

Canadian Forestry Journal

JUNE, 1916.

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Canadian Forestry Journal

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Military Demands on French Forest

Severe Cutting for Trench Purposes Creates Perplexing Problem for Government Forest Service

We gave some description recently of the destruction that has been wrought in the French forests by the artillery of the contending armies and of the suggested plans for reforestation after the war. There are some interesting notes in the "Revue des Eaux et Forests" in regard to cutting that is being done in the forests for the requirements of the French army, from which the following notes are taken:

Timber operations more and more important are being carried on in the Government forests for the needs of the army. After the smaller trees the finest trees of the stand are now being cut in several places. These operations are especially intensive in the forests situated at the front near the armies. The military authorities state that on account of the necessity of working rapidly and on account of the difficulty of transportation by railway they cannot go far for the wood which is required, and as the front changes very little the result is that the same forests are being constantly placed under contribution.

Military Needs Urgent.

The necessary consequence will be great lack of wood in certain regions of the north and east of France after the war, the more so because very probably the Germans will leave more or less completely ruined forests situated in the same region on the territory provisionally occupied by them. There is enough in that to disquiet and even to frighten those who while occupying themselves with the present situation are not disinterested in the fu-

ture. It is greatly to be desired that the armies should look for wood in the interior whenever they can so that the impoverishment may as much as possible be spread throughout the whole of France and not confined in large measure to the regions to the north and east already so terribly tried in other ways.

On the other hand, always under the necessity of haste, the operations carried out by the military parties have taken place often under more or less defective conditions. Evidently the rules of management and silviculture take second place in the present circumstances, but that is far from taking no account of them at all. There is nothing opposed to the cut being arranged according to the prearranged order of the rules for operations. However, it is often very difficult to reconcile the imperious demands of the army's needs which must evidently be given consideration before anything else, with operations satisfactory to the future of the forest. The military men think that the forester gives them wood that they want too parsimoniously. They do not think that if the French forests had not been administered with a wise foresight and with the object of conservation they would be far from being able to provide the heavy demands which are now imposed on them. In place of reproaching the foresters with being conservators, the military authorities ought rather to congratulate them on having been so.

The foresters who have the task of administering the forests at the present time fear that the military authorities ask very much more

wood than can be taken without compromising the future of the forests of which they have charge, and it must be recognized that some of the operations carried out by the army not only in the war zone where it is very difficult to limit the damage, but also in the interior zone, give some ground for these fears.

On the one hand, on account of the present circumstances great sacrifices have to be made. From this point of view France finds herself in the position of an individual who during long years has practised economy and who having to face extraordinary needs, imperious and urgent, sees himself in the absolute necessity either to take from his savings or to appeal to his neighbors. Who is there who in such conditions would hesitate to take from his savings the assistance which was necessary?

Precautions in Cutting

On the other hand, it is assuredly necessary to safeguard the future of

the French forests, the utility of which appears greater and even greater from the fact of this war. It is absolutely necessary for the operations to be carried out in each forest that the operators should be well acquainted with the treatment adopted, the management established, the object desired, and the rules and conditions which it is indispensable to apply to reach that object. No cut ought to be made, no tree ought to be taken if that would be harmful to the future of the forest. Any precautions that may be necessary to avoid compromising the future of that forest ought not to be neglected.

And it is not necessary to believe that it is absolutely impossible to reconcile these contrary interests. Thanks to the great reserves of material accumulated by the wise management and foresight of the foresters the French forests can furnish much wood without being obliged to sacrifice their future.

Saving the Settler from Cropless Lands

The opening up of non-agricultural lands to settlement has produced some of the most far-reaching and pitiful tragedies in the Dominion's history. Every province has communities which have been permitted to make the fatal error of a bad location. Their subsequent history is an unbroken line of bad crops, poverty, suffering and human demoralization. Too poor to move away, the farmer and his family resign themselves to a pitiful standard of living, giving their time and efforts for practically no return.

Every province and the Federal authorities have made such blunders in times past, nor is there satisfactory evidence that a general and complete reform has been brought about. Farmers still are allowed on Federal and Provincial "homesteads" which are impossible for field crops. The policy was, of

course, more the result of laxity in classification and not a deliberate effort to send settlers to useless lands. The laxness, however, is growing in public disfavor, and the tendency of all governments now is to protect the settler and to conserve rocky, sandy areas for their natural purpose of growing trees.

Several survey parties are engaged on soil examinations this summer, and such work is bound to achieve higher importance in the eyes of governments. One party, composed of Messrs. F. C. Nunnick, of the Commission of Conservation, and Walter Graham, of the Experimental Farm, Ottawa, are in New Brunswick co-operating with the Provincial Government in a scheme of land classification. The project deserves the hearty support of conservationists everywhere for the benefits are far from local.



Dying Bull Pine showing gum tubes of *Dendroctonus* on the bark
—Princeton, B. C.

Ravages of Insects in Canadian Forests

An Expert's Discussion of the Enormous Damage Annually Caused to Standing Timber and Logs

By J. M. Swaine,

In Charge of Forest Insect Investigation, Entomological Branch, Ottawa.

"The insect injury to Canadian Forests certainly amounts to many millions of dollars annually, probably varying between twenty-five and seventy-five millions."

Injuries by forest insects, through which trees are weakened or killed, logs are reduced in value or rendered unfit for use, and forest products ruined by boring grubs, are causing a very great annual loss in Canadian forests and to consumers of our forest products. All our forest areas are subject to such losses, although not all to a like degree.

It is impossible to make an exact or even very valuable estimate of the money value of the losses incurred in this way. Much of the injury occurs in northern or mountain areas, or other sections beyond the present boundaries of the timber limits, where the young growth is of more importance than mature timber. Timber killed by insects may enable fires to obtain great headway and thus contribute toward more extensive injuries. Serious injuries to reproduction are quite as important as the destruction of grown timber, but the money value of the loss can be estimated only very roughly. The majority of our fires, like extensive bark-beetle outbreaks, kill the timber without destroying or greatly injuring it for lumber. The lumber in these stand-

ing trees would be sound and good for many years, unless burned again, were it not for the insects, which almost immediately proceed to riddle the trunks with holes, and the parasitic fungi thereby given access to the inner layers of wood. The destructive agent in such cases is not the fire but the boring grub, and the prevention or quelling of ground fires is merely a very effective method of forest insect control. The outline to be given will make it plain that the annual loss in Canadian forests from insect injuries is very great. In American forests it has been estimated that "the amount of insect killed and damaged timber left in the woods, plus the reduction in value of that utilized to be charged to insects is not far from an equivalent of 10 per cent of the value of the annual output of forest products of all kinds in the rough." This would make the annual loss from insect depredations in United States forests approximately of the value of \$100,000,000.

Canada's Enormous Loss.

The insect injury to Canadian forests is probably somewhat less than

in the United States. We have not yet sufficient information to enable us to make any definite estimate of its value, but it certainly amounts to many millions of dollars annually, probably varying between twenty-five and seventy-five millions.

