# Canadian Forestry Journal

May 1919

Some B.C. trees, each capable of constructing three five-roomed dwellings.

Entered at the Post Office, Ottawa, as second-class matter.

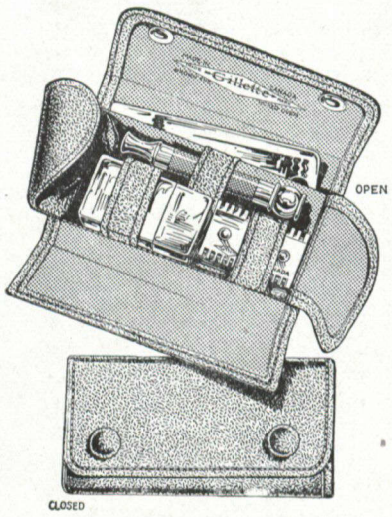
# Gillette

## Safety Razors

THE SHAVING SERVICE FOR EVERY MAN
—EVERYWHERE

### THE POCKET EDITION GILLETTE

Bound in Seal-Grain Leather




NEW KIT SET No. 20.

"If I was buying another Gillette Safety Razor", said one enthusiast, when he saw the new Kit Set, pictured here, "I would certainly want that one."

"It not only preserves all the good points of my old morning friend, but is as compact as any razor set I have ever seen, and takes the least room in the travelling bag.

"And then the black, seal-grain case is so dignified—so appealing to any man who is particular in his appointments. I suppose you are asking a pretty price for that set."

No; mere------**$5 the Set**

THE GILLETTE SAFETY RAZOR CO. OF CANADA LIMITED

LOOK FOR THE MADE IN CANADA TRADE Gillette MARK KNOWN THE WORLD OVER TRADE MARK.

Canadian Forestry Journal

VOL. XIV. OTTAWA, CANADA, MAY, 1919 No. 4.

# TREES ARE THE BEST MEMORIALS

## Living Remembrances of the Country's Defenders That Will Give Each Man an Enduring Monument

Trees are the best memorials.

In what more fitting form can the respectful sentiment of the living be enshrined?

The newspapers are surcharged with bright new ideas for the raising of monuments to the soldiers who have fought their last fight and paid the forfeit, and to those who having served valorously have returned to civil life. Nearly always the ideas are boxed in concrete, stone, brick and asbestos—a memorial hall, a bridge, a statute, a hospital.

"He who plants a tree,
He plants love,
Tents of coolness spreading out above
Wayfarers he may not live to see.
Gifts that grow are best;
Hands that bless are blest.
Plant! Life does the rest."

Let us popularize a form of memorial that identifies the individual soldier with an individual living monuments. One thousand names may be hidden on a brass tablet within a public hall. There is no reason why this mass remembrance may not be given more distinction and made much more suggestive through a living ever-renewing symbol. Trees will perform this happy function perhaps better than any other medium yet suggested. Let our monuments to the country's defenders represent our personal participation in the act of tree planting rather than a charitable toss of a dollar bill into a collector's hat.

### Woodstock's Plan.

Southern Ontario already has moved in this matter. Much activity is to be found in parts of the United States where Boy Scouts and other organizations have been promoting the planting of highways in memory of Theodore Roosevelt. Motor clubs have taken up cudgels for the planting cause and expeditions have been carried out with success. A fine example was recently set by the Woodstock (Ontario) Horticultural Society, which has adopted a plan for setting out a shade tree along a popular highway for every soldier who enlisted from the county. The trees will be given permanent identification plates.

The Canadian Forestry Association has been encouraging this work for months past and has supplied to many applicants information that tends to make planting work successful. Readers of the Forestry Journal probably are aware of the discouragements that often attend tree planting by amateurs, but the observance of a few simple rules will make the work simple and pleasurable. There is every need that before societies, schools, etc., commence a tree planting enterprise they should avail themselves of expert guidance. Particularly is this true where the tree stock is taken from woodlots and where evergreens are being handled. Unless the latter are cared for in ways that do not usually suggest themselves to the amateur, failure is almost sure to result. The Canadian Forestry Association desires to place its facilities at the disposal of all Canadians who are interested in tree planting and will be glad to co-operate with bodies of citizens planning a programme for the fall months. At this season, it is improbable that many will care to take the risks of transplanting trees in full leaf to new locations. But a busy season should open in the fall. Meantime the Forestry Journal will contain special articles for tree planters that should be kept handy. The following by Mr. F. W. H. Jacombe, of the Dominion Forestry Branch should help many to steer clear of common errors.

# HOW TO PLANT MEMORIAL TREES

## Scores of Societies Will Establish Shaded Avenues and Roadways in Remembrance of Heroic Soldiers

The first essential in planting a shade tree is to prepare a good large hole for it. If it seems needlessly large, all the better. In that case there will be plenty of loose soil around the roots, through which the little rootlets will be the better enabled to feel their way in their search for the soil-moisture. One American city, where the shade trees are under a special commission, always makes holes four feet square and three and a half feet deep. These are left for a time and gradually filled up with loose soil, fertilized if necessary; and, when the time comes that the tree is to be planted, a hole is scooped in the loose earth, a little larger than the mass of tree roots, and the tree is planted in this hole.

### Care of the Soil.

At the least the hole should be large enough to accommodate the roots of the tree without crowding. The fine top soil first taken out should be put aside by itself, and the coarser soil taken from lower down should be similarly put aside. The tree should be put in the hole in such a way that it will stand a couple of inches deeper than it stood in the nursery. Then, first of all, the fine top soil should be put back in the hole and tramped around the roots, after which the coarser soil may be thrown in. All soil must be firmly packed around the roots, except the two or three inches at the surface, which should be left loose, in order to lessen evaporation from the soil. Any gravel there may be had better be removed altogether. If the soil is poor, it may be fertilized with artificial fertilizer or well rotted manure, but care should be taken that none of the latter is allowed to be in direct contact with the roots.

The reason for putting the top soil in first is that it contains more plant food in available form than does the deeper soil, and so gives the better chance for the rootlets to absorb it and incorporate it in the tree. The tree is put down in the hole a little deper than it stood in the nursery because it will thus get a chance to root more quickly, the roots will be kept cool and, further, it will be able the better to resist the wind.

### Why Prune the Tops?

At the time of planting the tree needs to be headed back, that is, to have part of its top removed. In order to understand the reason for this, it must be taken into account that while the young tree has been growing in the nursery, its root system and its system of leaves and branches have been so developed that a balance exists between them, the roots supplying just the quantity that the leaves ned for their use. In the process of digging up the tree a certain proportion of the root-system has to be sacrificed; to balance this, a portion of the upper part of the tree has to be removed, or else the tree will suffer.

### Choose Small Trees.

If you are at liberty to select the trees for yourself, do not think that the larger trees are necessarily the best. Smaller trees are easier to transplant, and in the course of a few years will overtake the trees that at the time of planting were considerably larger.

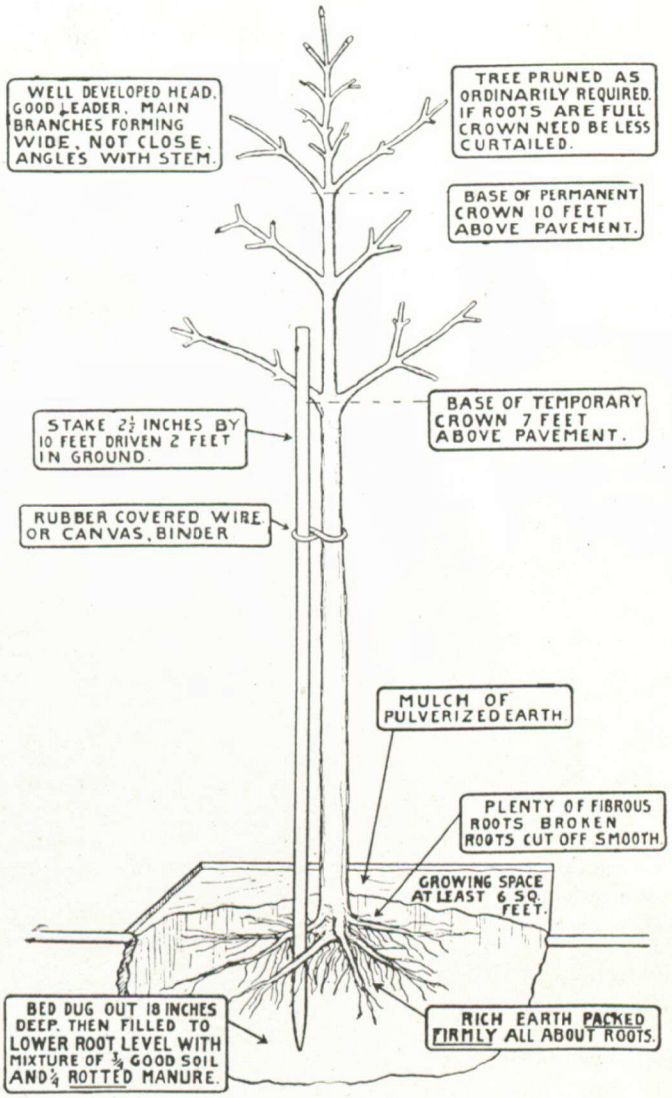
The tree should be planted while in a dormant condition, that is, in the case of a broad-leaved tree, before it leaves out in the spring or after it has shed its leaves in the autumn. Evergreens, or conifers, may be planted later in the spring or earlier in the fall. With the latter, special care must be taken that the roots do not dry out, even for an instant.

Trees planted on the street or as an avenue should not be placed nearer together than forty to fifty feet. If planted much nearer than this, both roots and branches will interfere with those of the neighboring trees, to their mutual detriment.

### Use Nursery Stock.

Trees grown in a nursery will in all probability give more satisfaction than those taken from a woodlot. If, however, for any reason it is desired to make use of the latter, much care should be taken in the selection of the trees. They should be selected either from the outside border of the woodlot or from some well-lighted opening in it. In that way there will be obtained trees which have been used to an abund-

ance of light and air, and so will suffer less through their new surroundings differing from their original environment. The greatest care should be taken to get trees with a good root-system. It will be well to remove quite a large mass of earth around the roots, so as to interfere as little as possible with the connections formed between the roots and the soil; in fact, trees can be transplanted at almost any season if a good large ball of earth is left around the roots. The greatest care should, of course, be taken that the roots should not be allowed to dry out, especially in the case of evergreen (coniferous) trees. In other respects the directions already given for planting the trees should be followed.

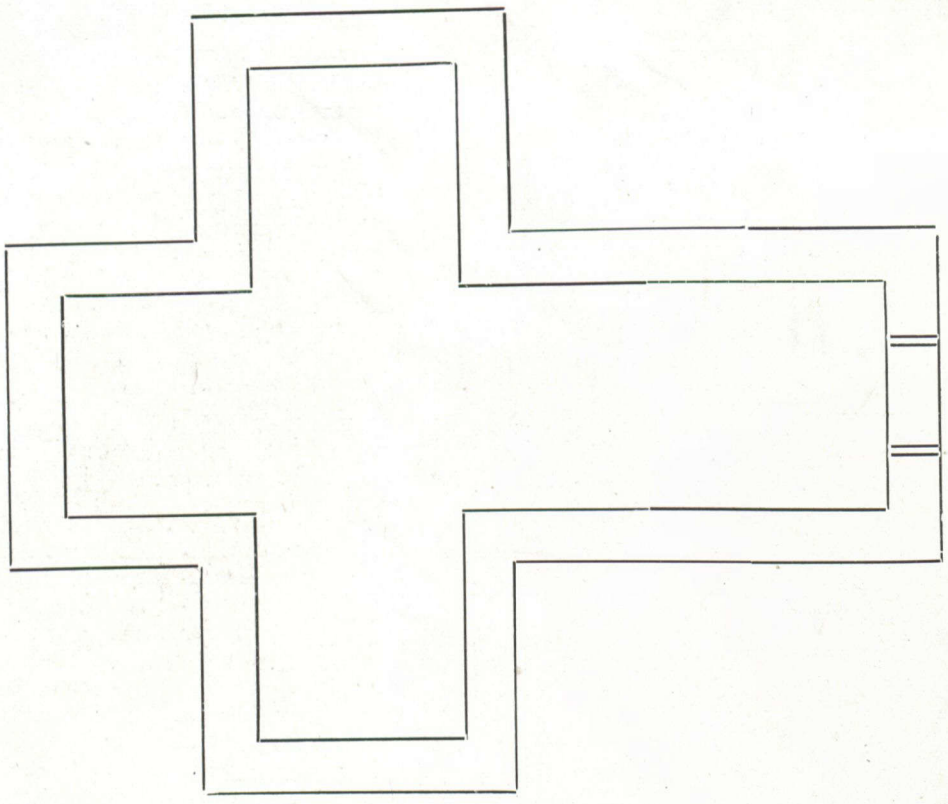



Picture by courtesy American Forestry Assoc.

THE RIGHT WAY TO PLANT A TREE.

# SUGGESTION FOR MEMORIAL PLANTING OF TREES IN PARKS AND OTHER PLACES

*Submitted by Mr. C. Dolph, President, Metal Shingle and Siding Ct., Preston, Ontario.*



To take the form of a Cross or Church. Inner row of trees to be planted so that in course of time they will form cathedral effect. Inside row, possibly elms.

