in a great measure to a more judicious operation of our forests and to the adoption of more efficient means to secure their conservation. It performs a work of very great value which deserves the encouragement of our population."

On the Field of Honor

The following forms a very graphic description of the death in battle of Lance-Corporal D. N. Trapnell, who was attached to the Forest Products Laboratories at McGill as assistant. He enlisted in 1914 and was reported missing after the battle of St. Julien. No more definite word was heard of him until the following letter was sent on by his father. It was written by a Chicago friend of Mr. Trapnell to his sister in St. Johns:

"One of the boys in our department invited me to go out to his club and listen to Mr. Philip Sampson speak on his war experiences in France; I accepted the invitation, and to-night found me at the club. Mr. Sampson's talk was very interesting indeed. After the affair was over, I walked toward his home with him. I happened to mention I was a Canadian and inquired of him whether or not he knew any McGill boys. He said, "Do you remember me talking about my two soldier friends who were killed at the same time I was wounded?" "Yes," I said, "Well," he added, "one of those chaps was a McGill man." "What was his name I asked?" "Don Trapnell," he replied. Well you could have knocked me over with a feather, I was so surprised.

To think that I should meet a man who knew Don and was with him at his death made me feel sure that "truth is stranger than fiction."

Sampson was the last man who saw him alive, and therefore I thought that perhaps his people might like to know about it. On the other hand, it may open an old sore, so that you may use your own judgment as to whether you tell them or not.

Sampson told me the happenings in his own vicinity, that is, the doings of 300 men who comprised the unit he belonged to. At the battle

of Ypres, the Germans attacked suddenly, but the Canadians mowed them down with their machine guns. The Germans retreated, then under the cover of their gas fumes attacked twice more. The 300 Canadians referred to dwindled down to 15, and among them were Sampson, poor Don and another chap.

The 15 men got together and debated on their future movements. The Germans coming on again, and the Canadian survivors decided that it would be useless to try and hold a front with their numbers which took 300 men to rightly defend. They therefore came to the conclusion to leave the trench, go over to the other side of the road and join the Canadian Scots and cover the gap their leaving made in the line, by an enfilade or cross-fire. Don and Bush (I think his name was) were first out of the trench; Sampson was the third man. Just as he had climbed out, Sampson heard a "Jack Johnson" coming, and he hurriedly threw himself back into the trench, but, not a moment too soon, for the shell exploded, blew the trench in on top of him and covered up all but his head. Finally he extricated himself, got up but found that two men had been blown in on his legs and feet. He pushed them off. There were Don and Bush. He spoke first to Don and then to Bush asking them both if they were hurt, but neither answered.

He says poor Don and Bush showed no signs of wounds; therefore it was his belief that the concussion of the shell killed them. As the Germans were coming on again, he left the two boys there lying dead, and crawled away.

Sampson says Don was a fine chap, and that he liked him very much.

As I said before, this man was the last man to see poor old Don alive, and therefore I have written all he told me."

GETTING ON

While the losses of members in many Canadian societies have been heavy during 1915 and 1916, the Canadian Forestry Association is moving steadily forward.

GIVE THE ASSOCIATION A HELPING HAND TO
PASS THE 4,000 MARK BEFORE MIDSUMMER.

This will be difficult unless several hundred members clip out the attached coupon NOW and fill in a name of a friend.

You need send no money until September next and then only a dollar bill. There is no strict prohibition of course against enclosing the dollar with the application.

Just suit yourself.

The new member will receive twelve issues of the Canadian Forestry Journal, and eight or ten small illustrated books dealing with forest protection.

Here is the coupon. Start at it now.

Secretary, Canadian Forestry Association,
Booth Building, Ottawa.

Make the following a member of the Canadian Forestry Association. In September, 1916, the annual fee of

a dollar will be paid by $\left\{ \begin{array}{l} \text{him} \\ \text{me} \end{array} \right.$

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A Voice From the Forest

Fire Fighting Requires Aid of Mechanical Apparatus but Good Trails are the First Requisite.

February 15, 1916,
Cranbrook, B.C.