The most important insect enemies of Canadian forests may be considered under the following heads: Borers in trunks of living trees; Borers in logs and trunks of standing dead trees; Defoliating insects; Bark-beetles in living trees, and Borers infesting wood products. A few representatives of each group will be mentioned.

Borers in Living Trees.

The well-known Poplar Borer, *Saperda Calcarata*, is an excellent example of this group. Everywhere abundant, its large whitish grubs perforate the trunks of poplars with large irregular tunnels, thus weakening the trunk, checking the growth and admitting fungus spores to aid in the more rapid destruction of the tree. In some districts full-grown poplars are almost unknown. There is no method of control applicable under forest conditions.

The Locust Borer, *Cyllene robiniae*, is practically exterminating the locust trees in parts of Ontario. A block of these trees in the forest belt about the Central Experimental Farm at Ottawa is now practically destroyed by them.

The Western Cedar Borer, *Trachekele* sp., an enemy of British Columbia cedar, is the most important of our borers in living trees, when the value of the timber destroyed is considered. Although a closely related beetle has long been known in Washington and Oregon forests, this injury has only recently been reported from British Columbia. That it has been working there for many years we know. The grubs are found working only in living trees, and this summer Mr. Chrystal and I found its old tunnels in cedar logs which had been killed by fire

eighteen years ago. The grubs cut flat slightly winding, longitudinal tunnels through the heart wood or more rarely in the sap wood of the middle three-fourths or four-fifths of the trunk, usually working upwards end ending their tunnels in a pupal cell in the branches; a single tunnel was traced for forty feet. The tunnels seldom extend to the but end or to the extreme top and do not show at all upon the wood surface when the bark is removed, so that when the tree is felled and trimmed there is usually no evidence of any trouble, although the heart wood may be very thoroughly riddled with tunnels. Even when the timber is cut into logs or shingle bolts the injury is easily overlooked, for the tunnels are flat and filled with boring dust of the same color as the surrounding heart wood. We have never found the larvae in dead trees and only seldom in perfectly healthy trees; usually they occur in "dead-top" cedars. The habits of the beetles and the distribution of the injury in British Columbia are being carefully studied this summer.

These three examples will illustrate the type of injury caused by borers in living trees. Other injurious insects with somewhat similar habits infest both eastern and western forests.

Ruin of Valuable Logs.

Pine and spruce logs and standing trees, killed by fire or bark-beetles, are usually very badly riddled or destroyed for commercial purposes if left unprotected in the woods for two seasons, or even for one. The chief injury is caused by large whitish legless grubs, the young of large long-horned beetles belonging chiefly to the genus *Monohammus*. The grubs work in the wood for two seasons, going deepest and causing the most injury during the second season. An account of an example I saw last summer will illustrate very well this type of injury. On the north shore of Lesser Slave Lake



Back of Peachland, B. C. Black Pine Killed by Mountain Pine Beetle.

there are piled over two million feet of good white spruce logs in a series of immense piles. Two of these piles had been cut two and a half years previous to our visit and the remainder one and a half years, or two winters before. The outer layers of logs in the piles cut latest were infested with countless numbers of the grubs then boring actively and audibly from four to six inches below the surface. The large amount of fresh boring-dust from the tunnels and lying everywhere between the logs gave evidence of the destructive work going on beneath the bark. On the older piles the outer layers of logs were completely ruined by the tunnels of the grubs, which had penetrated the heart wood and often passed completely through the trunk. At the time of our visit—July, 1915—the grubs had completed their two year's growth, transformed to adult beetles and all emerged from the logs of these older piles. Hundreds of thousands of feet of excellent white spruce had already been destroyed by borers in those piles, and much further injury will be done if no effort is made to prevent it. The whole loss could

have been averted very simply by booming the logs in a nearby cove during the spring following the cut.

In the Wake of Fires.

Losses from these large boring grubs occur frequently in our spruce and pine limits, when logs are left behind in the woods. Fire-killed and wind-blown pine, spruce and balsam in our woods are usually attacked by these beetles and the timber rendered useless within two seasons following the fire or storm. Fire-killed standing trees would remain excellent timber for many years if not attacked by insects and fungi or swept by succeeding fires.

Ambrosia-beetles excavate round tunnels about the size of the lead in a lead pencil deep into the wood of both deciduous and coniferous trees. The walls of the tunnels are stained black by a fungus which always grows thereon. The loss in reduction of value is at times very important. The most destructive of these borers, because its tunnels extend deepest into the wood, is the Pacific Coast Timber-beetle, *Platypus wilsoni*, found in the coast region of British Columbia. It extends its

tunnels from eight to fourteen inches into the trunks, and occurs in countless numbers in logs of Douglas fir, western hemlock, lowland balsam and Sitka spruce. It attacks only weakened or dying trees and logs.

Defoliating Insects.

Among the best known of our forest insects are the defoliating or leaf-eating species; of these the larch saw-fly, the spruce bud-worm, and the tent caterpillars must be familiar to all, and illustrate the nature of the injury caused by insects of this sort. A few of these defoliating insects are very seriously destructive in our forests, and unfortunately we have no direct means of combating them on large areas. Nature controls them, in a longer or shorter time, by means of their parasitic enemies and weather conditions. We hope some day to be able to assist materially in this control, by the distribution of the parasites, smaller insects which prey upon the pests; and the Entomological Branch is studying these problems from that standpoint.

The Larch Sawfly, the most destructive of the group, has killed immense quantities of larch within the last generation, from Nova Scotia as far west as Northern Saskatchewan, and will evidently extend its ravages throughout the range of the eastern larch. The larvae feed upon the leaves, and when numerous entirely defoliate the trees, and eventually kill them. It does not yet occur on the western larch in British Columbia, although it feeds readily enough upon cultivated specimens of the western species in the Arboretum at Ottawa. The wide gap (nearly 600 miles) between the ranges of the eastern and western larches will be a safeguard to the latter species.

The Spruce Bud-worm, in its caterpillar stage, attacks the buds and later the leaves of spruce, balsam, Douglas fir, hemlock and larch. It is most noticed in spruce forests.

While it has been known to kill large numbers of trees, particularly balsam, its parasites usually effect control before very serious damage is done. This has been the history of the recent outbreak in the Quebec and Ontario woods. It is always to be feared that spruce weakened by the bud-worm will be attacked by destructive bark-beetles. For this reason, bud-worm weakened spruce should be watched during the seasons following a bud-worm attack, and if any considerable numbers of spruce are found dying in clumps or groups an investigation should be made at once.

Fire is, of course, our most serious enemy to forest reproduction. Squirrels eat each season countless numbers of seeds, and immense numbers of young trees are girdled and killed by rabbits and porcupines. A large amount of young black pine was killed in this way, apparently by rabbits, in the Jasper Park region during the winter of 1914-1915. In addition to these and other enemies, reproduction is seriously affected in many regions by injurious insects. Certain species of caterpillars, beetles and chalcids feed within the cones or seeds of pines, spruces, hemlock, balsams, larch and Douglas fir, and more or less completely destroy the seeds. Still other species feed upon the seeds of certain deciduous trees. The extent of this seed destruction sometimes assumes serious proportions, and its effect upon reproduction must at times be most important. Certain species of boring caterpillars are particularly injurious to young growth of pines by girdling and killing the branches and tops and destroying or killing the trees. The white pine weevil, *Pissodes strobi*, is a serious enemy to white pine reproduction in the east. The grubs of this species destroy the top or leader of young trees; the result is a "double-top" or at least a distorted trunk of little use for lumber.