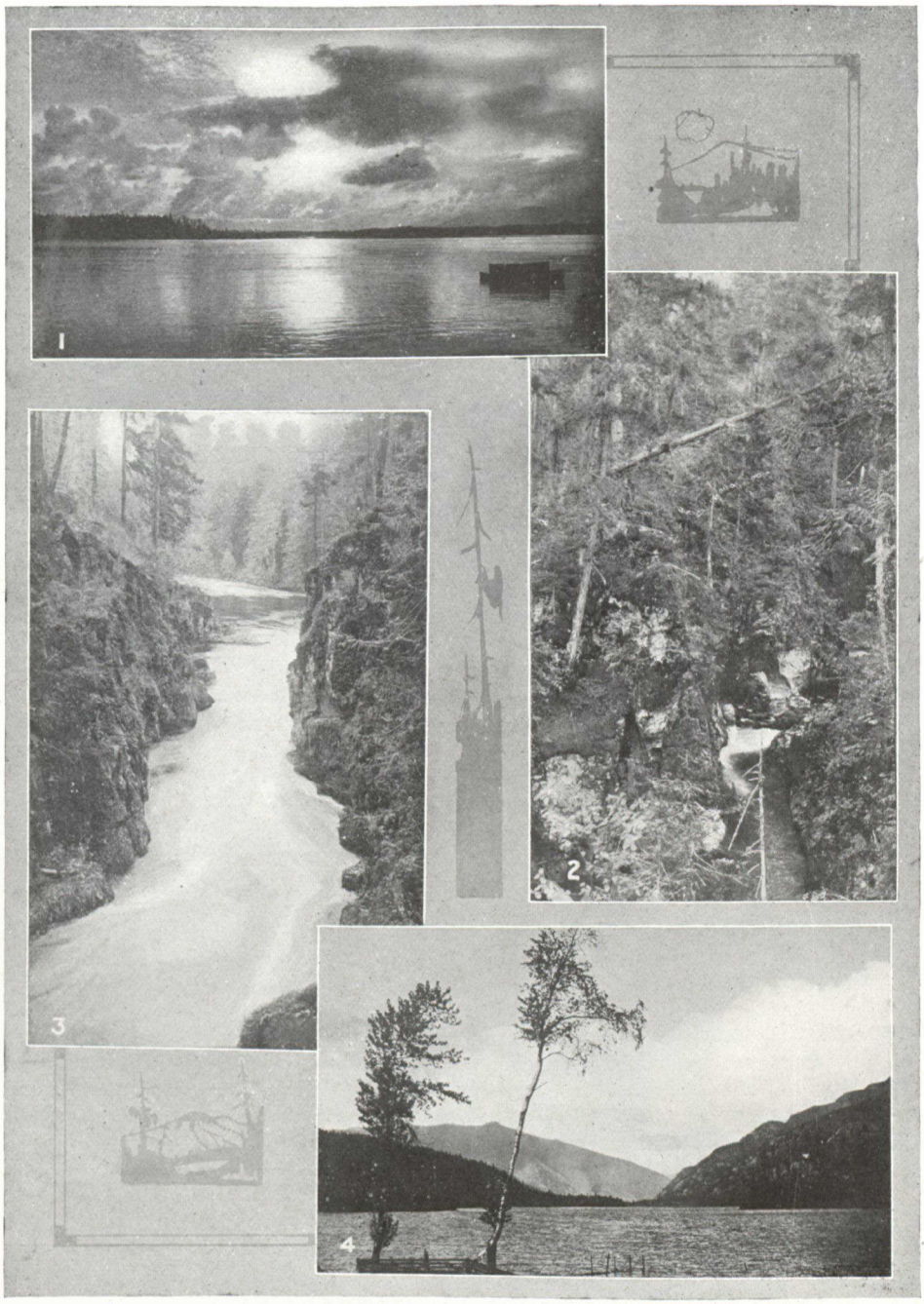
Outside row of trees may differ from inside row, possibly pine or any evergreen.

Inner space to be nicely levelled and seeded. Space between rows of trees to be kept as a walk with seats here and there.

Rough stone monument in centre with names of fallen heroes, or possibly all enlistments in smaller towns.

Surroundings may be planted with clumps of evergreens, shrubs, beds, etc., as circumstances may warrant.

Committee to select location and procure trees through park board, but patriotic citizens to pay for a tree and help plant it and mark it as their own.



Courtesy Water Powers Branch, Ottawa.

ON THE BEAUTIFUL WATERS OF THE INTERIOR OF BRITISH COLUMBIA.

1. Sunset, Campbell River, B.C.
2. Little Qualicum River.
3. Campbell River, B.C.
4. Adams Lake, looking north.

# HOMING PIGEONS FOR REPORTING FIRES

The Standardization Committee of the Canadian Forestry Association has under consideration the employment of pigeons to be used in carrying fire reports from the field to ranger stations. Full information on the subject is being obtained and a bulletin will shortly be issued on the subject which will be available to all interested. It is also hoped to have experimental work carried on during the present year.

The Dominion Parks Branch have recently been in communication with Mr. P. E. Edleman, electrical engineer, New York, and Commissioner J. B. Harkin in transmitting an extract from a letter received from Mr. Edleman, has the following remarks to make:

"Mr. Edleman recently wrote me suggesting that as homing pigeons had proved so effective in the recent war, that there appears to be no reason why they should not be adopted for forest fire protection work.

**First Step in "Wireless."**

"While I think wireless telegraphy or telephones will eventually be adopted for communication in connection with forest fire protection, it strikes me that in the meantime the use of pigeons would offer a simple and cheap means of communication between points at present without other means of communication. Attached hereto is an extract from Mr. Edleman's letter explaining his scheme:

"I propose simply to set up one or more homing pigeon stations or nests. Two birds will be carried by each ranger and when he needs help he will release one, then ten minutes later the other with message. The birds fly at once to headquarters to which they have been trained, at about fifty miles per hour, and as proven under far more difficult battlefield conditions than are ever likely to be met with in your parks, are 98 per cent perfect. The birds can stand the most severe weather without harm. In this country young birds cost under $10 each and trained birds, good ones, about $25 each. They live about 14 years. An ingenious system of working has been developed, so that absolutely reliable results are obtainable. No special experts are required, except one man to look after the whole system in a given area, as he can readily train in the men sufficiently to handle things right. The men will carry the birds on a special holder lightly strapped to their backs or other suitable manner. The upkeep is insignificent, as the food for a bird for a whole year costs only about $2.00 or under 20 cents monthly. The birds are clean and healthy and will be treated as pets by your men, especially as they come to know their value.

"I realize that every new plan is likely to be doubted, but here is one so evident that as soon as unimpeachable and most up-to-date correct data came to my attention I at once remembered your problems and communicated the result to you.

**Returned Men Available.**

"I would recommend that one man, who is a pigeon expert be hired to look after the entire system and teach your other man the essentials, as they can learn them far easier than they could learn a telegraph code or the handling of a telephone system. This man should preferably be a returned soldier, who has been with the army homing pigeon service and previously handled pigeons as a hobby, as it takes a good man to make the plan a success. Such a man would gladly work for a nominal fair stipend and welcome the opportunity. It makes no difference as long as a good pigeon man who is wide-awake is put in charge of the system. The birds are kept in trim by continued practice from time to time.

## OUR DOMINION PARKS.

The Dominion parks of Canada, which are maintained as wild-life sanctuaries, include an area of 7,927 square miles, or more than 5,000,000 acres, nearly equal to one-half the total area of Switzerland, almost as large as Belgium, and nearly 1,000 square miles greater than the area of Wales. Jasper Park alone, which includes 4,400 square miles, is larger than Montenegro and almost twice the size of Prince Edward Island.

## FROM A NOTED FORESTER.

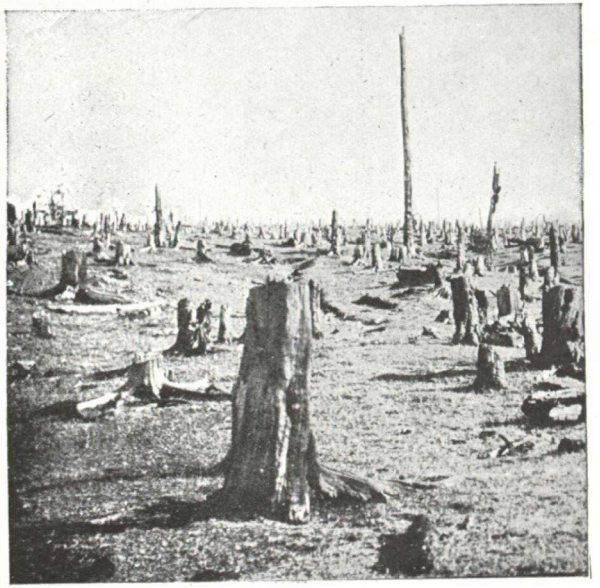
"Allow me to congratulate your Canadian Forestry Association on the extraordinary progress it has made during the war, and the improvement in your Journal. You have no doubt heard of the almost startling advance that has been made in forestry in Australia during the war period.

Very truly yours,

D. E. HUTCHINS.

Wellington, N.Z.

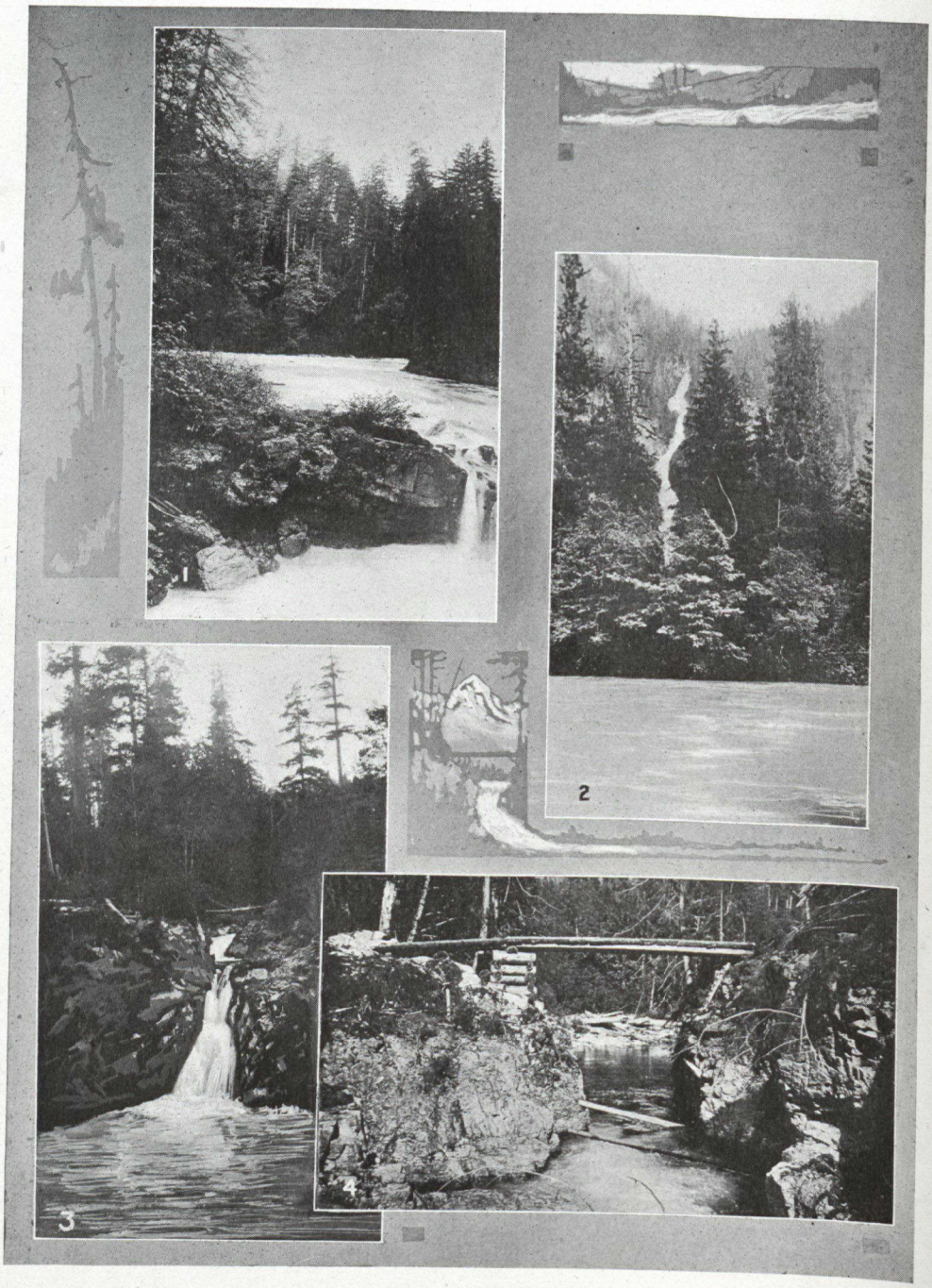
A LIVE FOREST MEANS LIVE JOBS



A DEAD FOREST DRIVES OUT POPULATION

KEEP CANADA A COUNTRY OF LIVE JOBS

Forest fires rob the workman, the merchant, the farmer; no citizen escapes the tax collected by these needless conflagrations. Forest fires are just grown-up camp fires, grown-up cigarette stubs, grown-up match-ends. No patriotic citizen needs to be told more.




THE FOREST AND THE WATER POWERS OF BRITISH COLUMBIA.

1. Stamp River.

2. Hazel Creek, Toba Inlet; 800 feet fall in view; typical of many streams as they descend from "hanging valleys".

3. Little Qualicum River.

4. Chehalis River Bridge at Upper Canyon.

# A BUSINESS PLAN FOR WESTERN FORESTS

## How United States Government Placed all its Natural Forests Under Forestry Control—An Analogy for Canada

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

With the foregoing as its text, the Journal wishes to carry its point one step further. The claim that the forestry operations on the public-owned timber lands governed by the Dominion Government should be subject to the Dominion Forestry Branch has been sounded so frequently in days ante-dating the present Government as to remove our protest from even the suspicion of politics. What is wrong to-day has been wrong for many years. The correcting of this wrong is a matter of high public importance. What has been allowed to occur on the timber berth operations divorced from any supervision by the Government's timber conservation department (the Forestry Branch) is no whit different from what occurs on the Crown timber lands of Ontario. Whether in Ontario or Saskatchewan, the public interest is not served by further toleration of a destructive policy in respect to the timber properties.

### Is Revenue Collecting Enough?

The United States faced a situation closely analagous to that now obtaining in the Department of the Interior of Canada. Washington, like Ottawa, maintained two branches to deal with national forests. Like Ottawa, one branch identified itself with constructive forestry, while the other looked upon the forests under its charge as a silver mine to be gouged out and abandoned. It collected revenue; the operators collected the timber. Eventually at Washington this destructive scheme, that no market gardener would have put up with for ten days, was abandoned and the whole of the national forests were placed under the authority of the United States Forest Service. The end that has been achieved in the United States is precisely what the Canadian Forestry Association and the Commission of Conservation have been contending for during many years.

To give our nine thousand readers a clearer idea of how the United States reached the goal and what public purpose was served by the reform, the Canadian Forestry Journal wrote Col. Henry Solon Graves, Chief Forester of the United States. His reply follows:

"I am very glad to comply with the request in your letter of April 30 to give you a brief statement in regard to the benefits of the combination of the administration of the National Forests of the United States and the technical Bureau charged with investigations in forestry, lumbering, forest fires, etc.