To Editor, Canadian Forestry
Journal:

I have read the article in the Canadian Forestry Journal, with reference to a portable gasoline forest fire fighting pump, by Mr. H. C. Johnson, Fire Inspector, Board of Railway Commissioners. It is a step in the right direction. At the present moment, however, it could not be used to advantage in the majority of localities because of the lack of trails, so we come down to the old point, viz., trails and more trails and as Mr. Johnson justly states in his article, good and reliable topographical maps. There are very few such maps covering forested areas in this country, Canada. Given good trails and the construction of artificial water supply where natural supply fails—which is not a very difficult or serious matter—then mechanical apparatus would be a godsend to the men in the field. I have always thought that the present policy is very haphazard in regard to "fighting" forest fire. There are all kinds of schemes for discovering fires, but they do not appear to have evolved many methods for extinguishing them. A fire starts at a given point, the wind is in a given direction, and if a man has only got a map of the locality which is reliable, he would soon then be able to have a general plan of campaign, cut and dried. Given the above data he can then make a fair guess in what direction the fire will run. As a rule, there are no reliable maps, there is some one man who happens

there are no known trails, unless to be around who knows the country and carries such knowledge bottled up in his head, and so time is wasted trying to stop the fire at no particular vantage point, until probably hours, and days, in some cases, afterwards when some one has had a look over the ground. This vantage point should be known beforehand, and a concentration made there, with a line of retreat to the next defence, already known, in case of a sudden fall back.

"Not Enough Action."

With good maps, artificial water supply where natural supplies fail, as I have said before, not a very difficult or costly matter, and some attempt at organization, a portable fire pump would be a very useful and valuable weapon in the hands of the men in the field. There is too much talk as to what should be done and too little action taken in the field. What is wanted is more of this talk put into action. The average forester seems to think that when a decent map and estimate is made that all is done. Both are extremely useful, but do not go far enough. Fire wardens are asked to send in reports giving hazards, probable points of danger, advocate such and such trails, all of which is usually squashed at head office, very neatly filed, and the matter dropped. This information should be marked on a plan, the wind currents assumed in the varying directions and a cut and dried plan of campaign agreed upon for the different situations in relation to the wind currents. With fairly accurate plans

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(not of a microscopic order but of a sufficiently large scale so that a man in the field can readily recognize the physical features) in the hands of the fire rangers on the ground, all these points can be located. Of course, these things cannot all be done in a year, or two, but take time. Present measures in the field are not systematic enough, but are over-systematic in the office. In the field, it is rather in the nature of nibbling a little over the whole area. It would be far better to take so many square miles every year and make detailed plans, reports, etc., then whilst the next lot, or grouping of square miles, was being surveyed, and reported upon, the first group of square miles could be having trails, roads, fire lines, fire guards, lookout stations, telephone lines, water supply, shelter cabins, being built, all with a view to the point that any portion of the area would be accessible to fire fighters.

A Retaining Fee?

Another thing I have found is that men dislike fighting fire, that is, the public, and it is very difficult to collect men to do this work. How would it be to have a scheme whereby ranchers and farmers living in the vicinity of forested areas be paid a small retaining fee or sum of money, with the understanding that they are bound to turn out immediately when called upon. A ranger could then always be reasonably as-

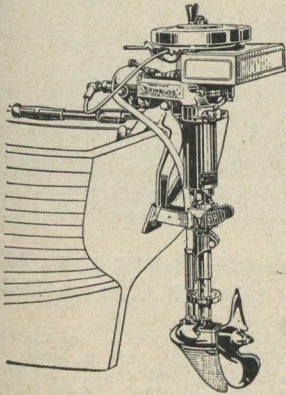
sured of a semi-permanent force of men at his call. I know the public can be compelled under the law, and even if they come willingly there is always trouble afterwards about pay, and it is a very difficult matter to get them to come a second time. If you attempt to enforce the law, they merely laugh at you, and you have not got the time to travel possibly some considerable distance to put the machinery of law into action, and probably, if you did so, and got a conviction against offending parties, he and his friends would in the general terms “get you” afterwards. Such action on your part would queer your chances of getting men in the future to fight fires.

Something Tangible.