(To be continued in July issue.)

Consumers Must Pay Higher For Canadian Wood Supplies

Pulp Mills Going Farther Afield For Their Raw Materials Will
Tax Canada's Spruce Resources

(By Cyril T. Young, In Charge of Ontario and Quebec Land and Timber
for the Canadian Northern Railway System.)

[The following article, prepared on request by Mr. Young, is a militant call for protection of our Canadian timberlands from every form of waste. Mr. Young has gained a close and accurate knowledge of the forest resources of Northern Ontario and Northern Quebec from Lake St. John through to the Manitoba boundary, and from the Ottawa River and the Great Lakes through to James Bay during his twenty-two years of field experience and subsequent contact with transportation interests.

If, as Mr. Young declares, the consumer must pay more for his paper and the paper mill must spend more cash on the raw supplies of pulpwood from the Canadian forests, then must follow a higher valuation on spruce and balsam and other pulp producing areas, rendering their protection and perpetuation a matter of greater urgency on governments and limit holders.—Editor.]

The same awakening is coming to us later on our pulp wood area as we received in our high-class white pine area a few years ago; and American mills are now going far afield for their wood, one rail haul delivery this winter being 846 miles, and quite frequently 700 miles. This is due not only to the constant erection of more mills but to the increase in the capacity of mills al-

ready erected on the American side. To date it has been the short log haul and easily driven timber and the 13 to 16c rate wood that is reaching these American mills. Supplementing this rail haul timber is the St. Lawrence and Anticosti wood which before the war was reaching points as far west as Erie on a \$2.00 per cord boat rate prior to the present scarcity of bottoms and also though a much less quantity of Nipigon, Port Arthur, Knife River wood reaching Erie ports at the same figure or towed to Ashland on Superior and getting into Green Bay section by rail haul from Ashland South.

Lake Shipping Scarce.

The European conflict has not only affected shipments of pulp from Norway, Sweden and Russia, but the removal of the bottoms from the Great Lakes for either Transatlantic or coastwise trade has resulted in making Great Lakes delivery of pulp wood practically impossible in cost, except to the mills who own their own vessels and their loading and in some cases discharging equipment. This is resulting in increased demands—very strong at the present time—for rail haul wood from settlers' lands and patent lands in Northern Ontario and Northern Quebec, which can be exported to the American mills, and

"I personally know large sections grossly over-estimated at forty-five cords to the acre that cannot possibly cut more than four to five cords to the acre on the average. Spruce mixed with pine is sometimes quite deceiving and certain pulp wood areas further south estimated at ten cords to the acre average are to-day actually cutting less than two cords to the acre."

when bottoms can be secured this applies to New Brunswick wood as well.

Export wood like timber must inevitably go higher, due to the scarcity of labor in Canada from enlistment and the demand from war industries which men find more congenial to home life than the woods employment affords. Added to this is the increased cost of provision, such as hogs live weight at \$12.00 per hundred, and sugar at \$10.00 per hundred wholesale, with no possible outlook than further advances in the provision market all round. Added to this is the increased and ever increasing cost of barking plants, saws, boilers, chain, rubber and leather belting, etc., several of which have gone up from 55 per cent. to over 100 per cent.

Increased Paper Prices.

The final solution does not lie in cheaper Canadian wood or decreased cost of transportation, but in increased paper prices during the period of the war, and as month after month passes without positive results, two or three or more years' war is not at all improbable. Canadian pulpwood operators selling to American mills are not now making any more money than heretofore and are taking immensely larger risks unwarranted by the profits obtainable. Personal friends of mine are operating all the way from the head of the lakes through to St. John and have made less money and some of them more debt within the past eighteen months than at any other period of their pulpwood operation. Many of the operators have had to close out entirely, and this is bad for the reason that in any business if the stream of consumable goods

is steady economic life goes on smoothly; if for any reason the stream is interrupted more or less serious consequences always ensue. Operators should go further in insisting on financial assistance from the buyers, for these mill owners know that there is no greater help to legitimate business than well regulated and easy flowing credit.

Forests Unlimited?

Nor is the quantity for future supply to these American mills up to 19c rate by any means unlimited. Most convincing, indeed, is a map showing the pulp concessions granted in Ontario and Quebec, and if to these could be added those that will likely yet be granted on five good pulp and paper mills sites remaining in the North the result would be more so. Mill sites to manufacture the wood growing north of the National Transcontinental are impossible except at Lac Seul and none on the Nelson on the Hudson Bay line. I might also possibly add one on the upper waters of the St. Maurice above La Tuque. All the other waters are flowing north and will not be intercepted by steel within a quarter of a century.

Looking away to the future because some of our Canadian mills are yet going to have to go as far afield for their wood as the American mills, who are rail hauling 600 miles, are doing to-day, it would be well here to state frankly that there is no commercial timber for a hundred miles south of the waters of James Bay on the territory known as the James Bay Basin.

Only Near River Banks.

Many Canadian and American mill men have the idea that because they are told spruce is growing on

the banks of the Albany, lower Matagami, Moose, Hurricanaw and Nottaway that Northern Ontario and Northern Quebec is all timber country. If they were to get out of a canoe and travel inland for days as I have done, not only below the last portages going down to James Bay, but away up on the rivers sometimes even south of the National Transcontinental, they would find merchantable timber does not exist back from the river banks. This is true of an immense area around Lake Mistassini, north and west of Lake St. John, where heavy fires have occurred, on across the Hurricanaw and Moose—on past Martin's Falls (the only fall in 300 miles of navigation on the Albany), and I understand from Indians on through Patrica to Port Nelson, for all this lowest bench of land is practically muskeg.

A Question of Accuracy.

It is all very well for reporters to turn up Departmental records of Northern exploration of 1910, showing 288,000,000 cords of spruce in the then explored section of Northern Ontario, but is it there out on the ground? It certainly is on the better sections of the Northern Clay Belt, such as Temiskaming, Abitibi and parts of Mattagami, Kapuskasing and Missinabi, but I personally know large sections grossly over-estimated at forty-five cords to the acre that cannot possibly cut more than four to five cords to the acre on the average. Spruce mixed with pine is sometimes quite deceiving, and certain pulp areas further south estimated at ten cords to the acre average are to-day actually cutting out less than two cords to the acre.

Returning to the immediate question and summarizing: Woods labor will be seriously acute by Nov. 1st—wholesalers refuse to even

guess where provision prices will reach—and equipment is proceeding skyward steadily.

Paper to Soar.