### Forests Minus Foresters.

"It was not until 1891 that recognition was given to the need of holding forest lands in Federal ownership for the purpose of timber production and watershed protection. In that year an act was passed by Congress, authorizing the reservation of portions of the public domain, partly or wholly covered with trees or undergrowth, as Forest Reservations. It was not until 1897 that provision for the administration of these Forest Reseryes was made and not until 1899 that actual administration was attempted. This administration was placed in the General Land Office of the Department of the Interior, the function of which up to that time had been to survey and dispose of the public lands of the United States. During the next six years the administration of these Forest Reserves, especially the handling of the timber resources on them, was handled with increasing difficulty, owing to the need of the practice of forestry

on them, while practically all the technical foresters were in the Bureau of Forestry in another Department of Government. There was, to be sure, co-operation between the departments, but it was obvious that the best ends could not be served so long as the technical foresters were able to function only in an advisory capacity. Consequently, on February 1, 1905, the administration of the Forest Reserves (which have been since designated as National Forests) was transferred to the Department of Agriculture and the Forest Service formed by a combination of the former Bureau of Forestry, which had been chiefly an investigative organization directly charged with the handling of the resources of the forests. The General Land Office retained jurisdiction over the public domain but outside of Alaska has never attempted to sell timber on it, nor has this been necessary, since under our laws it has been possible to purchase land and timber from the unreserved public domain cheaply.

**Good Management—This.**

"The net effect of the transfer has been to assure the handling of the timber sales on the forests in accordance with the best principles of forestry so that the future production of timber on the areas cut over would be assured. With the widely varying stands in different forests, this has meant in practice an equally wide variation in the methods of cutting designed to secure this future production. In fact, this co-relation of the methods of cutting and of the restrictions on purchasers to the kind of stand in which the operation is conducted is one of the chief reasons why the work of administering timber sales should be in the hands of technical foresters. If all stands were alike, it would be relatively easy for the technical forester, acting in an advisory capacity, to draw up a set of rules which could be uniformly applied. Congress, however, very wisely stipulated in the Act of June 30, 1897, merely the objects to be accomplished and left the means by which these results were to be secured almost wholly to the discretion of the administrative officers. The result has been that where conditions permitted, the removal of only the mature and overmature timber has been allowed, thus leaving the younger and thriftier trees to grow until they in turn become mature. In other stands it has been necessary to start new crops of trees and the cutting removes most of the present stand, leaving, however, ample seed trees. It is frequently possible to find both these general forms of cutting on the same forest in stands of the same species, since each stand is examined before the sale is made by technical foresters and a plan of treatment outlined in accordance with the age and condition of the stand.

**Managing a Nation's Forest on a Proper Plan.**

"On the ground, the result has been that the future productivity of the areas cut over is assured. Between 700 million and 800 million feet of timber are now being cut annually in the National Forests, and this amount is certainly to be increased in the future rather than to be decreased. On some forests stands which were cut over some years ago, with the reservation of the younger, thriftier trees, are now being cut for a second time. In other cases, where clean cutting, with the reservation of seed trees, was permitted, there are good stands of small seedlings which are rapidly growing and which will make good timber in the future. Of course, perfect success has not been secured in all cases but, in general, the **results vindicate the wisdom of placing the administration of these areas in the care of the technical forestry branch** of the Federal Government, which has been charged with the co-relation of present timber use, future timber production, continuous use of the forage crop, in so far as ti does not interfere with the other purposes for which the Forests were created, and the protection of the flow of streams rising within the Forests."

H. S. GRAVES, *Forester.*

Washington, D.C., May 7, 1919.

**Canada's Dual Control of Forests Outlived.**

It will be seen from the foregoing that the developments in the United States have been parallel in important respects to those in Canada, to the extent that for many years, in both countries after the importance of forestry was theoretically recognized, the administration of publicly-owned timber, on forest reserves, was entrusted to a non-technical organization, notwithstanding the fact that there was in existence a technical forestry organization which, according to the logic of the situation, should have been given the opportunity to handle this work along scientific lines. Such matters are, of course, in a somewhat less developed stage in Canada than they are in the United States, and it is, therefore, natural enough that the step of placing forestry in the hands of the established technical forestry organization should come somewhat later in Canada than was the case in the United States.

It should also be noted that this transfer was brought about in the United States only as the

direct result of years of agitation by the American Forestry Association and other public-spirited organizations, which recognized fully the anomaly of the existing situation. The Dominion Lands Act, Section 58, would appear to confer upon the Dominion Forestry Branch jurisdiction in technical matters. However, if so, this provision has not been made effective as to licensed lands. Cutting on these lands is thus allowed to take place without due regard to the interests of the future, which demand that operations be conducted in such a way that the forest shall be perpetuated. The Dominion Government can take but partial credit for the practice of conservation upon its forest lands so long as this condition is permitted to continue.

### An Heirloom Policy.

It should also be emphasized that the present anomalous condition is a heritage from former times, when the importance of conservative methods of cutting was not realized. The present agitation for a change in this respect is, therefore, not in any sense a criticism of the existing Government, but is calculated to educate public sentiment to the point where it would approve action by a progressive Government in the direction of correcting the mistakes of previous administrations. The transfer of the administration of technical forestry work on licensed timber lands to the Dominion Forestry Branch would constitute a land-mark in the forest history of Canada, which would reflect very great credit upon the Government which should make such provision. It is believed that the time is now ripe for action along these lines. It should be noted that this action has been recommended by the Commission of Conservation during the past five years, also, of course, for years by the Dominion Forestry Branch, as a departmental matter.

## HANDLING WESTERN FORESTS.

*Editorial in the Winnipeg Tribune, April 18, 1919.*

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

"It is suggested that before any tract or forest is put up for sale or operations authorized on it thorough information should be obtained on the following points: (1) The probability of a market for the products; (2) the conditions of climate, wind and soil; and (3) the composition of the forest as to tree species and the relations they serve toward one another. It is only after information of this kind, which will vary considerably on every tract of forest, has been obtained that the formulating of a proper working plan designed to perpetuate the forest and increase its production is possible. The present administration of a great natural resource is, in the opinion of many, behind the times."

## WOOD FOR AEROPLANES.

The American Lumberman feels confident that the manufacture of aeroplane spruce is due for a great revival. "Therefore," it says, "lumber manufacturers who have during the war gained experience in the production of airplane lumber should keep an eye on the future and develop this field. The most successful and satisfactory building material for an airplane is wood, but that wood has to be perfect and correctly handled. If supplies are hard to obtain or if they are not satisfactory in character the manufacturers of airplanes will turn to other materials. For example, a Frenchman already has perfected an airplane made entirely of steel and it is said to operate successfully. Practically 6,000,000 motor vehicles were in use in the United States at the beginning of the year and it may not be many years before that many airplanes are in service in this country. Think, therefore, of the wonderful field for lumber that there is in the expansion of the aircraft industry."

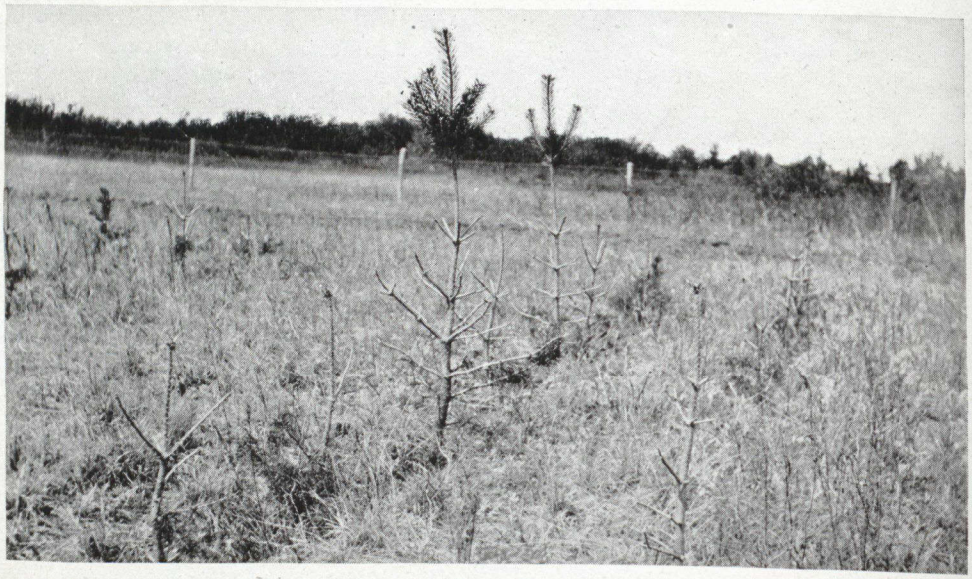
## WARNING!

**THIS is a bad season for forest fires.**

**Watch your campfire and your cigarette.**

**Every forest fire puts somebody out of work.**

A fine stand of spruce and poplar in the Porcupine Forest Reserve, Saskatchewan.



A Scotch Pine plantation on a Dominion Forest Reserve, badly damaged by rabbits.

# A PROPOSED BRITISH EMPIRE FORESTRY ASSOC.

## Would Act as a Link Between Progressive Societies in all Parts of British Dominions

Some months ago, the Secretary of the Canadian Forestry Association offered the suggestion that the forestry activities of all parts of the British Empire might well be brought into closer relationship by the forming of a "British Empire Forestry Association". The proposal was submitted to leaders of the forestry movement in Great Britain, Australia, New Zealand, South Africa and India. The hearty reception accorded to it may be guaged by the excerpts from letters printed herewith. Other letters will appear in the June issue.

Although the Anglo Saxon peoples have been the last to admit forestry to its rightful estate, one would be a wilful reactionary to deny that recent years have worked remarkable changes. Forestry is coming into its own. The painful lessons of war experience have accomplished more for forestry in the British Isles than a half-century of warning and advice. Much the same is true of Australia and New Zealand and Canada. The era of the explosive orator and his "unscratched resources" has given place to the counting machine and its cool recital of facts and figures. From the Rocky Mountains to the Atlantic, Canada has been spending forest capital without any concern for the next holder of the purse. To realise cash from tree trunks has been the extent of our business science and even at this hour is mostly the measure of our forestry practice. The story of similar public attitudes and action is monotonously applicable to nearly every part of the British Empire except India.

### Applying the X-Ray.

This is the day of X-Ray examinations. Because a policy is old and in the good graces of a few rusty administrators or a commercial or political sect is almost the best reason why it should be put on the operating table and have its anatomy photographed. Certainly the people of the overseas Dominions who are yet legal masters of their forests are in a mood to examine the merits of a forestry programme in its relation to the public interest. There has never been any question that an intelligently guided forestry policy is the keystone of state management. The great trouble appears to have been that a people habituated to mere exploitation and sudden profits in their private experience has to pass through some such metamorphosis as the war provided in order to appreciate the meaning of foresight and patience. All our public issues bearing on elections have been tied to immediate causes and immediate consequences. Forestry cannot be compensated in a five-year calendar. We have been treated to scandals of waterless canals, sawdust wharves, "plundering the treasury" and so forth, because these things are pictorial and easily visualized by political and economic children. Nothing but the solemn times of 1914-19 could have made Canadians willing, as they are to-day unquestionably willing, to study national economics and sit humbly in the school-room of international and historical experience. Because of this changed attitude, because of this new patriotism that wants facts and perspective in place of tosh, the swift development of forestry science in Canada is to be regarded as one of the certainties in the new order.

### The New Association.

The British Empire Forestry Association, which is yet unformed and only in a stage of discussion, would aim to relate the forestry movement in all sections of the Empire. It would act as a clearing house for mutually-valuable information and would place at the disposal of all foresters whether in the British Isles or Canada or Burma news of common problems and solutions.

More than this, it would bear a very important relation to the development of timber trade within the Empire. For example, the amount of misconception regarding Canadian woods in the British Isles and Australia and New Zealand, the lack of knowledge of important Australian woods in other parts of the Empire,

have played into the pockets of foreign timber salesmen continuously. To penetrate this veil of darkness would indeed be a service worth reckoning.

We give herewith part of a letter received from Hon. R. T. Robinson, K.C., Minister for Forests, of West Australia:

Perth, West Australia, Jan. 30, 1919.

"The basic purpose which is the genesis of your society has my heartiest sympathy. By no means the least important of the lessons of the war to the Empire is that which has reference to forests. It appears to me also that no war-lesson has been so widely appreciated and understood. Evidences of this are everywhere visible. Your Association is one, and, in Great Britain, the Forestry Sub-Committee of the Reconstruction Committee is another. I have perused the report of this sub-committee with the deepest intrest, and noted with satisfaction that its recommendations embody the sound forestry principles advocated by such able exponents of national forestry as Lord Lovat, Sir William Schlich and Sir John Stirling Maxwell.

"In Australia, war experience has awakened a forest conscience in quarters which had previously been impervious to argument and irresponsive to considerations of national economics. Here, too, the evidences of the existence of a new and better spirit towards forests are many. In 1916 New South Wales passed an admirable Forest Act; since then Victoria and this State have done likewise. The measure put on the Statute Book of Western Australia some six weeks ago is designed to put an end to reckless exploitation and to foster and cultivate our great forest heritage so that it may be the basis of great industries for all time.

"An Empire Association such as you outline is, in my opinion, a step in the right direction. There are many matters in regard to which mutual help and advice would be of value, and an Empire Forestry Association would act at once as a sort of Forestry Clearing House and Information Bureau. Mr. C. E. Lane-Poole, Conservator of Forests here, is at one with me in this matter, and he wil lbe very pleased to help in any way he can."

## CHANGING THE OLD ORDER IN AUSTRALIA.

The following letter was received from Mr. C. E. Lane-Poole, Conservator of Forests, Western Australia:

"My Minister has handed to me your letter of the 15th November last, in which you furnish some details regarding a projected British Empire Forestry Association designed to bring into closer co-operation the various forestry departments and associations throughout the Empire. The idea appeals strongly to me, as I am fully convinced that it is only by systematically educating public opinion that the true relationship between forestry and national economy will be brought home to the various people within the Empire.

"I understand that my Minister is writing to you by this mail and is giving you some information as to what has been done here and also has added some suggestions whereby the objects of your proposed association may be helped so far as Australia is concerned. In this State the public conscience has only of recent days been aroused to the vast importance of the country's great natural forest heritage, and those engaged in the work of forming public opinion have been met by an almost impenetrable wall of prejudice and ignorance.