It is all very well putting up notices and telling the public that they are forest guardians, but they require something tangible to make them feel bound to come forward when required. It might be worked on the feudal system in that, each should bring any man he can spare, or should collect any men he knew of. For example, the ranger discovers a fire, he notifies T., T. then notifies A. B. C., and so on. Each brings a retainer and so you have a crowd collected in no time. T. A. B. C. being paid a small retaining fee per month during the fire season, not a large sum, but just to make them feel bound to lend a hand. It might be considered too expensive,

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but I know that more money should be spent in the field than is now spent, and I also know that the average "Public" is not altruistic as a rule, and a small retaining fee would help his forest patriotism, or whatever you call it, a whole lot. The old fashioned methods of fighting fires in the forests can never be done away with but can be greatly improved upon, and there is no reason why better tools cannot be placed in the hands of the men who have to do the fighting. It is a wide field and high time the actual fire fighters should be given better tools to work with. We carry water now, at least we attempt to do so, in pails, tin cans or anything we can grab, but there is mighty little of it reaches the fire. If water can be got at all, it is the best weapon with which to fight fire, and nobody but a fool will argue otherwise. The introduction of mechanical apparatus to aid the fire-fighters, really sounds solid, and is a step in the right direction and there is no reason why it can not be brought to perfection.

Trails Come First.

Trails, however, are the basis of the whole thing, not built in a haphazard manner, but built to the very best advantage. For fire-fighting purposes a trail need not lead anywhere definite provided it has a strategic value from a fire fighting point of view. In fact trails, out-

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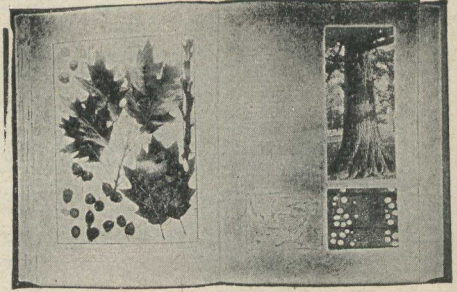
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side of those connecting two places or points, should be of two kinds, viz., patrolling trails, preferably on the tops of ridges, and fire trails or feeders to strategical points. Main trails should be eight feet wide and all others four feet, grades being not greater than one in seven.

India and Canada's Trade

One of the newspapers of India thus comments upon the visit of Mr. H. R. MacMillan, Special Lumber Trade Commissioner for Canada:

"In the past five or six years we have heard of very nearly all our colonies sending abroad all over the world Special Trade Commissioners. I have not seen it suggested that the Government of India have ever considered the question of appointing such Trade Commissioners to travel around and consider trade questions affecting his country. With all the talk we hear of India getting some larger share of the world's business after the war is over, it rather strikes one that the present would be an excellent time for a representative of Government in the Commerce and Industry Department to make a tour round and see a few things from a practical point of view in relation to Indian trade requirements and the capabilities in the way of supplying products. The Canadian Government saw the possibilities of the position months ago and we have in Calcutta now the Chief Forester of British Columbia who has been sent round the world by his Government as a Special Lumber Trade Commissioner; one of the ideas of Mr. MacMillan's commission seems to be an investigation as to the possibility some day in the near future of trade reciprocity between Canada and India. Hitherto, as is well known, such Indian commodities as there is a demand for in Canada have gone into the Dominion Colonies via America with the assistance of American finance and through American merchants. But



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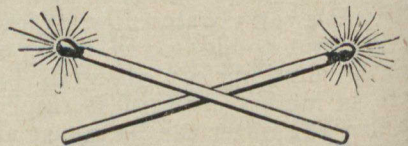
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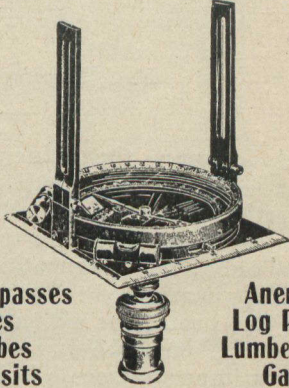
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as the purchasing power of Canada increases, it stands to reason, Canadian merchants should be able to, and should be encouraged to deal direct with this country. The ports in British Columbia should offer as good entrepots for merchandise from India as any on the American Pacific coast. The establishment of a direct steamship line between India and Canadian Pacific coast ports is only a matter of time. It is understood that the policy of the Canadian Government is not to subsidise impractical dead heads, but to assist its active industries by introducing them to the notice of the world's markets; and at the same time assuring consumers abroad that Canada is capable of supplying what her Government Department, after investigation, are satisfied that she can supply. It is a simple proposition after all, and it is real business, and about as far as a government ought to go. There is probably less commerce subsidising by foreign

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governments than many of us believe. Subsidies are not always the best incentive to forcefulness and independence and self reliance."