Before the termination of the war you will see "News" selling closer to \$40.00 N. Y. delivery than the \$25.00 now quoted, for even at present many of the mills have no reserve supply of wood, and everywhere the stock of "News" is getting very low, notwithstanding the fact that we are not yet in the low water period affecting the grinders and output. Our cheaper jack pine and poplar woods should be more utilized in Krafts and wrapping paper and then the logging of all timber together would cheapen spruce wood costs.

With South America, Asia and the entire Continent of Europe in urgent need of pulp and the public (with extra coin in their pockets from a false prosperity due to national loans) buying more war extras than they really require why should they not pay the cost of increased material—pulpwood?

Berthierville Nurseries

Under the direction of Mr. G. C. Piche, Chief Forester of Quebec, 400,000 trees have been shipped this year from the Quebec government nurseries at Berthierville. Of this number 250,000 were sold to the Laurentide Company Limited at Grand' Mère, 20,000 to the Riordan Pulp and Paper Co., 50,000 to the Perthuis Seignory (for the sixth year in succession) and the rest to colleges and private individuals.

"There is no commercial timber for a hundred miles south of the waters of James Bay on the territory known as the James Bay Basin."



An Avenue of Green Ash, fifteen years from the seed, on the ranch of Dixon Bros., Maple Creek, Sask.

The War and the Small Birds

(From "*Revue des Eaux et Forêts*")

It is with great pleasure that I have received from various regions of France news about the number of small birds. Especially in the east, in the west and in the southeast the birds are more numerous than in preceding years. The quail, so rare two years ago, has returned to some extent everywhere; they were pointed out to me in the neighborhood of Belfort, where they had not been seen for a long time. Partridges, thrushes, blackbirds are numerous; the starlings have become much more numerous. The fine swallows which defend us from mosquitoes are numerous, perhaps because they have not been able or did not wish to settle in the many

villages which have been destroyed in the north or the northeast.

However, most of the small birds have become familiar with war, as many species, like the pipit and the lark, are not afraid to settle on the firing line beside the batteries or the first line trenches, as the Count of Tristan pointed out to me at Nieuport. The greenfinches and the linnets, not having found bushes for their nests, have settled on the ground.

The war will thus have an appreciable influence on the increase of the small birds which eat insects and grain. This favorable situation is due:

(1) To the absence of hunters.

(2) To the absence of poachers.

(3) To the numerous places of refuge which are offered by the badly cultivated or uncultivated fields. Thus in the south on account of the scarcity of farm workers who are all mobilized the grape vines have become vertiable bushes. The birds are not being disturbed in their mating and the rearing of their broods by farming and especially by copper sulphite treatment of the soil have made of these vines real breeding places.

In other places various delays in

the farm work have saved many a brood.

(4) The boys, being employed at work in the fields, no longer employ their holidays in wandering into the commons and the woods to dislodge the birds from their nests.

(5) The high price of food has in the villages reduced greatly the number of dogs. As we know these animals scour the country all day destroying many nests. A correspondent tells me that he now hears but rarely the barking of dogs wandering far from the villages.

New Fire Laws for the Prairies

The Provinces of Manitoba, Saskatchewan and Alberta have now brought into force "acts for the prevention and suppression of fires." The design of the acts in the two latter provinces are practically identical and in their general outlines agree with the legislation of Manitoba.

The Manitoba Act, however, appears to have a closer application to the question of fires set on the borders of Reserves which frequently do heavy damage to timber growth. A ranger on a lookout tower in one of the Manitoba Reserves counted no less than 38 fires in progress at one time, and all were within striking distance of the timber area.

Under the Manitoba Act, as recently amended, a municipality must appoint three fire guardians. These officers are made responsible for the investigation of conflagrations of all kinds, and the municipality is bound to apply adequate penalties to guilty parties. A Provincial Fire Commissioner, Mr. Lindback, has wide powers under the Act.

Such a law should result in better protection for the reserves against fires working in from set-

tlers' lands. Heretofore the rangers have had no legal recourse even with evidence of flagrant carelessness in land clearing operations. Now it will be obligatory upon the municipality to control its fires and to answer for damage done to all forms of property, forests included.

The Acts of Alberta and Saskatchewan do not appear to go as far as the Manitoba Act in placing the onus of blame on municipalities in which a fire originates. The secretary-treasurer of the municipality is made the responsible local officer under the Provincial Fire Commissioner. Section 7 of the Alberta Act, however, should bring forest fires within the purview of the Act:

"The local assistants of the Fire Commissioner shall investigate or cause to be investigated in a general way the cause, origin and circumstances of every fire occurring within the limits of their respective jurisdictions by which property has been destroyed or damaged with a special view to ascertaining whether such fire was the result of negligence, carelessness, accident or design."

Clause 2: "Such investigation shall be begun within three days not including Sunday of the occurrence of the fire."

Canadian Woodsmen Interest the English

London, June 10.—The timber problem supplies a very interesting sidelight on the war. It is being dealt with speedily and efficiently, and very shortly the expert Canadian lumbermen who are over here engaged in the scientific method of thinning out certain of our most famous woodlands and hewing and shaping the timber for immediate use will be working at full pressure. To get to work in earnest they are only waiting the arrival of their milling machinery.

At present they are marking down and surveying certain tracts of forest land, "blazing" the trees—mainly the soft wood trees of pine and fir—and so arranging their scheme of attack that the beauties of our rural scenes shall not be unnecessarily marred.

Yesterday afternoon, in the course of a long walk through the beautiful Forest of —, certain parts of which have been earmarked for slaughter, a Daily Mail representative met a little party of pioneers surveying.

Soldier-Trappers.

They were brown, lithe woodsmen—half-soldiers, half trapper, and wholly romantic. They were diagnosing the cases of certain tall, feathery-topped pines very much as a doctor deals with his patient, and jotting down their calculations in a charted case-book. Already behind them could be heard the battle-music of saw and axe, broken into now and again by the sudden scream of the steam-driven "circular." Sundry gaps appeared now and again in the dark line of foliage—each gap meant the fall of a giant, and no giant has ever been dismembered so speedily as he. Half an hour ago a king of the glade, he was now a neat pile of railway sleepers ready for the track.

"If we had all our tackle here," said one of the pioneers, "I guess we'd be able to turn you out a complete box of matches from the waste product of that tree—and do it while you wait!"

This soft-voiced, keen-eyed young man seemed to know everything there is to know about the trees and the forests of the inhabited globe, and how to make the best use of them. "You in Great Britain have over two and a half million acres of forest," he said, "and as a war-time asset trees and their product are so much fine gold—properly handled.

Valuable By-products.

"Apart from the timber proper, which is so much in demand for military purposes, the by-products are extremely valuable. In ordinary times the Austrian forests produce between four and five million hundredweights of tanning bark alone. Then there are very large quantities of turpentine and potash and gallnuts 'extracted' from the trees as well.

"In France the term of maturity for cutting the forests is determined by a committee of skilled officers and divided up into so many years, with each series of years representing so many blocks of forest to be felled. The annual cutting is so arranged as to cover a certain extent of ground, so that when one block is felled another reaches maturity."