"Since the foundation of the colony of Western Australia 90 years ago, the belief has prevailed that the forests of the country are inexhaustible and this belief has found expression in the cruel and destructive methods of conversion. Exploitation in consequence has been carried on with a recklessness that has reduced the forest wealth very materially. But a better state of things is coming about and, aided by a Forest Act, passed in the end of last December, I have hopes that we shall be able to repair much of the damage done in the past, and to adopt a policy for the future, which will ensure a continuance of this State's position as the premier timber exporting State of the Commonwealth group.

I observe with pleasure from Canadian journals that come under my notice that in each of your provinces, measures for preserving and strengthening the forest asset are in active progress, and, more particularly, I notice with satisfaction that the danger from fire is asessed at its true worth, and that measures are taken accordingly. In Australia Scientific forestry has much to contend with on this fire question, owing to the utterly erroneous opinion, held in many quarters, that a fire through the forests is a really good thing for it."

On Coquitlam Lake, British Columbia.

# WILL PLANTING PAY IN BRITISH ISLES?

*By H. J. Elmes in a Discussion of the British Government's Forest Planting Projects.*

I think we have no sufficient knowledge of the actual extent of untouched virgin forest in the north of Europe, or of the future cost of putting that timber on the English and other competing markets, but we do know that these forests under reasonable protection from fire and over-cutting, such as have been adopted in Norway, Sweden, some parts of North Russia, and in the Dominion of Canada, will produce, and continue to produce, by natural regeneration without any other outlay, spruce and pine of a higher quality than we can grow in most parts of the United Kingdom. We also know that where this timber can be floated or partly floated, to the shipping ports, it can be landed in England at costs for freight, cheaper than it can be conveyed by land from many parts of England to collieries and centres of

consumption only 50 to 100 miles distant, and it was stated in a very able paper in the Timber Trades Journal that it was possible to purchase in Sweden from lumber companies, the freehold of forests, from which all the then saleable timber had been extracted, but which were well stocked by natural regeneration with young trees, which in 30 to 50 years' time would be ready for the market; at a much lower price than the bare land without any timber on it could be bought in England. And I believe that this will be found equally true of vast areas in the Dominion of Canada and Newfoundland, which have ben more or less logged over, but from which at the prices ruling before the war it would not pay to take out any but the best logs, and I quite agree with the suggestion that this point. Another important area of which the Canadian Government must be consulted on the future production is very indefinitely known are the districts on the French, Spanish and Portuguese coasts, which have hitherto supplied almost the whole of the pit props for the great Welsh collieries.

## SOLDIERS TAKE GOOD POSITIONS.

Lieut. H. C. Kinghorn, of Fredericton, N.B., has accepted a permanent position with the New Brunswick Crown Land Department. Mr. Kinghorn is a graduate of the University of New Brunswick in Forestry in 1911, and has had extensive experience with the Dominion forest service and British Columbia forest service. Mr. Kinghorn resigned from the forest service of British Columbia in May, 1916, to enlist in the 58th Battery Canadian Engineers.

Lieut. H. S. Laughlin, B.Ss.F., of Milltown, N.B., has also accepted a position with the Forestry Department. Mr. Laughlin graduated in 1914 from the University of New Brunswick, and joined the British Columbia forest service, enlisting in November, 1915. Lieut. Laughlin was in charge of forestry work in District 5, Canadian Forestry Corps, France, and has been highly recommended by his superior officer overseas.

Capt. A. J. McIntyre, of Campbellton, an ex-locomotive engineer and machinist, who recently returned from overseas, has accepted the position of inspector of Fire Protective Appliances on Locomotives for the Forestry Department of the New Brunswick Government. Mr. McIntyre, by co-operative arrangement with the Railway Commission, is also District Fire Inspector for the commission. His duties involve the periodic inspection of the nettings in the smoke-boxes of locomotives and also ashpans. Over 200 locomotives operate in New Brunswick, owned by the C.N.R., C.P.R., Caraquet, Temiscouata, Kent Northern, and Fredericton and Grand Lake Railways. His work also covers the supervision of more than twenty railway fire patrolmen. Mr. McIntyre's work is especially concerned with forest fire protection.

Pte. H. C. Lynn, also a returned soldier, has accepted a position as assistant railway fire patrolman.

"To bring the matter closer home it is plainly up to the people of Cape Breton to take active part in conserving our fine stretches of woodland and forest. At present they are disappearing rapidly."—Sydney, N.S., Record.

## RETURNED OFFICERS CHOSEN.

Major D. D. Young and Major James Brechin have been appointed by the Provincial Government to positions as British Columbia Market Commissioners, associated with the Trade Extension Department of the Forest Branch. It will be the duty of these two officials to cultivate the prairie and Eastern Canadian market, and generally to conduct an aggressive campaign for British Columbia forest products. In conjunction with a generally extended campaign for business in Canada, it is the intention of the Minister and of the Trade Extension Department in particular to study the world's lumber market, the Government realizing that if this province is to expand her trade in the products of her forests it will be necessary for the department to keep itself intimately posted upon world conditions particularly during the reconstruction era, when the demand for lumber is abnormal.

## BRITISH COLUMBIA'S LUMBER SALES.

The 1918 value of the lumber output was $54,162,523, which was almost doublt that of 1915, and 12 per cent greater than that of 1917. The total production for the year was shown as 1,545,422,000 feet. Since 1915 the lumber cut has increased over fifty per cent.

Taking two-year-old Jack Pine out of the nursery beds to plant on a Saskatchewan forest reserve.

Planting Jack Pine seedlings in furrows on a Dominion Forest Reserve.

# A LAND OF FORESTS—WITHOUT FORESTRY

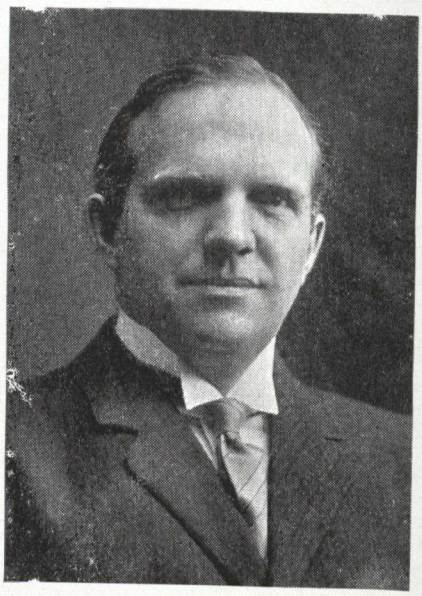
*By Dr. C. D. Howe, Faculty of Forestry, Toronto, in Address to Toronto Board of Trade.*

## "Canada Stands Almost Naked of Any Forestry Practice—A Plain-Spoken Indictment of Forest Management

Not long ago I attended a meeting of business men and university professors gathered to listen to reports upon the progress of industrial research in Canada. Being Toronto business men and, therefore, doers as well as seers, some of them seemed inclined to express impatience that matters in the hands of the Research Council at Ottawa had not developed more rapidly. One of the gentlemen made the remark: "Canada stands almost naked of industrial research, of co-operation between the scientists and the business men." Another, in replying, said, in effect: "We must have patience. New ideas develop slowly". Then to use what he doubtless considered a convincing illustration, he remarked, with a great deal of emphasis: "I remember 25 or 30 years ago we had to be told what forestry meant. It was an entirely new thing. Now, every big lumber company or pulpwood concern has a forester. They could not do business without one."

The statements of these two gentlemen made a deep impression upon me, the first because of its terse descriptive quality, and the second because of the profundity of ignorance which it displayed. Since the second statement reflects a very general public opinion with regard to forestry in Canada, I shall combine it with the first and make the remarks quoted the subject of my text and I shall say: After nearly 30 years of agitation and effort Canada stands almost naked of any forestry practice, of any definite, carefully formulated plans for the management of forests.

I make this statement deliberately, although I am aware that it will evoke criticism and perhaps censure. I believe the time is ripe for plain speaking. **The forests of the Dominion chiefly rest in Crown lands. They belong to you and you should know into what state their past and present treatment has brought and is bringing them.** You should demand an account of stewardship.



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

### Forestry Practice Means——

To make myself clear and to avoid misunderstanding, let me define what forestry practice means. The primary object of forest management is to maintain unimpaired the capital stock, the forest wealth. Herein lies the difference between lumbering and forestry. Lumbering removes the trees with no thought of a future forest crop on the same area; forestry practice removes the trees only after careful planning for the future crop. When this fundamental object has been accomplished, the next procedure in order is, if possible, to increase the earning capacity of the capital invested in the forest. Although minor objects and methods of technique may differ under varying circumstances, these are the two elemental principles at the base of all forestry prac-

tice. Keep the capital intact, so that its returns will be as continuous as possible; increase the earning capacity of the capital. Nothing about that is hard for a business man to understand! In fact, someone has defined forestry practice as the application of business principles in obtaining the continued productivity of woodlands.

### Cutting Coupons—and Cords.

Suppose you had an acre of land covered with trees of commercial value. Now, trees possess the miraculous power of rejuvenating themselves each year and the result is a layer of new wood. Let us suppose that the new wood laid down in a growing season on all the trees of an acre totals a cord—a cord of wood per acre. You could remove a cord of wood each year and your capital stock would remain unimpaired. You could consider that cord of wood as earnings on capital invested or you could imagine yourself cutting coupons instead of cords. And the wonderful thing about it is that you, your children, or your children's children could go on doing this as long as the sun shines and the rain falls, for wood is only solidified sunshine and water plus a small percentage of mineral salts from the soil. I will substitute for the words you and your children the term, the state, the nation. I confess I can never pass this point without dreaming of what might be if men only demanded in governmental business the same standards that they insist upon in their private business.

The primary object of forestry practice, then, is to maintain the capital stock in a productive condition. I take this to be the foundation upon which all legitimate business rests—the security of the investment. As business men you make this your initial demand upon the state. Do you or have you made the same demand in behalf of the forests in which you are part-owners, which yield revenues to the public treasury, and so indirectly reduce the cost of carrying on your business, whatever it may be?

### Some Business Data.

Perhaps you have not the data at hand. Let me answer the question for you. One-third of the geographical area of Canada doubtless is incapable of producing trees of sawlog size because of the inhospitable climate or soil conditions. The actual sawlog producting areas probably do not total 500,000 square miles, and at least one-half of this has been burned. Any of you who have travelled in the north country or who has even ridden on the transcontinental railways must be fairly well convinced that our forest capital has not been maintained unimpaired and therefore, according to our definition, the primary object of forestry practice has not yet been attained.

The capital values destroyed by fire are incomprehensibly large. The effect of this loss of wealth upon industry is already apparent, for it has forced lumber concerns to seek materials each year farther and farther from the market, which means that the consumer has to pay more and more each year for the products of the forest. We are using in Toronto forest products whose raw material came from the other side of the height of land in the Hudson Bay drainage basin. Think of the transportation charges on that material! I see in this room wood material which came from the Southern States. The wages expended in converting the raw material into the finished product went to the citizens of another country and yet those wages might have gone to our own citizens; we could have the raw materials better adapted for the purpose within 200 miles of Toronto, if we had taken the first step in foresty practice, that is, had we maintained our forest capital unimpaired.

### How the Consumer Pays.

We as consumers are paying heavily to-day for our neglect of this elementary business precaution, yet the failing of timber supplies through the devastation of forest fires is not the most serious aspect of the problem. Mother nature is a great restorer; if undisturbed, she eventually heals all wounds, and in time she might recover our fire scarred forest areas with commercially valuable trees, but, unfortunately, she is not allowed to carry out her plans. The forests are burned not once, but repeatedly. I know areas that have been burned thirteen times in the past 50 years. The repeated forest fire is a vicious and destructive thing, for it kills the young trees which are to make the future forest and it kills the mother trees (seed trees) which might, if allowed to live, replace the destroyed young.

One-half of our commercial timber lands have been burned. You see, even if there never were another forest fire, one-half of our future supply of timber should come from these areas. Every fire decreases that possibility by destroying the young commercial trees. You cannot kill the children for several generations and look forward to the continuance of the race; you cannot kill the young pine and the young

spruce on an area every 5, 10 or 20 years and expect eventually to get saw logs.

### Killing the Forest Children.

Let me state once more the conditions on the burned areas: Thousands of square miles of forest land in the Dominion have been so severely burned by repeated fires that they will lie barren of commercial trees for hundreds of years unless they are planted by man. Other thousands of square miles, less seriously burned, are restocking themselves naturally to valuable species, but these areas are being constantly reduced and transferred into the first class mentioned because of inadequate fire protection.

I asked you a moment ago, if you had demanded security for the Canadian forest capital in which you share. Have you? You have spent a million dollars a year for the past ten years for protection of your property. You have invested ten million dollars in a certain project. Have you asked for an adequate return on that investment? Let me tell you, although you have spent millions of dollars on forest protection, the safety of the forests is still largely in the hands of Providence. I mean it depends upon weather conditions. Things go fairly well until we have an exceptionally dry season. The technique of fire-fighting methods has not been sufficiently developed to cope with the extra dry season. A very effective preventive method, although successfully practiced in certain districts in the West, has not yet been employed other than experimentally in the East, namely the disposal of the slash which becomes extremely inflammable in softwood forests, as in the north country. Unless the slash in certain districts is burned at the time of lumbering, we may as well become resigned to periodic forest holocausts. The best fire-fighting organization in the world could not master a situation in which all the odds were against it.

### The Patronage Millstone.

Another reason for this insecurity of the forest, the reason more time and thought have not been put upon the development of fire-fighting methods is largely because the rangers are not hired because they are efficient workmen or even good fire-fighters—but for other seasons.