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Making Sure of a Future Forest

From an Article by

R. O. Sweezy, in Pulp and Paper Magazine.

In this country the principle of conservation has awakened such a sympathetic response from all intelligent proprietors of forests that we find, not only the inauguration and vigorous application of elaborate and efficient fire protective systems, but such advanced practice as reforestation on an important scale being introduced by one of the leading pulp and paper firms.

Because we are erroneously basing our calculations and methods on conditions that existed years ago, before the pulpwood industry held sway, I maintain that we shall soon realize that the capital wealth of the forest is being depleted with little or no prospect of renewal. Areas that are logged over to-day—even though the logger adheres scrupulously to state laws for cutting—are in grave danger of becoming mere "wind-falls" with a possibility of a future "cut" over the same area a very speculative one indeed.

But why should there be any uncertainty about the same area producing in a reasonable time a forest crop just as good as the one being cut to-day?

Taking Care of Seed Trees.

Do we not find areas that were even burned over—perhaps 100 years ago—offering good pulpwood crops to-day? We do, indeed, and such areas have been grown from seed, too. But had there been no old spruce trees scattered about in little patches that escaped the fire the probability of a spruce covering would have given way to one of deciduous growth—examples of which an observant forester finds frequently enough.

It is known by the forester of course that spruce seed, in order to have a fair chance to germinate, must come from a tree of considerably advanced age, and moreover, it is not every year that conditions are favorable for the seed. Hence by our present method of pulpwood lumbering in which only young and slender conifers are left we not only remove the old seed trees, but we invite the destruction of the remaining young trees by reason of their exposure to wind as a result of having cut the larger protecting growth. It may be stated, however, that if the year of cutting happens to be a good

seed year the chances of a new growth, from the seed of the lopped off tops, are fairly good. By this method though we would be trusting very flimsy hopes for the future of our forests.

To remedy the evil nature suggests an easy and inexpensive method. Good example being found throughout the country the mention of one here will be sufficient. In the Upper Ottawa region a certain area of some fifty square miles was swept by fire about 75 years ago, and although the destruction was complete on the burned parts there is growing on them to-day a dense covering of valuable spruce which sprang up from seed supplied by the fortunate presence of scattered clusters of five or six to fifteen or twenty old spruce trees, which escaped destruction at the time of the fire. Elsewhere the same fire swept some areas clean, leaving no such clusters of seed trees with the result that only deciduous trees have sprung up.

The Spring Fire-Peak

If the forest fire danger was represented by a line rising and falling as the danger increased or decreased there would be a sharp rise or "peak" in the few weeks after the winter snow leaves the woods. This is so much the case that the term "Spring Fires" is well known to every forester. The ground is dry, the dead leaves and herbage are sapless and tindery, and the least spark may start a fire that will sweep whole miles of forest. All who go to the woods are cautioned to see that they are especially careful to put out completely their camp fires and to see that no fires start from matches, pipes, cigar stubs or fire arms. Canada has many fire guardians on duty at this season but if these rules are observed much more timber will be saved than can be saved through the most strenuous efforts of fire fighters. The time to stop a forest fire is before it starts.

Canada is in a war that is taxing her resources and every patriotic citizen will do all he can to prevent the enemy being helped by the destruction of Canadian resources.—(Publicity Bulletin of Dominion Forestry Branch.)



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A Few Opinions of the School Service of the Can. Forestry Ass.

From Charles G. Fraser, Principal Manning Ave. School, Toronto: "I wish to thank you for the copies of the Boy Scout's Forest Book which you sent me to use in the classes in my school. We have had some very pleasant half hours together, reading and speaking, discussing, etc., and expect to have more. It is such a beautiful book, so instructive and suggestive that I wish it could be in the library of every school in the Province."

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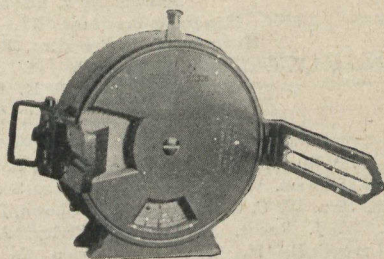
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