Gold Mine in Wood.

Our Canadian visitors are struck at the richness and the beauty of our own magnificent stretches of forest. The English Crown woods alone cover about 125,000 acres, with the standing timber valued at anything between two and three million pounds.

A Day in a Dutch Forest

By H. R. MacMillan, Chief Forester of British Columbia, Read
Before B. C. Forest Club, Victoria



H. R. MacMillan

Holland was originally heavily forested, chiefly with oak forests. Through wars, careless cutting, fire and pressure of population, the forest was gradually cleared away. Large areas of land when denuded of trees proved unsuitable for agriculture, and for hundreds of years lay unproductive in the form of sand dunes along the coast of the North Sea, on the islands and the Interior district of Arnhem, near the German border; or where the land, though sandy, was too level and too poorly drained to form dunes, it became known as heath. At the present time there are in Holland 1,272,403 acres of heath.

The land, forest and otherwise, as elsewhere in Europe, has passed through various ownerships which have profoundly affected its present forest condition. In very early times title was vested in "marks" under a German system of community ownership. Dutch villages in Noord Brabant (152,000 acres) and in Limburg (98,664 acres) still own forest and heath land which they acquired in 1462 from the French King who had before that time usurped the ownership of the marks. The ownership by marks and French kings gradually merged in ownership by the Counts of Holland, and by smaller owners who acquired forest and heath domain from time to time. The land in the possession of the Counts of Holland was in 1813 taken over by the state. The area of the state land, forest and heath, in the forest districts now is 59,746 acres.

Forest management of a kind began on some of these forests at a very early date. The area which I visited near Breda, extending to the Belgian frontier, where on the day of my visit the roar of the cannon could be heard, first received silvicultural attention in 1514, when Count Hendrik von Warsaw (whose city fell to his German compatriots on the day of my visit) seeded the sandy heath with Scotspine and the loamier soils with oak, forming a forest which still exists. In a similar manner, with but little plan until the eighteenth century, land was seeded by various owners throughout Holland and fine forests created, which have, without any soil cover, greatly exhausted the soil.

Though the state took over the ownership of the forest lands in 1813, but little advance was made in their management. Until about 1840 a policy was followed by planting oak in pure stands three to four yards apart for timber production in a rotation of 140 years. Then in 1840, according

to the present Forest Service, this policy was changed for the worse by planting oak eight to twelve yards apart and underplanting with beech, oak, chestnut and ash for coppice, a system which produced poor oak timber and impoverished the soil.

Initiation of a Forestry System.

Previous to 1890 there was no technical service in charge of Holland's forest lands, the administration being in the hands of the Land's Department officials. In that year an official of the Colonial Forest Service in Java was placed in charge of the Dutch Forest administration and an organization created which still exists. A branch of the agricultural department was created, known as the "Staatsbosch beheer," and charged with the administration of state forests and heath lands. The head of the service is known as the inspector of state forests and plantations. The headquarters of the organization are at Utrecht. The country is divided into Houtriesterij (forest districts). In charge of each district is a Houtriester or district forester. The composition of a forest district is well shown by the one which I visited. This district, the best timbered of any in Holland, was made up of five forests, each an administrative unit known as a Boschwachterij, and in charge of a Boschwachter or permanent ranger.

So well have these districts been mapped that in all official tables the area is given in hectares to the fourth decimal place, a feature of intensive administration which profoundly impressed the visitor from British Columbia.

The Houtriesters in charge of the five districts are foresters who were trained in the Dutch school of agriculture and horticulture, and later at Munich. The Boschwachters are strangely, for a country where the work is so intensive, are not encouraged to take any special training, and are not expected to secure promotion to the position of Houtriester. In order that the Dutch and Colonial supply of trained men may be developed a state forest school has been opened at Wageninigen in connection with the state school of agriculture and forestry, where a course is given, two years at the school and one year working on a Dutch forest under a Houtriester. The graduates are employed chiefly in the Dutch colonies.

When I arranged to visit the Dutch forest near Breda, I selected this particular district because the Houtriester spoke English. It was impossible to mistake him when I arrived at the station. A green felt hunting cap surrounded by two green cords ending in a tassel, the brim turned jauntily up; a dark green uniform, the coat double-breasted, buttoning tight and overlapping in front from one shoulder to the other with green corded epaulettes and two rows of darkened brass buttons down the front bearing in relief the Lion of the Netherlands, green riding breeches and black leather leggings. These were the markings of a forester who spoke excellent English, and as soon as I landed asked if I knew Overton Price, with whom he had studied a year at Munich in 1898.

A Multiplicity of Forest Roads.

We embarked in a taxicab for the inspection of the forest. When there are no visitors along, the customary mode of travel is on a bicycle. The roads are as level as they must be in a forest district where there are only two contours, one for ten yards and the other for 15 yards above sea level. Whether or not because they are valuable chiefly for military purposes, the roads are all paved with granite sets. We visited first the Liesbosch, an oak forest existent since 1500.

The first feature which struck me was the very great number of roads. Nearly ten per cent. of the area is in roads. A plan of the forest looks like a city map. The roads are placed in all Dutch forests, 130 yards apart, both for purposes of fire protection and to reduce to a minimum the cost of removing the thinnings. The characteristic of the Liesbosch is that 400 years of growing oak both as standards and as coppice with practically no underplanting for soil cover has robbed the soil of all humus. Therefore, since the administration was started in 1890 the policy has been to make the improvement of the soil the first consideration.

The Forester has two classes of oak forest to deal with:—

- (1) The pure stands planted before 1840.
- (2) The coppice with standards planted since 1840.

The pure oak (*Q. pedunculata*) stands planted before 1840 are very open and the soil is unprotected and devoid of humus. These stands are being underplanted with beech and chestnut, which greatly add to the humus, and in a few years visibly affect the rate of height growth in the oak standards.

The coppice forests are being converted to high forest as quickly as possible by cutting out the coppice and holding over the most promising trees for the production of standards. As a result of this policy, since 1890 a comparatively large area of coppice has been converted to oak standards. It is interesting to note that the forests, which under French influence in Holland two to three generations ago were converted to coppice, are now under German influence being converted from coppice to standards. The Dutch are following in forestry the German practise very closely.

The prices received for oak timber are so high that there is no inclination on the part of the Dutch foresters to change the composition of their oak forests. The oak is cut at 140 years when 500 to 600 cubic feet per acre is the average production. The timber is sold in stump for \$0.34 to \$0.35 per cubic foot, and everything is measured. If the timber is very straight and suitable for piling in the canals and harbors \$0.50 or more is secured. The coppice or underplanting is cut and sold the year before the oak is to be cut. This also is sold. Small stuff 3 to 4 inches in diameter selling for \$0.22 to \$0.29 per cubic foot. Oak is greatly valued because of the use of the bark for tanning. After the timber has been cut and the stumps dug out and sold, a crop of lupine, followed by a crop of rye, is grown to enrich the soil. Then the ground is planted again with oak in mixture with beech and elm, the intention being that a pure stand of oak will be produced with an understorey of shading and humus producing trees. The Liesbosch of less than 497 acres of forest is managed on a sustained annual yield basis. The net annual revenue is \$4.85 per acre.