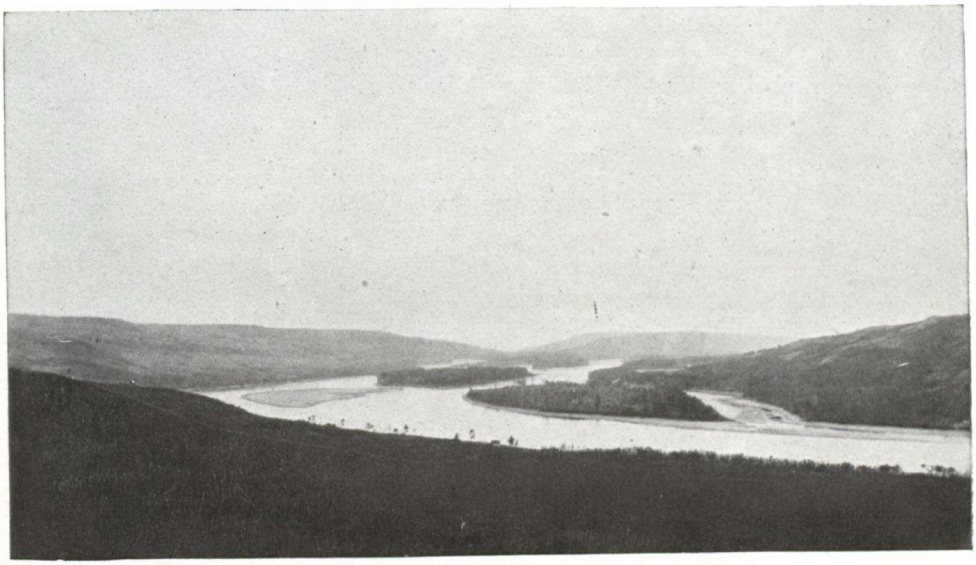
I have only words of praise for the men in charge of the Dominion and Provincial Forestry Branches. There are men at Ottawa; there are men here in Queen's Park, men in nearly every provincial capital, hard working, patriotic men who are giving the best efforts of their lives in the attempt to protect our forest capital, but they are far from successful because in the end they find astride every trail that hideous grinning monster, political patronage. Who is to blame for this state of affairs? Now, I have thought over this matter a good deal, and I have come to the conclusion that no politician, no official of the government is to blame; they are simply the victims of an inherited political tradition with regard to the methods of handling government business. You and I are really the responsible parties. The average citizen is to blame because he does not demand in government business the same standard that he demands in his own private business. Political patronage is a question of public morals and the problem will be solved only on this ground.

If, as an organization, you are contemplating presenting a memorial at Ottawa or in Queen's Park on this subject, I make bold to suggest that you state the case something like this: Our forests are in a precarious condition. Unless they are relieved, their revenue-producing function will be practically destroyed because of repeated forest fires. We believe this condition is chiefly due to an archaic, inefficient, rotten system of political patronage, a system for which you are not responsible because you inherited it from your political ancestors. In fact, we ackowledge that we as tax-paying citizens are really responsible for a condition of affairs for which we have in the past condemned you. Now, cannot we get together and devise some means of putting forest protection on a business basis. I have a feeling that the responsible politician, I mean the legislator and the cabinet minister are just as disgusted with the whole business as anyone else, and that approached in this manner, they would meet you more than half way.

### What of White Pine?

Let me say again that the first step in forestry practice is the maintenance of the earning power of the capital stock. This primary object has not yet been accomplished in Canada because we have not yet devised the means and methods to make the forests reasonably safe from destruction by fire.

Now, let us turn to the unburned logged-over lands and see how our definition of forestry applies to their treatment. We have the testimony of lumbermen that the end of the white pine supply in Eastern Canada is in sight. There will be scattered white pine trees in the forests for many years, but outside the forest reserves only a few large stands of virgin white pine



At the junction of the Peace and Smoky Rivers, Athabasca Country.

remain. Investigations indicate that white pine does not reproduce itself when removed from the ordinary mixed forest. The young seedlings require light and the dense thickets that spring up after logging choke and finally kill the little trees.

Certain areas in the old pineries, that is, where the trees were in pure stand when cut, are undoubtedly regenerating themselves with pine, but we don't know how extensive such areas are. It is very important that we should know, but we don't know. We need much more investigation of the matter, but so far as the investigations have gone, they indicate that we have not accomplished the first object of forestry practice in respect to white pine, that is, we have not kept the capital stock represented by white pine trees unimpaired and continuously productive.

### A Two-Thirds Reduction.

For the past two summers I have been investigating for the Commission of Conservation at Ottawa, the regeneration of spruce and balsam on cut-over unburned pulpwood lands in the Province of Quebec. I cannot here go into the details of my results, but I would like to tell you what we found on a certain representative area of 97 acres which had been severely culled. Twenty-six spruce trees per acre had been removed. We counted all the young trees on those 97 acres and determined their death rate. **We found when they reach merchantable size there will be only 7 spruce trees per acre to take the place of the 26 spruce trees removed by the logging operations, or, in other words, there will be one-third as many spruce trees in the future forest as in the virgin forest.**

We don't know yet whether this area is representative of all the cut-over balsam lands in Eastern Canada. It is very important that we should know. If it is representative, then it will be very evident to you as business men that the forest capital stock represented by spruce trees has not been maintained unimpaired and continuously productive. Therefore, we have not accomplished the primary object of forestry practice in respect to spruce.

### Balsam in Quebec.

Balsam trees at the rate of 32 per acre had been cut from these same 97 acres. Following the same line of investigation as with the spruce, **we found that in the next crop there will be 12 trees per acre where 32 have been taken away, or, in other words, there will be a little more than a third as many balsam trees in the future forest as were in the virgin forest.** Nor is this the whole story. Our investigations indicate that 7 of those 12 balsam will be so badly damaged by heart rot as to be unfit for pulpwood; **so the final result will probably be 5 pulpwood bearing balsam trees where 32 were taken away.**

We don't know yet whether this area is representative of all the cut-over balsam lands in Eastern Canada. It is very evident that we should know. If it is representative, then it is no longer necessary for me to bring to you any

more illustrations to drive home my assertion that we have not attained the first objective of forestry practice because we have not maintained the forest capital unimpaired and in a continuously productive condition.

### Who Should Manage the Forests?

Let me point out to you a great anomaly that very largely accounts for our present forest conditions. As business men you will appreciate the point. The Forestry Branch at Ottawa is charged with the care of 25,000,000 acres of Dominion Forest Reserves. It has a staff of technically trained foresters. With the exception of settlers' permits and a few odd logging jobs, the activities of the Branch are confined to fire protection. All the licensed lands, all the big logging operations within the forest reserves are in charge of another branch at Ottawa, which has not a forester in it. Let us come nearer home. The Province of Ontario has around 7,000,000 acres in forest reserves. It has 10,000,000 acres under timber license and practically the same area in pulpwood concessions. There is a Forest Branch with technically trained foresters. There are no better foresters in the Dominion, yet they have no part in carrying out the timber regulations for the licensed lands. That is in the hands of another branch which has no forester in it. Managing forests so that they will remain continuously productive is a big job; it calls for men with special ability and special training. Those of you who are manufacturers—to whom do you turn with your technical problems? Do you turn them over to your clerks?

### A Challenge to Business Men.

May I refer you back to my text: Canada stands practically naked of any forestry practice. The reason for this is that you and business men like you throughout the Dominion have not taken interest enough in your property to see that it is properly managed, to demand an account of stewardship. I thing it is the part of patriotism as well as the part of elementary business policy to make an effort to sustain an industry which stands third as a producer of wealth in this country, an industry that created for Canada in 1917 forest products valued at $116,000,000, an industry that employs over 50,000 people and distributes nearly 40 million dollars in wages. These are concerned with wood products as such. If we add to these sums the industries partially dependent upon wood in some farm, we find that they increased the wealth of Canada in 1917 by over $250,000,000. Surely in the interests of the continued prosperity of our country, the wheels of these industries should continue to turn.

### The Brighter Side.

Gentlemen, I hope I have not drawn the picture too dark. I have failed in my effort, if I have given you the impression that the case is hopeless. It is far from that. We are still much better situated in regard to timber supplies than any other country, but that does not justify indifference or the delay of recuperative methods. Four-fifths of Canadian soil is probably better adapted to the growing of trees than to any other purpose. No other country has such large forest areas, so accessible to transportation by water and by rail, so near the great consuming markets. Russia may have more timber; the United States undoubtedly has more and in greater variety, but I repeat, no other country has such large forest areas so near the great consuming markets of the world. With proper forethought and proper fore-action there is no reason why Canada should not supply the timber requirements of the world. Properly manager our great forest areas might turn for all time continuous streams of sylvan wealth into our public treasuries. But they never will; they will lie as idle waste lands, a burden upon the tax-payer, as so many of them already are. unless recuperative methods are inaugurated at once, unless you and the business men like you throughout the country take more interest in them in the future than you have in the past.

---

## ==TREES==

Some trees drink deep draughts beside brooks,
Delighting in gurgle and black moisture:
Coolness and strength they draw up into their limbs
And pay it out for the passer-by to enjoy.
In the shadow and amplitude of their noble branches,
And in their clean, shining, exquisite leaves,
Thin and translucent for green light to trickle through,
Harmoniously curved as musical instruments,
They instill fortitude by their robust trunks,
Moulded as individually as men's bodies;
Valiant and comfortable;
Some shaggy,
Some glossy as lithe animals,
All of them full of kindness and tree-humor
And the dignity that springs from belonging to one place.

# A BETTER PLAN OF SELLING PUBLIC TIMBER

## Higher Present Revenues and Certainty of a Replenished Crop—New Brunswick's Experiment

The Crown timber lands of New Brunswick aggregate some 10,000 square miles, which bring in a direct annual revenue to the Government of around $500,000. Hitherto, the typical Canadian method of timber disposal has been followed—the license system. Specific areas were put up for license, usually for a twenty-year period, but renewable more or less indefinitely, subject to the payment of a fixed sum per square mile per year as ground rent, a fixed sum per thousand feet as stumpage, when the timber is cut, and a bonus in a lump sum, payable following the sale, determined by competitive bidding; a fire tax is also levied, amounting to one-half cent per acre per year, which is supplemented by a levy upon privately-owned forest lands and by an appropriation from the Government. The essential point is that the soil remains in the ownership of the province, only the right to cut the timber being disposed of, under restrictions which are subject to revision at the discretion of the Government. There is thus every opportunity for the enforced adoption of improved methods of cutting, as rapidly as changing economic conditions justify the promulgation of corresponding regulations by the Minister of Lands and Mines.

### The Timber Sale Plan.

A recent development is the reversion to the Crown of some 400 square miles of land previously held under license, because the licensees considered the lands to be so near exhaustion as not to justify the renewal of the licenses, with consequent obligation to pay the annual ground rental, bonus and fire tax, in addition to other charges. An examination by the forest service showed, however, that considerable amounts of timber still existed on some of these tracts, for which there was a strong local demand.

It was first intended that these lands should again be put up for sale as licenses, on the old basis, but after very careful consideration the plan was changed to a straight timber sale basis at public auction.

### How the State Gains.

This sale was held early in October, 1918, and had the effect of fully justifying the tentative adoption of the new policy by the Government. Under the old system, the stumpage rate was $2.50 per M. Adding to this the pro rata charge for ground rent, fire tax and bonus, the total revenue to the Government was in the neighborhood of only $3.00 per M. At the recent sale, however, the prices bid for the coniferous species varied from $5.50 per M. to $7.75, according to the character of the timber and its accessibility. The estimated total revenue to the province will be $70,000 for the 110 square miles disposed of. A diameter limit of 12 inches is prescribed for spruce and pine, and 9 inches for balsam. Two years are allowed for removal of the timber.

If this revolutionary change in policy proves as satisfactory in practice as now seems probable, its extension on a large scale may be anticipated in the future, with corresponding benefit to the revenues of the province. On larger sales, the time limit for removal must of course be extended. In case of long-time sales, provision would presumably be made for the periodical readjustment of stumpage prices, as is now done on timber sales in the National Forests of the United States, and as is provided for in connection with the sale of timber on provincial Crown lands in British Columbia.

### Holding Worn-Out Lands.

It is to be anticipated that the reversion to the Crown of timber lands approaching exhaustion will continue, rendering feasible the increased extension of the timber sales policy. It is of course logical and inevitable that the province should, as a rule, have to hold worn-out lands for recuperation. The progressive exhaustion of virgin supplies in New Brunswick will greatly increase the area so held. The adoption of the timber sales policy may be expected to facilitate the practice of better forestry methods, calculated to ensure a more satisfactory regeneration of the most valuable species.

The logical procedure will be for the forest service to make a careful preliminary study of the conditions on each tract and prepare cutting regulations adapted to the local conditions in each case. These restrictions being known in advance of the sale, the prospective purchaser will take the additional cost of logging under these conditions into consideration when making his bid, so that in the long run the province will bear the added cost of leaving the lands in a productive condition. The adoption of such a policy as to timber sales may, as its benefits become realized, be expected to have a corresponding effect upon the administration of lands held under license, through the abandonment of the present rigid diameter limit, which does not, as a rule, give satisfactory results, and the substitution in its stead of a scheme of cutting based upon the local conditions existing upon each particular tract. This should mean, in the course of time, the marking of timber for cutting, under the direction of trained and experienced foresters, with a view to leaving the cutting area in the most productive condition feasible under the existing physical and economic conditions.

With a technical forestry organization already on the ground, and with the Provincial Government in the most hearty sympathy with its work, steady progress toward the more intelligent handling of Crown timber lands may confidently be expected.

## WOOD BLOCK PAVING.

Wood block paving, which in European cities has long been the favorite, is increasing in use in Canada, despite the frequent clumsy methods used by town engineers in laying it. Rightly laid it is an ideal paving material.

## LATE SPRING SAVES $40,000.

*(Toronto Globe)*

Owing to the fact that there is still a good deal of snow in the woods, making it practically impossible for fires to get going, there is no need for rangers, and the department has decided not to send the men into the woods until the 15th of this month, or about 15 days later than usual. The saving amount to roughly $2,700 a day.

## NOVA SCOTIA'S FOREST CROP, $19,000,000

*It has been customary to estimate the annual value of Nova Scotia's forest products at $5,000,000. Hon. O. T. Daniels, Attorney General and Commissioner of Lands, comes forward in an article in "Canada Lumberman" declaring that the old total is quite innacurate. Mr. Daniels places the value of Nova Scotia's forest crop at nearly $19,000,000.*

"The following list gives the estimated value of forest products for the province during the present season compiled from the best sources of information available:

| | |
|---|---|
| Lumber | $8,755,000 |
| Cordwood | 5,250,000 |
| Staves, fish, apple, potato , barrels and boxes | 500,000 |
| Pulp | 400,000 |
| Christmas Trees | 50,000 |
| Hop Poles | 50,000 |
| Pit Props and Booms | 600,000 |
| Telegraph and Telephone Poles | 50,000 |
| Railroad Ties | 500,000 |
| Poles, Rails, Stakes, Posts and Boards for fences | 500,000 |
| Ship Timber and Knees, etc. | 1,000,000 |
| Laths | 150,000 |
| Wharf Timber and Piling | 100,000 |
| Shingles | 100,000 |
| Miscellaneous as Weir Stakes, Clothes Pins, Tan Bark, Maple Sugar, etc. | 100,000 |
| Total | $18,905,000" |

# TRADING TIMBER FOR LOGGED-OFF LAND

Exchange of merchantable stumpage in United States National Forests for adjacent logged-off lands is a new policy which is being pursued by the Forest Service. A dozen such exchanges have been made in the United States, of which four have been in Oregon.

The policy, which is still in process of formulation, adds to National Forest area land which has been logged and which has little or no agricultural value, but which, if given proper conditions, will produce a new crop of trees. The benefit of bringing the area under government reservation and care, while the private owner is compensated by new stumpage for his mill, is largely in affording the logged-off area better protection from fire.

No general congressional action has sanctioned the policy. For each transaction or group of transactions the Forest Service has been compelled to get a special bill through Congress. Passage of these bills has been obtained with little difficulty, but the memory of the old "lieu land" situation will make difficult any general authorization for exchanges of timber and land, on any basis. Forest Service men, nevertheless, hope that such congressional action may be procured within a few years.

The exchanges are made on a basis of market value for the stumpage and appraised market value for the logged-off lands. The appraisal is made by Forest Service engineers.

Communications received by the Swayne Lumber Co., Oroville, Calif., and other timber concerns in the Feather River district of California, indicate that the Forest Service is anxious to apply the new policy there.

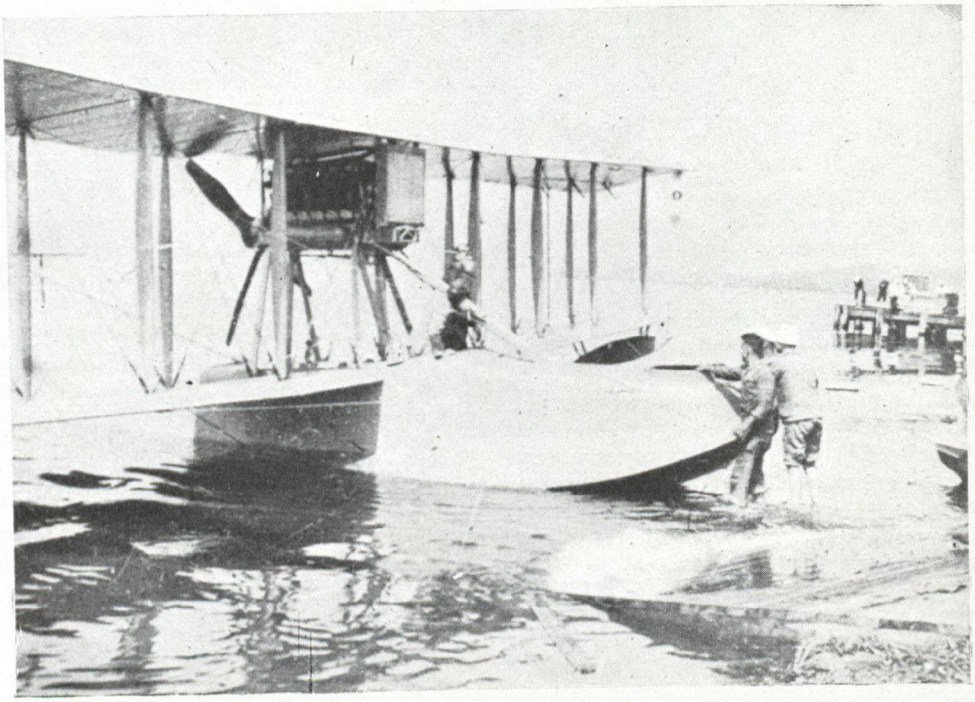
Although some sugar pine trees now being milled show they are 300 years old, timbermen state that approximately only a century is necessary to bring newly forested areas to marketable bearing again.

The Government has a huge timber acreage in the Pacific Coast states which is mature and ready for market. The new policy of exchange will mean that this will be milled and that additional areas, suitable only for reforestation and not for agriculture, will be added to the acreage of timber growing for the benefit of the future citizens of the United States.

# INSECTS AND FUNGI DAMAGE MORE THAN FIRES

*J. M. Swaine, Entomologist, Ottawa.*

We are beginning to realize at last that our Canadian forests are disappearing very rapidly, but very few, even among those of us familiar with our woods appreciate how fast this process has actually become. Fires, insects and fungi are the greates enemies we have to deal with. The fire problem is rapidly being solved. The Forest Protection Associations of the provinces are demonstrating how successfully co-operative measures can deal with such problems. The injuries by insects and fungi, on the other hand, have, until, recently, been practically unrecognized. The actual conditions, however, indicate that these injuries are annually much greater in our forests than that caused by fires. We have a most disheartening example of combined insect and fungous destruction sweeping through the balsam forests of Eastern Canada at the present time. Upon hundreds of square miles of forest the balsam has been very seriously injured or killed within the last eight years, and on large areas of this practically all the balsam is already dead. The injury appears to be spreading rapidly in the balsam and a similar trouble is affecting the spruce in a much smaller degree. How far this is to spread we do not know, but certainly all balsam in infested forests is threatened with destruction. This subject is of the utmost importance to the lumbermen and provincial authorities of Eastern Canada and should receive immediate and very serious consideration.



# CANADA STARTS AERIAL FOREST PATROL

## First Experiments Will be Conducted in Central Quebec With Hydro-Aeroplanes.

There is every possibility that Canada will enjoy the distinction of being the first nation to institute an aerial forest patrol. By permission of Hon. C. C. Ballantyne, Minister of Marine and Fisheries and Naval Affairs, two hydro-aeroplanes have been released to the St. Maurice Forest Protective Association for use in Central Quebec. At the date of going to press the Association's pilots were at Halifax preparing to bring the machines to Three Rivers.

The release of the hydro-aeroplanes for forest patrol experiments was obtained only after great difficulty. The original application of the St. Maurice Association, supported by the Quebec Government, was favorably received by Hon. A. K. Maclean, acting in Mr. Ballantyne's absence, and later nulified by Mr. Ballantyne, the latter's decision being again modified after a meeting of a deputation of the Canadian Forestry Asociation and the Aerial League of Canada. The part played by the St. Maurice Forest Protective Association in negotiations is worthy of high praise inasmuch as this body volunteered to pay practically the entire expense of maintenance of machines, salaries of pilots and other items of heavy expense so as to secure not only for the St. Maurice region, but for all the Government departments and other private associations in the Dominion, the data absolutely necessary before any system of air patrol can be entered upon. Most observers of the negotiations will doubtless conclude that the Dominion Government has made a remarkably good bargain for the reason that several of the Dominion Government departments have already applied for the use of hydro-aeroplanes for forest patrol and will now be able to avail themselves of the experimental results in the St. Maurice territory. The first pilot to inaugurate the patrols

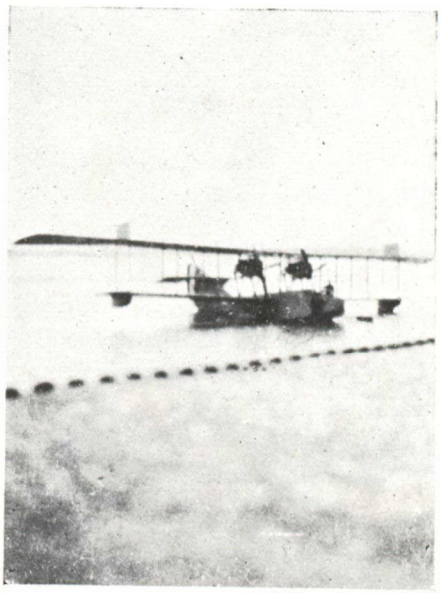
will be Mr. Stuart Graham, who participated as an airman in the British Government's fight against German submarines. Mr. Graham will have the fullest co-operation of the officials of the Royal Canadian Naval Air Service. Experimental work will be conducted in the use of wireless telephones and telegraphs. It is intended also to try out the use of aerial cameras in mapping forests. The possibilities of this work are most promising.

The flying boat type has been regarded as being most applicable to the conditions accompanying forest patrol in the province of Quebec where lakes and rivers are almost always within reach as convenient landing stations or in case of accidents. From the point of view of the Canadian Forestry Association, the confidence expressed by returned aviators in the effcacy of aerial patrol of forest areas and the ease of forest mapping called for immemdiate experimental trials. No one having to do with the securing of the Dominion-owned machines for use in Central Quebec has the temerity to advocate aerial patrol as a cure-all for forest fires nor anything but a probably useful auxiliary to present means of fire detection. Recently the Government of Ontario requested from the officials of Argyll House, London, an estimate of the cost of a system of aeroplanes for use in the forested districts of Northern Ontario. Instead of mapping out a modest experimental plan, the officials of Argyll House concocted an elaborate and highly expensive scheme whereby the Government of Ontario might easily be called upon to pay out close to one million dollars during the first year. Quite properly the Ontario Department of Lands and Forests rejected the scheme implying thereby no adverse opinion of possible advantages of earial patrol for Ontario. The Quebec experiments will probably determine to a material degree the adoption of aeroplanes by Ontario and other provinces in 1920.

The United States Government has recently brought about a co-operative plan between the military authorities of the United States Forest Service whereby government machines will be tested in fire detection work during the present year.

## THE EAST AND EXPORT.

I am strongly of the opinion that Ontario, Quebec and Nova Scotia have not a very large quantity of timber that Canada can afford to export. The most of the lumber that is still left in these provinces, in my opinion, will be required for use at home. There is no doubt that a large amount of building will take place during the next few years and these provinces combined will produce very little more than what is required at home. British Columbia, no doubt, has a lot of good lumber and timber and is wanting a market and may be able to export a considerable quantity, but there is at present a large quantity of British Columbia lumber used in the provinces of Ontario and Quebec and the trade in British Columbia and these provinces is increasing monthly. There is not a furniture factory in the provinces of Quebec and Ontario but what are importing large quantities of oak lumber from the United States; also quantities of gum wood are imported. This is all manufactured into furniture. The building trades are importing large quantities of Georgia pine which is used for the construction of buildings; also large quantities of California white pine are imported for the sash and door mills. If we had a large surplus of lumber in the province of Ontario such as many people speak of, we would not have to import such large quantities as we do.—R. E. Truax, M.P. (Walkerton Wholesale Sash & Door Factory, Walkerton, Ont.



The flying boat at Halifax Harbor.

# DO YOU KNOW WHERE THESE MEN ARE?

Following are some of the names and addresses of Forestry Association members whose mail has been returned by the post office marked "Not at address". Registered letters also have failed to find them.

Readers of the Journal will confer a great favor by letting the Secretary (206 Booth Building, Ottawa) know the whereabouts of any of these man, should such information be available. The Association's experience shows that many men leave no postal address for forwarded mail, although they have no intention to separate themselves from the membership.

William Allan, Esq.,
c/o McLaren Lumber Co.,
Blairmore, Alta.

P. C. Bernard-Harvey, Esq.,
Post Office Building,
Edmonton, Alta.

J. H. Billingslea, Esq.,
University, Lewis Hall,
Seattle, Wash., U.S.A.

W. E. Bailey, Esq.,
10 The Salisburuy,
297 St. An toine St.,
Montreal, Que.

G. W. Bowles, Esq.,
148 Glendale Ave.,
Toronto, Ont.

J. A. R. Bedard, Esq.,
Marion P.O., Que.

Edward S. Bryant, Esq.,
38 Asticon Road,
Forest Hills Station,
Boston, Mass., U.S.A.

Albert Bowset, Esq.,
Lr. Fairfield Rd., N.B.

Geo. A. Bajoie, Esq.,
c/o Hudson Bay Co.,
Winnipeg, Man.

Walter Blois, Esq.,
34 Lansdowne Ave.,
Toronto, Ont.

E. Currie, Esq.,
1820 East Second St.,
Long Beach, Calif.

E. E. Carver, Esq.,
13th Street South,
Lethbridge, Alta.

Can. Pulpwood Producers Ass'n,
Dandurand Building,
Montreal, Que.

Dr. C. F. Dowman,
1769 45th Street E.,
Vancouver, B.C.

John W. Dodds, Esq.,
678 Ossington Ave.,
Toronto, Ont.

J. P. Drewett, Esq.,
Dept. Railways and Canals,
Ottawa, Ont.

R. R. Day, Esq.,
Grand Mere, P.Q.

J. A. Echlin, Esq.,
504 Queen Street E.,
Toronto, Ont.

R. W. Evoy, Esq.,
Kinuso, Alta.

J. L. Farwelu, Esq.,
35 Richmond St. W.,
Toronto, Ont.

Capt. I. Fraser,
Br., Can. Rec. Missions,
901 Main St.,
Kansas City, Mo., U.S.A.

Thos. Flynn, Esq.,
Board of Trade Building,
Montreal, Que.

H. Gale, Esq.,
Vancouver, B.C.

H. H. Greenamyre, Esq.,
11142 91st St.,
Edmonton, Alta.

L. C. Godbout, I.F.,
Mont Laurier, P.Q.

Richard Hibbard, Esq.,
Boynton, Ont.

E. Hellman, Esq.,
606 Bank of Ottawa Building,
Vancouver, B.C.

C. J. Haddon, Esq.,
B. C. Forest Service,
Kamloops, B.C.

J. C. W. Irwin, Esq.,
143 Grenadier Rd.,
Toronto, Ont.

David James, Esq.,
Fort Fraser, B.C.

Philip Loosemore, Esq.,
35 Woodlawn Ave.,
Toronto, Ont.

Thos. T. Lawson, Esq.,
5380 Sherbrooke St. W.,
Montreal, Que.

David McTierman, Esq.,
Bryson, Que.

Thomas MacLaughlin, Esq.,
Pembroke, Carleton Co.,
N.B.

A. J. Moyers, Esq.,
Dept. Railways and Canals,
Ottawa, Ont.

A. E. Might, Esq.,
Camrose, Alta.

John C. Moyan, Esq.,
Cereal Dept.,
Macdonald College, Que.

E. C. Manning, Esq.,
P.O. Box 1253,
Calgary, Alta.

J. E. McClellan, Esq.,
Moose Jaw, Sask.

B. C. D. Phillips, Esq.,
303 Winch Bldg.,
Vancouver, B.C.

Fred B. Robinson, Esq.,
155 Yonge St.,
Toronto, Ont.

Charles T. Rutty, Esq.,
Calgary, Alta.