A Scotch Pine Stand Described.

The other important forest in the district of the Maasbosch is almost wholly Scots pine, in very bad condition through having grown a pure open stand of Scotch pine without any understorey in soil protection for hundreds of years. The problem here is also to improve the soil and thus improve the yield. This forest of 1086 acres is divided by roads into 250 small tracts, in each of which the age and natural condition is different. The contents and rate of growth of the forest have been carefully measured, and of the 58,245 cubic feet that are produced each year, 54,715 cubic feet are cut. The timber to be cut is taken each year from the section of the forest that is in poorest condition. The tracts cut vary in age from 100 to 120 years. The stand is so very open that the soil, which is sandy, has become covered with berries and heath. The forester sells this heath

to the farmers for cattle bedding for an average of \$4.83 per acre, sometimes as high as \$19.43 per acre, the farmer buying it "on the stump," so to speak, and removing it himself. Then the pine forest is underplanted with oak, *Q. rubia* being used where the soil is poor, and *Q. pedunculata* where the soil is good. The underplanting has a magical effect on the thriftiness and rate of height growth of the Scotch pine.

The stands of Scotch pine in the Maasbosch are exactly similar in appearance to the lodgepole in the plateau south of the Chilcotin River. (What our lodgepole needs undoubtedly is thinning and underplanting.)

The Scotspine is sold on the stump for \$0.15 per cubic foot on the volume estimated by the forester while the tree is standing, a volume which includes trunk, limbs and leaves no stump. As soon as the timber is cut a new plantation of Scotspine and oak or elm is started.

Damage to Shade Trees

A case of much interest to the property owners of Ontario was recently decided at Omemee, Ont., relating to the rights of property owners in the trees on the highway adjoining their premises. The tree in question was in front of the residence of Mrs. Edward, mother of Mr. Jas. Edward, divisional freight agent of the G. T. R. at Ottawa. A neighbor complained to the town council that the tree had grown so large as to injure the draught of his chimney. The council without investigation ordered one of its employees to trim the tree. Mrs. Edward sued the municipality for damages. The case was heard by Judge McMillan who awarded the plaintiff \$15 and costs, by the terms of the Municipal Act, Section 487. The judge contended that ten days' notice should have been given to the plaintiff.

Another instructive case came before the Ottawa Police Magistrate recently. A teamster damaged a city shade tree by wilfully backing his wagon against it. It was one of the first cases of the sort to be heard in Ottawa. The magistrate decided that an example should be made and he sentenced the driver to pay a fine of \$5 and \$2 costs or one week in jail.

These decisions are interesting to those who are suffering from damage done to trees by corporation employees, linemen and others.

Stringent Administration

It is interesting to study the lengths to which Governments in European countries go in the way of interfering with property rights of the individual for the benefit of the community. In Denmark, for instance, the purchase of any forest area, however small, by no means carries the right to administer it in accordance with the plans and desires of the new owner. Until he has been the registered owner of such an area for ten consecutive years, he is not permitted to cut down a tree without authority of the Minister of the Interior. The other day, an owner was fined a considerable amount for having done so in ignorance of the law on the subject. We have much to learn in this West of ours as to what price the individual must pay to promote "the greatest good for the greatest number." And this, we presume, is the object of all administration.—"Farm and Ranch Review" of Calgary.

From a Paper Manufacturer

Secretary Canadian Forestry Assoc.
"I enclose \$10 to help along the publication of some of your work in French."

Maine's Appropriation

The state of Maine makes an annual appropriation of \$71,400 for forestry work. Of this, \$69,400 is expended on fire protection, \$1,000 on nurseries and reforestation work, and the balance on investigations and publications.

In Massachusetts, the annual forestry appropriation is \$83,000, of which \$33,000 is for fire protection, \$10,000 for nurseries and reforestation work, and \$20,000 for the purchase and maintenance of state forests. The remainder, \$20,000, is expended for administration, publications and investigation.

Captain Herchmer Wounded

Captain Lawrence Gerald Herchmer, son of Mr. F. K. Herchmer, district inspector of forest reserves for Manitoba, who is with a battalion of Highlanders from Winnipeg, was wounded on the 29th April, by a compound fracture of the lower jaw. The setting was done on the 4th May and by the 9th he was reported to be out of danger and doing well.

Our Forestry Battalion

So pleased is the War Office with the work of the Forestry battalion under Lt. Col. Alex. Macdougall that Canada has been asked to send two thousand more lumbermen.

The 1,500 men who have gone are engaged in cutting down the forests in Great Britain to supply the shortage of lumber.

The new battalion will be under the command of Lt. Col. J. B. White of Montreal, a director of the Canadian Forestry Association, who is now in England. The organization will be done by Lieut. J. W. Hughson of the firm of Gilmour & Hughson.

The equipment of the Canadian Foresters is so well liked by the British government that it has decided to equip English forestry battalions in a similar manner.