P. W. Richards, Esq.,
P.O. Box 20,
Indian Head, Sask.

Wm. Stanley, Esq.,
2317 Main St.,
Vancouver, B.C.

R. W. Street, Esq.,
3305 Lanoraie Ave.,
Montreal, Que.

S. H. Sykes, Esq.,
718 Metropolitan Bldg.,
Vancouver, B.C.

John G. Savage, Esq.,
405 MacKay St.,
Montreal, Que.

Wm. Seip, Esq.,
Powell River, B.C.

Ralph M. Taylor, Esq.,
L'Annonciation, Que.

J. Ellis Taylor, Esq.,
301 University Ave.,
Montreal, Que.

J. P. Turner, Esq.,
McArthur Block,
Winnipeg, Man.

Walter D. Wilcox, Esq.,
El Tovar, Grand Canyon,
Arizona, U.S.A.

Henri R. Wickenden, Esq.,
303 Winch Building,
Vancouver, B.C.

G. C. H. West, Esq.,
Chapleau, Ont.

H. H. White, Esq.,
39 Highview Crescent,
Toronto, Ont.

Albert M. Woodman, Esq.,
Delora, Ont.

H. N. White, Esq.,
1212 5th Street W.,
Calgary, Alta.

F. H. Whitney, Esq.,
1726 32nd Avenue W.,
Calgary, Alta.

# 'PLANES AS SCOUTS IN BIG CONFLAGRATIONS

In view of the United States Forest Service, aircraft would be useful not only in the discovery of fires at their origin, but also in scouting large fires while in progress, as in the case of the great Minnesota disaster, thus minimizing the material destruction and the loss of life. The experience of forest officers in fighting fires in the National Forests if the Western States has emphasized the importance of having an efficient scouting service on every large fire. Where a fire is confined to one watershed its progress can usually be determined from some high point. But often a fire may be burning in several canyons at the same time. The general topography of the country, but more especially the depth and width of the canyons, may influence wind conditions to such an extent that a fire in one canyon may be headed in one direction, while in the next canyon the fire will be burning in the opposite direction.

If the fire covers a fairly large area—for instance, ten or more square miles of a rough mountainous country containing no inhabitants and practically no transportation system, and where timber and underbrush are so thick that trails must be cut before a pack outfit can reach a suitable site with a camp outfit for the fire fighters—the difficulties encountered by a fire scout are readily realized. In much of the western country it is difficult to travel on foot more than a mile an hour, owing to steep slopes and thick underbrush. The use of aircraft for scouting purposes under such conditions should prove most efficacious.

The idea of utilizing airplanes in this kind of work is not, of course, altogether new. Aircraft were successfully used in directing the forces engaged in fighting the big fire in munition warehouses in New Jersey some months ago.

It is probably premature to discuss the value of aircraft in actual forest fire suppression work. Some types of aircraft would lend themselves to the transportation of fire fighters. The suggesiton has also been made that bombing planes could be used to advantage in that fireproof bombs, consisting of certain chemicals, could be hurled on fires in sufficient quantities to extinguish them. Haw practicable a scheme of this kind might be remains to be seen. It goes without saying, however, that the adoption of aircraft for patrolling the forested areas of the country will create a large field for experiments of many kinds.

## "CONTRIBUTING MEMBERS".

The following are new "contributing members" of the Canadian Forestry Association, supplementing the list hitherto published:

| | |
|---|---|
| C. Mickle | John G. Turnbull |
| D. L. White, Jr. | E. Thomas |
| R. Southam | Gill & Fortune |
| Mrs. H. D. Warren | Sigmund Samuel |
| Fred M. Tennant | T. Walklate |
| The Soper Lumber Co. | Shives Lumber Co. |
| McAuliffe-Davis Lumber Co. | R. W. Reford |
| | George Creak |
| Western Retail Lumbermen's Association. | H. L. Putnam |
| | Estate of Geo. H. Eaton |
| Merkley Bros., Ltd. | A. Joly de Lotbiniere |
| Frank J. D. Barnjum | Francis W. Caulfeild |
| John Fenderson & Co. | A. C. MacIndoe. |

## WHERE B. C. WOOD GOES.

The United Kingdom was the biggest purchaser of British Columbia lumber during 1918, the next best customers being Japan, China, Australia, Africa, South Sea Islands, and South America, in the order named.

Douglas fir leads all other woods in the total cut for 1918, with cedar second, spruce third and hemlock fourth.

The 1918 pulp production showed sulphite 66,054 tons, sulphate 12,188 tons, and ground wood 91,145 tons.

## BRITAIN REFORESTING.

Two hundred thousand acres of forest land in Great Britain are to be replanted, at a cost for planting and maintenance the first ten years, of $17,000,000, according to an announcement by the Government. The trees will replace some of the heavy timber cut down during the war, and provide additional forests so that the country may be independent of other timber sources in case of emergency.

# DANGERS OF THE LOCOMOTIVE SPARK

*(Railway and Locomotive Engineering.)*

We have observed in connection with some of the large railroads of the country that severe service tests have been given through a period of years to develop better conditions and that the front-end arrangement on locomotives, or what is known as the "spark arresters", have been receiving careful consideration. It is a question to draw forcefully the attention of this subject to every official, as we consider the spark hazard is possibly the greatest that has to be contended with in connection with fires on railroad property and that even though spark causes have been very much lessened in many instances, it is a question whether it may not be possible in the future to eliminate entirely the occurrence of fires from these causes. . . . We find that the relative importance of the value of property destroyed shows that sparks from locomotives occupies about second place of all the sundry hazards involved in the destruction of railroad property, and that in the number of fires reported it occupies about the same relative position. . . .

The approximate danger-line from sparks is 150 feet distance from the centre of the track. In confirming this statement the testimony of those who have had occasion to observe the progress of fires originating from locomotives is to the effect that while objects located at a greater distance sometimes burn, the firing of such objects is not the immediate result of sparks from a locomotive, but that of a flying brand from the original spark fire within the above distance. These conditions, however, would not prevail with a defective spark-arrester. So small is the heat-carrying power of a spark from a locomotive in good condition that there is doubt as to whether or not they cause a fire. Well-known laws applied to falling bodies show that sparks sufficiently large to carry fire must, under ordinary conditions of discharge and of wind velocity, strike the ground within a comparatively short distance from the track.

There is, therefore, nothing to bear up the locomotive spark but the initial velocity with which it is projected. From considerations, it should be evident that conclusions based on observation in connection with fixed fires are not applicable to the conditions affecting sparks in locomotive service.

We believe with a uniformity in respect to careful maintenance of the corrective influences that have been devised up to date, that much can be done in preventing the large fire waste caused by flying sparks. This, however, must receive careful individual co-operation on the part of all employees and the motive-power departments, and our hope is that we may be able in the future to acknowledge the result of the work of some inventive mind that will bring about the entire elimination of fires caused by sparks thrown from the smoke-stacks of locomotives.

# 1918 FOREST FIRES IN NEW BRUNSWICK AND NEEDLESS DAMAGE CAUSED

| CAUSES | No. of fires. | Area, acres. | Damage. |
|---|---|---|---|
| 1. Fishermen, hunters, campers, picnic parties, neglecting camp fires or throwing away burning matches | 29 | 17,874 | $55,817 |
| 2. Settlers neglecting their slash fires | 15 | 185 | 8,950 |
| 3. Careless use of fire by industrial operations, such as portable mills, rossing plants, etc. | 5 | 62 | 2,743 |
| 4. Fires caused by railroads, defective nestings and ashpans—hot clinkers being thrown on right of way, etc | 788 | 637 | 2,606 |
| 5. Unknown causes | 10 | 318 | 2,150 |
| 6. Incendiary (supposed) | 3 | 4 | ---- |
| Totals | 850 | 19,080 | $72,266 |

# SWEDEN VERSUS CANADA—A FIGHT FOR BRITISH MARKETS

Speaking at a lumbermen's meeting in Toronto, Mr. Montague Meyer, who is accompanying Sir James Ball, British Timber Controller, in his tour of Canada, outlined the purchases that had been made in Canada this year. In the Ottawa Valley they had bought 50,000 standards of white pine and red pine. They had also purchased the majority of the wintered stocks of spruce from Ottawa right down the St. Lawrence and practically all of the wintered stocks and some of the fresh cut stocks in the Bay of Fundy and New Brunswick. He said that attention must be paid to the requirements of the European markets for special sizes and grades of spruce if they wished to secure the trade that formerly went to Sweden. "We have no wish to spend a single shilling in Sweden", he said, "if we can help it. At the present time we can not help it, but the time will come when Canadian lumbermen, if they do the right thing in regard to manufacturing what the market wants, will furnish us with the majority of our timber and only a small portion of our imports will come from Sweden."

## THE REST OF THE STORY.

**Mr. Meyer might have continued his remarks to include a parallel betwen the development of forestry practice in Sweden and the absence of any such exotic in the Dominion of Canada. Mr. Meyer stopped at the mill-gate. He might have told, with much advantage, how that in Sweden the entire forest area, in public and private ownership, is virtually under a reign of scientific forestry law, that little or no cutting can be done anywhere unless in agreement with forestry regulations. Sweden employs more than four hundred professional foresters as the dictators of cutting practice, with the result that Sweden to a very large extent is taking out only the increment and leaving her forest capital intact. This is not true of any part of Canada east of the Rockies except in local patches.**—Editor Canadian Forestry Journal.

# IS THIS BORROWED MONEY OR REVENUE?

*(A Statement by Dr. C. D. Howe, before Toronto Board of Trade.)*

"Our so-called forest revenues are not revenues at all. They represent so much money taken from the capital stock; an average of 1.5 million dollars in Ontario for the past ten years, and nearly the same for the province of Quebec. It is not revenue at all; it is borrowed money. You are already paying exorbitant interest on it in the steadily rising pulpwood and lumber prices, and you will pay a higher rate each year so long as the practice of borrowing is continued. Also, because we are each year reducing our forest capital and so restricting its production you contribute in the aggregate large sums of money to pay the wages of lumbermen in the States instead of paying our own lumbermen. You do this every time you buy southern pine to furnish your house, and practically every house I have entered in my ten years residence in Toronto contains more or less southern pine.

"This borrowed capital must be restored to the forest either in the form of planting or in the form of regulated logging operations—probably both, if our lumbering and pulpwood industries are continuously to be maintained even at their present capacities. Either method of restoration will be very costly, but you or your children because of your previous neglect will be compelled to pay the price. The longer you wait, the higher the price."

# WINNING THE PEOPLE FOR FOREST PROTECTION

The Canadian Forestry Association is now busily engaged carrying out an extensive programme in rousing the public to active co-operation in forest protection.

Our newspaper publicity bureau has had uncommonly hearty aid from the editors of English and French newspapers in all parts of Canada. Articles and editorials on forest protection and reforestation are appearing without stint and at a season of the year when interest in the subject is most productive of benefit.

Lectures, with motion picture illustrations, have been given by Mr. Robson Black before many audiences in Ontario and Quebec, two large and influential gatherings being arranged during April under the auspices of the Royal Canadian Institute at Toronto University, and the Canadian Club of Kingston, Ont.

Our Railway Demonstration Car, is now being outfitted on a scale much more extensive than applied to last year's car, and will make a tour of scores of communities in Eastern Canada, motion picture lectures being given in local halls each evening.

The Association now possesses two complete motion picture projectors and ten reels of picture film, the latter being used for circulation in regular theatres where opportunity offers.

Mr. A. H. Beaubien, who conducted many successful French lectures for the Canadian Forestry Association last year, will start during the last week of May for Quebec points to hold a series of public meetings to stimulate public interest in fire protection. Mr. Beaubien this year will have the aid of excellent motion pictures.

Meetings will be organized by the Association in Northern Ontario early in June and a series of illustrated talks given. The usual audience in Northern Ontario for Forestry Association meetings averages above three hundred persons.

As was done last year, hundreds of brief and pointed cartoons and fire warnings, in the form of lantern slides, are being sent to the motion picture theatres in forested districts for use between the reels of film. This is a potent means of reaching large numbers of people.

New forms of educational literature have been issued and carefully distributed to Canadian schools, as follows:

19,000 to New Brunswick.
5,000 to Nova Scotia.
2,000 to British Columbia.
15,000 to Ontario.
35,000 to Quebec.

2,500 special pieces of school reading to school teachers of the Western Provinces.

The foregoing publications are being supplemented from month to month by other novel reading matter, arranged in such form as to gain sure attention.

In New Brunswick, Quebec and Ontario, Quebec and Ontario, many of the rangers are visiting the schools personally and reading interesting stories supplied by the Forestry Association, to the classes of children.

# BRITISH COLUMBIA'S TIMBER WEALTH

## Enormous Stands Available, but Forest Fires Have Taken 665 Billion Feet

The recently published report of the Commission of Conservation on the forests of British Columbia by Roland D. Craig, F.E., and H. N. Whitford, Ph.D., is a comprehensive work, well illustrated with maps and photographs. Through the co-operation of the Provincial and Dominion Governments, the timber owners, the Canadian Pacific railway and other interests, the authors secured very complete data on which to base the estimates. The province was divided into 66 districts, for which separate estimates of the stand were compiled.

The forest resources of the province are estimated to be approximately 350 billion feet saw-material with an additional 16 billion feet suitable only for pulp. In addition to the estimate of the stand, the report describes the effects of the climate, soil and topography on the forests, and outlines the various systems of tenure under which the forest resources have been alienated. Interesting chapters are devoted to the description and distribution of the various species of trees and to the injuries done by insects.

The total land area of the province is 355,855 square miles, of which approximately 200,000 square miles is incapable of producing forests of commercial value. About 145,000 square miles lie above the merchantable timber-line, and on 55,000 square miles below the timber-line the soil is either so rocky or wet, or the forests have been so completely destroyed by fire that there is no hope of natural re-establishment of forest conditions for centuries.

Of the remaiing 155,855 square miles, which is capable of producing forests, only about 28,000 square miles—less than one-fifth—carries sufficient timber to be classified as statutory timberland. In the interior of the province, there are areas of forest land, aggregating 23,800 square miles, which, though not reaching this standard, carry between 1,000 b.f. and 5,000 b.f. per acre, part of which may be utilized. Only very meagre data have been obtained, as yet, as to the area of land which can be used for agricultural purposes. The forest land classification indicates that somewhat over 5,000 square miles is grass land or very open forest, some of which is suitable for cultivation, but the greater proportion is of value only for grazing. In addition, there is, perhaps, from 12,000 to 15,000 square miles, cleared or under forest, which is more valuable for agriculture than for forest production. Deducting this potential agricultural land, say 20,000 square miles, from the total capable of producing commercial timber, there is 135,855 square miles of absolute forest land which should be devoted permanently to forest production.

The timber on about 100,000 square miles, or two-thirds of the original forest land, has been totally destroyed by fire, and on over half of the remaining 55,855 square miles the timber has been seriously damaged. tI is estimated that the province has lost, through forest fires, at least 655 billion feet board measure. As the present total stand of saw material in the whole Dominion probably does not greatly exceed this amount, the seriousness of this loss, due very largely to public carelessness, is apparent.

The following table indicates the composition of the present stand of saw material:

| Species. | Coast: Million bd. measure. feet | Coast: Per cent | Interior: Million feet bd. measure | Interior: Per cent | Total: Million feet bd. measure | Total: Per cent |
|---|---|---|---|---|---|---|
| Western red cedar | 59,000 | 27.4 | 18,019 | 13.2 | 77,019 | 22.1 |
| Douglas fir | 64,000 | 29.4 | 12,573 | 9.2 | 76,573 | 21.8 |
| Spruce* | 14,000 | 6.7 | 58,375 | 42.8 | 72,375 | 20.6 |
| Western hemlock | 52,000 | 24.6 | 12,164 | 8.9 | 64,164 | 18.3 |
| Balsam† | 19,000 | 9.2 | 13,838 | 10.2 | 32,838 | 9.5 |
| Lodgepole pine | 20 | .1 | 12,130 | 8.9 | 12,150 | 3.5 |
| Western yellow pine | ----- | --- | 4,208 | 3.1 | 4,208 | 1.2 |
| Yellow cypress | 3,700 | 1.9 | ----- | --- | 3,700 | 1.1 |
| Western larch | ----- | --- | 3,152 | 2.3 | 3,152 | .9 |
| White pine | 1,100 | .5 | 1,617 | 1.2 | 2,717 | .8 |
| Black Cottonwood | 400 | .2 | 272 | .2 | 672 | .2 |
| | 213,220 | 100.0 | 136,348 | 100.0 | 349,568 | 100.0 |

*Includes Sitka spruce, Engelmann spruce, white spruce and black spruce.
†Includes alpine fir, lowland fir and amabilis fir.

Of the species used in the manufacture of pulp and paper (hemlock, balsam, spruce and cottonwood), there is 170 billion feet, which is equivalent to 243 million cords of pulpwood. This may be increased to 250 million cords by utilizing smaller timber. As the supply of pulpwood is becoming a very serious matter in eastern North America, it is important to know that so considerable a supply may be obtained in British Columbia.

During the last five years the total cut in the province has averaged only 1,250 million board feet. With a stand of 350,000 million board feet of timber of commercial size, and with over 100,000 square miles of land on which young forests are established and which, if protected, should produce from 5,000 million to 7,000 million board fet per annum, it will be seen that the forest resources of British Columbia can, under conservative exploitation, supply at least five times the present cut without seriously depleting the capital stock.

# BENEFICIAL EFFECTS OF FOREST COVER

By *Samuel T. Dana.*

Perhaps the most obvious relation that exists between forests and water is the tendency of the tree cover to check erosion. The leaves and branches of the trees prevent the rain from beating upon the soil at it does in the open; the cover which they afford delays the melting of snow in the spring; the upper layers of the forest soil act as an enormous sponge that absorbs large quantities of water which in turn are passed on to the great reservoir of mineral soil underneath; and finally the surface cover of stumps, fallen twigs, branches, and even whole trees acts as a mechanical obstruction to prevent rapid run-off. The surface run-off from forest areas is less, both in total amount and in velocity, than that from similarly situated unforested areas. The steeper and more rugged the topography, the more marked is this contrast.

In hilly country some erosion is, of course, inevitable under any conditions. When the soil cover of trees, underbrush, and litter is kept intact, however, this is more often beneficial than otherwise, since only the lighter soil particles are washed away, to be later deposited in the more level lands below, adding to their fertility. But when this protective cover is interfered with, whether by fire, destructive lumbering, overgrazing, or injudicious clearing of land for agriculture, the proportion

of coarser, infertile materials washed away increases greatly and transforms erosion from a constructive into a dangerously destructive force, difficult of control and capable of doing untold damage.

### As Water Users See It.

From the standpoint of the water user, the tendency of the mountain forests to prevent erosion is of the utmost importance. Wherever storage reservoirs must be used, whether for municipal supplies, irrigation, or water power, they are exposed to the ever-present danger of silting up. Every bit of soil brought down by the streams and deposited in them reduces their capacity and consequently their effectiveness by just so much. This sedimentation is serious under any condition, but doubly so when, as not infrequently happens, no other satisfactory dam sites are available and the reservoir can not be replaced at a reasonable cost.

Water heavily laden with eroded material often decreases the efficiency and increases the cost of maintaining diversion dams, pipe lines, flumes, canals, and other irrigation works. Sometimes such water damages the crops to which it is applied, and not infrequently it seriously injures or even ruins the land by burying it under a mass of sand, gravel, boulders, and other infertile debris. Excessive erosion may interfere seriously with navigation by filling the streams with material which is deposited in their lower reaches and in the harbors into which they empty.

### Even-Flowing Streams.

The action of the forest in reducing surface run-off tends also to regulate the flow of streams. Instead of rushing away in uncontrollable torrents the water is absorbed into the great reservoir of mineral soil, from which it is gradually paid out to the springs and streams. This tends to decrease the high water run-off and to increase the low water run-off. Both results are good. The decrease in the high water run-off means that there is less danger of destructive floods and less waste of valuable water; while the increase in low water run-off means that a larger supply of water is available during the dry season, when it is particularly needed. It is the low water flow that to a great extent determines the availability of any given supply for municipal use, irrigation, or hydroelectric development, and anything which will increase this flow is therefore a factor of prime importance.

## SAVE TREES BY USING THEM.

"There is no need of our saving trees through the non-use of wood", say the chiefs of the Forest Service, who are the nurses, sales-agents, and managers of our more than 150,000,000 acres of nationally owned forest lands. They are also consulting physicians to the remaining four-fifths of our forests still under private ownership, and are available as expert advisers to all users of trees or tree-products.

Under certain limitations we have plenty of timber, provided it is conserved intelligently and consumed with sensible economy. But we have been getting less than 50 per cent of the value out of the trees we fell, as against Germany's 98 per cent.

We should conserve not by non-use, but by intelligent use—that is to say, by getting the fullest possible return from every tree. This means more efficient lumbering, better sawmilling, and better wood-working all along the line. It means also the unlimited utilization of waste products.—The Nation's Business.

## THAT EMBARGO ON PULPWOOD.

"With the end of supplies in sight in many United States mills, some of them have turned to Canada. Instead of taking measures to insure a continual growth in their own land they have killed the goose that laid their golden eggs, and have come north in the hope of finding another brood. The fact that the Canada goose has turned out to be somewhat in the nature of an owl and looked with some degree of wisdom and foresight on the situation seems to disturb those who would have raided the nest. Canada has foreseen the danger in time, and intends to have her forest resources continue to contribute to the welfare of future generations of Canadians."—Can. Pulp & Paper Magazine.

The Forest Products Laboratories at Madison, developed from "clabber" (casein) taken from fine Wisconsin Jerseys a glue of remarkable adhesiveness. Woodblocks joined with it have held against ten days' soaking supplemented by twenty-four hours' boiling in water. The process is now available without cost of industry and enables any manufacturer of furniture to put together articles that will stand the test of any climate.

## ONTARIO'S NEXT MOVE.

The earliest recognition that timber land administration involved more than the scaling of timber and collection of dues, came in the form of organization to protect timber from fire. There came into existence in most of the provinces two separate staffs, one charged with protective and the other with administrative duties —the one idle in the winter and the other in the summer. This unbusiness-like arrangement has gradually disappeared in province after province, until now Ontario is the only province in which all the phases of timber land administration are not consolidated under one organization. Quebec was the first province to place the timber administration in technical hands, and to provide technical instruction for its staff. British Columbia followed, and within a year, New Brunswisk has reorganized its timber land administration under technical direction.—Dr. B. E. Fernow.

## FUTURE PROFITS.

In the coming years we are destined for an immense export trade in the direct and by-products of our forests. An immediate expansion of our timber preserving activities is, therefore, a matter of supreme necessity.—Belleville Intelligencer.



# SHOULD FIREWOOD BE SOLD BY WEIGHT, NOT BY CORD ?

The idea is advanced by the United States Forest Service that wood fuel should be sold by weight instead of by cord measure. The ground for this is that the heating value of wood depends not upon the bulk of the fuel but on its solid contents. We all know that firewood can be so piled that it will measure 128 cubic feet, yet if repiled in an honest way the pile will shrink to much less than that.

All persons know that it is the solid content of the wood that produces heat, not the water that may be sealed up in the sap vessels or the air in the crevices. Yet, in buying wood by measure, one must pay as much for these or for the air in the spaces between the sticks as for the solid fuel. It is further laid down that a pound of dry wood of one species has as much heating value as a pound of any other species, nearly or quite so. A little reflection will convince any one that this is most probably true. While a pound of dry sap wood may have as much heating value as a pound of heart wood it would fill a very much larger space. Of course the Forest Service has not advanced this idea without careful experiment, for it is not the custom of these scientific bodies to promulgate anything which is a mere notion founded on guess.

It would be doubtless inconvenient to weigh wood. But many a change once derided has since become an established system. It is a matter of history that the first man to raise

an umbrella on a rainy day in any civilized country was stoned by the populace, who looked upon the act as impious. The first dealer who arranges to weigh his wood, selling it by the ton or hundredweight, or fraction thereof, as coal is sold, and advertises the fact is likely to draw a great increase to his trade, if it were only for the novelty.

Though the idea of weighing firewood may seem preposterous to many we might as well become prepared for the changes that this rapid age brings about so quickly. Eggs will yet be sold by weight instead of by count, for it is well known that one dozen of large eggs will weight more than another of small ones, and will contain as much more food as the difference in weight indicates, or even more. Potatoes now are sold by weight in most cities. The tendency is to sell by weight many other things that now are generally sold by measure.

Measure is no just criterion of value. Weight is a certain indication of content. It is more honest, more just. Measure is neither, when the objects sold are many in number and various in size.

It must be conceded that a pound of green wood is of far less heating value than a pound of the seasoned fuel. But no one pays as much now for green wood as he does for dry. That is all a matter of custom or of economic regulation.—Florida Times-Union.

# CHOOSE ONLY STURDY TREES AS MEMORIALS

*("Forest Leaves," Pennsylvania.)*

Before you plant a tree be sure that it is adapted to your region. Some of our native spruce and also our balsam trees are very beautiful trees in the colder parts of our state, but in most of it they live long enough to become of respectable size and then begin to die. The white birch is also a tree of northern origin which of late years has become remarkable by its short life. It would be almost an insult to the memory of any one to plant a tree of such kind for a memorial.

Then on the other hand we know of white oaks five feet in diameter, and of red oaks as large; and of pin oaks and scarlet oaks almost as large—sturdy, symmetrical, impressive masses of life and beauty. Among the cone bearing evergreen trees is the Norway spruce, which in spite of its foreign origin, is actually likely to be more durable than any of our native evergreen trees. White pines, if planted, should be planted in masses, where in the struggle for light the main trunks will grow strong and tall. If the white pine is planted in the open it sends out long branches which are too weak to bear the weight of snow that falls upon them. Then, too, the white pine weevil and the pine blister rust threaten the pine.

Among the other trees we might suggest as suitable and fairly long lived are the black walnut, the beech and the sugar maple. The hickory trees have the borer to contend with and often die out in a neighborhood before its pesistent attacks. For the same reason the locust can no longer be regarded as suitable for memorable purposes.

## SEED SUPPLY PRECARIOUS.

Nursery planting in Canada has been greatly handicapped this year by difficulty in obtaining seed. Scotch pine seed was a failure in Europe last season and red and white pine was a failure in Canada.

**FOREST FIRES drive out population**

**A live forest means live jobs.**

**Therefore:—Put out your campfire, your match, your cigarette!**

*A shelter belt of poplar protecting the fruit trees on a large British Columbia farm.*

## THE NATIONAL FORESTS OF THE U.S.

There is in the National forests of the United States under the control of the Forest Service a total area of 160,193,996 acres. To this must be added those of Alaska, with an acreage of 26,748,850 acres, and of Porto Rica 65,950 acres, giving a total area reserved and controlled by the Forest Service of 187,006,796. Within some of these forests what are known as "National Monuments" are specially dedicated for the preservation of objects of historic or scientific interest. These "National Monuments" have a total area of 1,424,940 acres. Within the forests there are also certain National Game Preserves, and these also are dedicated specially by Acts of Congress for the protection of wild animals. These dedicated areas amount to 2,000,000 acres, the greater part of the area being in Arizona.

## ONE WAY TO START A FIRE.

Here's a simple way to start a fire without matches, flint, steel or sticks: Everyone knows how to start paper burning with a magnifying glass, well, that's just the trick, only use a front lense from your field glass. It will make a very strong glass and the brighter the sun the easier it is to start the fire. After your tinder

begins to smoke a little, blow on it and it will break into a flame very much sooner. You don't have to keep a big fire going all day in camp so as to have it ready to cook on at supper time, just keep a smouldering one and you can start it again very easily by fanning a little.

Almost all hunters nowadays carry field glasses and consider them an essential part of their outfit. They are invaluable for searching out and finding game, but it is well to know of another way in which they can be made to serve a useful purpose.

## *SHADE*

*By Theodosia Garrison.*

*The kindliest thing God ever made,*
*His hand of very healing laid*
*Upon a fevered world, is shade.*

*His glorious company of trees*
*Throw out their mantles, and on these*
*The dust-stained wanderer finds ease.*

*Green temples, closed against the beat*
*Of noontime's blinding glare and heat*
*Open to any pilgrim's feet.*

*The white road blisters in the sun;*
*Now half the weary journey done,*
*Enter and rest, O weary one!*

*And feel the dew of dawn still wet*
*Beneath thy feet, and so forget*
*The burning highway's ache and fret.*

*This is God's hospitality,*
*And whoso rests beneath a tree*
*Hath cause to thank Him gratefully.*

## TABLE OF CONTENTS FOR MAY, 1919.