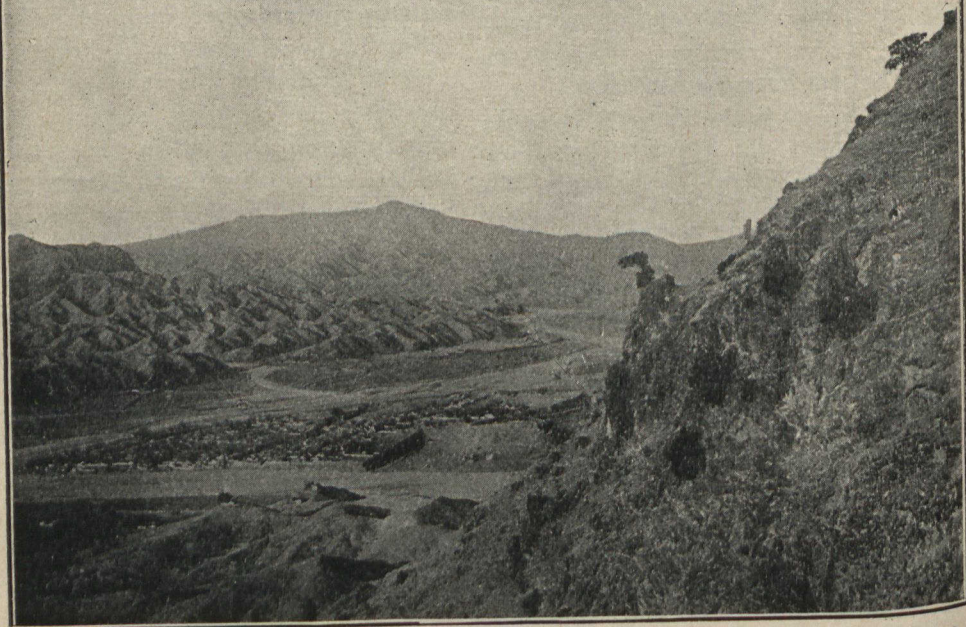
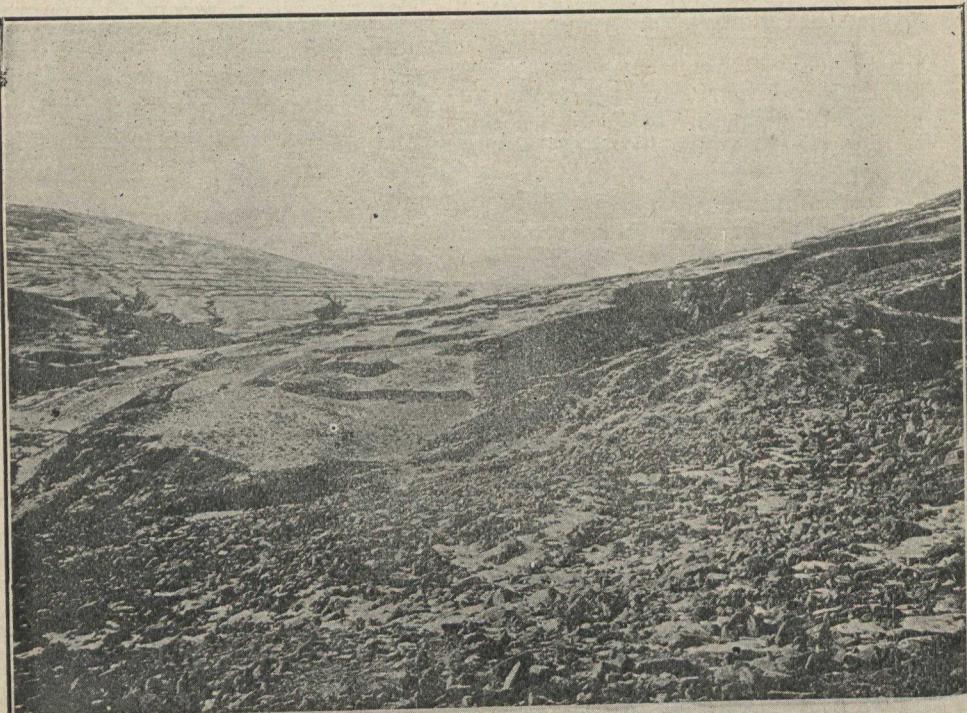
Canadian Timber Values

According to a recent Commerce Report the values of the various classes of timber produced in Canada in 1914, together with the values of the forest products, total \$176,672,000, being divided as follows: Lumber, lath and shingles, \$67,500,000; fire wood, \$60,500,000; pulpwood, \$15,500,000; posts and rails, \$9,500,000; cross ties, \$9,000,000; square timber exported, \$400,000; cooperage, \$1,900,000; poles, \$700,000; logs exported, \$850,000; tanning material, \$22,000; round mining timbers, \$500,000; miscellaneous exports, \$300,000; miscellaneous products, \$10,000,000.

Prairie Lumber Industry

Although the prairie provinces are usually associated with but one pursuit, namely, farming, the forested portions give rise to a lumbering industry of importance, and, while inferior in development to those of British Columbia or the eastern provinces, are of great value to the immigrant settlement in the west. In 1913 some 188 mills in Manitoba, Saskatchewan and Alberta sawed approximately 250 million feet of lumber, valued at the point of manufacture at over \$4,260,000. Of this quantity, Saskatchewan forest produced approximately two-thirds. Alberta one-fifth, and Manitoba the balance. The prairie market consumes about 1,434 million feet of lumber annually. Over one-half of this comes from British Columbia (in part from the Railway Belt portion), and the remainder is supplied from northwestern Ontario, the United States, and the home forests. —Forest protection in Canada, 1913.

How China Pays the Penalty



Photographs taken in desolated parts of China. Top picture shows effects of recent erosion as a result of deforestation about three miles from Tsa Pu, Wu Tai District, Shansi. Lower picture was taken in the valley of the Sha Ho with the town of Tou-Ping and distant Granite-Gneiss Mountains, Chili Province, China.

China's Policy of Forest Wrecking

Indifferent to the Striking Success of Japan's Korea Possessions
in Reforesting Barren Lands

The Hong Kong Weekly Press in printing a detailed notice of Mr. N. Shaw's "Chinese Forest Trees and Timber Supply" says:

"One rises from a perusal of this work with a feeling of positive disgust at the foolish neglect by the Chinese of trees, which is slowly but surely ruining one of the fairest regions in the world. The North-West is gone, and the North is going." Then, almost immediately afterwards, we read, in the review of the annual report on Chosen, an account of what Japan is already doing in her newly-acquired territory, and our disgust is deepened. "With a view to stimulating in the people an interest in or love of afforestation, the government-general, selecting the anniversary of the demise of the First Emperor of Japan as Arbor-day, has caused, since the annexation, a universal plantation to be carried out on that day, the first time being April 3rd, 1911. The first Arbor-day was held under the auspices of the Governor-General in the government grounds on the slopes of Nansan, while the civil governor conducted plantations on a mountain in Keijo on the second and third Arbor-days. Arbor-day arouses much interest in the people in general, especially in the school children. While 4,650,000 trees were planted on the first Arbor-day, over 10,160,000 trees were planted on the second Arbor-day, April 3rd, 1912." Could anything be a greater contrast than the state of things existing, so to speak, next door, where, according to Mr. Bourne, the only effort made in the direction of afforestation is that "Wood is usually

planted round graves and is usually cut and sold by a spendthrift son."

These quotations speak sufficiently for themselves, if, indeed, there is any need of demonstrating the desirability of afforestation in China and the possibilities that would lie before any well-designed plan to that end. This being so, why is it that the Chinese, who always have an eye to the main chance, have suffered so valuable an asset as a huge timber supply not merely to be neglected but in many cases to be deliberately destroyed? China's timber crop ought to be a very paying thing, and afforestation and lumbering are industries which are quite within the capabilities of the Chinese themselves. The mining industry is hampered and stifled principally because it is feared that its development would give foreigners too great an influence in the interior, but this argument does not apply to the timber trade, which could be developed to a considerable degree, if not to its fullest extent, by the Chinese themselves. Probably the two principal reasons which prevent anything being done in this direction are lack of roads and the unsettled condition of the country districts. Speaking roughly, all the accessible land in China is cultivated and is under crops which yield a much quicker and, in the long run, a larger return than timber; but if timber has to be grown in the inaccessible spots, how is it to be brought to market without roads of some sort? As a matter of fact, China's only large forests are all in remote places difficult of access, and probably it is to that reason alone that they owe

their existence, though unfortunately the same reason deprives them of the greater part of their usefulness. The timber supply of Hainan Island has hardly been touched yet; the interior of the island abounds in valuable woods, but there is no means of bringing the logs to the coast. The forest belts of South-East Tibet and Western Szechuan, and of the interior of Fokien, can only be turned to account where water communication is handy, and as practically no effort is made to replace the trees that are felled, the indications are that in process of time the wooded area will be driven so far back from the rivers that it will be useless. There are, however, many parts of China that are now absolutely bare where timber could profitably be grown, i.e., along very large stretches of the Kwangtung littoral, where the conditions are identical with those of the New Territory. Referring to these regions, and particularly to the Hakka country, a Kew Bulletin says, "There are few places in the world where good coniferous timber will grow more easily or more quickly than in certain parts of South China." As a matter of fact, pine plantations are often seen in those sections, but the trees rarely attain timber-producing size, or even exceed five or six feet in height. By the time they are big enough for firewood, they suffer from the depredations of the villagers on all sides: it is always found necessary in China to have watchmen to protect growing crops at night, but for a plantation of trees, the services of these men would not be confined to the few days when the crop was ripening, but would be a standing expense until the trees were ready to be thrown. In these circumstances, it is no wonder that hardly any Chinese show practical enthusiasm for the afforestation of their barren hillsides, and we fear that in spite of the excellent example Japan is setting her in Korea, the development of China's potential re-

sources in this respect will not be the fruit of a well-laid design and of concerted measures, but will be evolved gradually *pari passu* with the advance in other directions, especially in the development of her internal communications and in the greater security of the rural districts.

A Note to a Guide

Dear Tom-o'-Woods, good day to you!

I take a pen to say to you,
I'd like to run away to you—

A city is a jail.

I loathe the walls that block us in,
The foolish rags they frock us in;
I want to wear a moccasin

And feel the mossy trail—

To watch the forest shimmering,
The morning kettle simmering,
To know the flash and glimmering
That dipping paddles make,
To taste the breath of June again,
To hear the calling loon again,
To see the mirrored moon again
Within a dreaming lake.

A brook's clear laugh is haunting
me,

A squirrel's chirr is taunting me;
I know the hills are wanting me—

The hills I long to roam.

Then fill a pack or two for me—
Oh, anything will do for me—

And patch the old canoe for me;
Your boy is coming home.

—Arthur Guiterman.

From a Firm of General Merchants

Maple Creek, Sask.

"We enclose renewal subscription for 1916. We know that you are doing a grand work and deserve much stronger support than you are receiving."

Newfoundland's Tragic Timber Losses

Sir Daniel Morris Asserts That Forest Fires in the Colony Cost Over \$5,000,000 Yearly

Speaking at a meeting of the Royal Society of Arts in London recently, Sir Daniel Morris said that the timbered areas of Newfoundland were generally found in the valleys of the larger rivers, and on the banks of the lakes and ponds. In many cases they were confined to strips from one to two miles wide. There were about six and a half million acres of wooded lands in the Colony. All the known timbered areas in Newfoundland, except those lying within the three-mile limit of the shore reserved by the government, were held under licence by private parties or by companies. The conditions under which these licences were issued gave the holder the right to cut timber for a term of ninety-nine years on payment of an annual rental of two dollars per square mile. In addition, there was a royalty of fifty cents per M feet B. M. payable on all timber cut on the area, except such as was manufactured into pulp or paper. In the production of sawn or manufactured lumber there were a dozen large mills in Newfoundland, and ten times as many small ones producing cooperage stock, barrels, shingles, and laths. The annual value of the output was estimated at £120,000. In 1906-7 the value of the exports of sawn lumber reached a total of £65,000; but this had since fallen off, due, it was thought, to increasing local requirements. Water power was abundant, and leases were granted by government for terms of years of the right to use the waters

of any river for driving machinery, on payment of a rent and subject to a fine of £100 for each offence of introducing sawdust or other deleterious matter into the water.

The spruce lumber was of exceptional quality. It was used locally for general building purposes and for ship and boat building, and in the case of the smaller logs it provided a very superior material for manufacture into paper pulp. A very small proportion of the birch timber was utilised, the principal uses being the construction of the under-water parts of the hulls of cruisers and for wharf piles, as the wood was found to last better than most others under such conditions. It was used for various other purposes, among others, that of the manufacture of furniture.

The smaller timber of Newfoundland was chiefly used for the manufacture of paper pulp, but since the outbreak of the war there had been a considerable export of pitprops to this country. An inquiry had been made by experts into the cost of supplying pitprops to this market, and one of these experts had expressed the opinion that the cost need not exceed that of pitprops coming from the Baltic.

Sir Daniel said that very little seemed to be known in this country about the flora of Newfoundland! no one seemed to have devoted themselves to the subject, and he gave a long list of the forest trees which grow there. Besides the black spruce and the

birch already spoken of, he mentioned among others the white pine, the balsam fir, the tamarack, the sugar maple, the black ash, and the American elm. Several of these, he said, produced valuable woods useful for a variety of purposes. Forest fires were the cause of a loss to the Colony estimated at from £1,000,000 to £2,000,000 annually; they were very largely due to sparks from railway engines. Once an area was cleared, reforestation took from thirty to fifty years. Jutting out as it did into the Atlantic, Newfoundland was much nearer the Mother Country than most people realised.

In the course of an interesting discussion that followed, Sir William Macgregor, a recent governor of Newfoundland, who presided, said that in addition to the forest reserves in the island itself, there was a considerable area, perhaps 10,000 or 12,000 square miles, in the southern part of Labrador. The trees were practically all of the same kind as in Newfoundland, and there was not so much difference in the rate of growth as might be expected. The Labrador forests did not suffer from fires to the same extent as did those of Newfoundland, and one result of this was a much higher proportion of coniferous trees; for it was found that a fire not only destroyed the standing trees of these species, but it destroyed the seeds also, with the result that the first growth after a fire was not of pine or spruce, but of the less valuable birch. He had read recently that a spark arrester had been invented which was efficient and cheap. The difficulty in the past had been that if the meshes of a spark arrester were sufficiently fine to stop sparks, ventilation was stopped also, and it was very difficult to get up the heat necessary to develop steam. As to reforestation, it was a melancholy fact that the British peoples did not anywhere seem to appreciate its importance.

Lord Northcliffe said that very few people had crossed the island in more than one direction. Had it been in the hands of the Germans, it would have been long ago exploited.

Mr. Alfred Reed (of the Albert Reed Company) said that in spite of many good points, the native Newfoundlander had one defect—he was extraordinarily deficient in any appreciation of the value of standing timber, and would cut down a large tree to use a very small part of it, although he could get what he wanted from a much smaller tree not far away. Another thing was that it was very difficult to get them to settle down to any kind of industrial labor. The last time he was at the mills he was told by the superintendent that practically every man except the foreman and leading hands had worked, taken his leave, and come back at least three times.

English Forest Areas

Many Canadians who have not visited Great Britain suppose that there is little woodland in the old country, and it is natural to think of the United Kingdom as cleared of timber and cultivated like a garden.

In England and Wales, according to a recent report of the forestry branches of the British Government, there are nearly 2,000,000 acres of forest, and large areas of uncultivated land on which it is the intention to cultivate a growth of timber. There are, it is estimated, 2,500,000 acres of afforestable land in England and Wales.

Of course most of the British forests are held for park and estate purposes. The area of crown forests in England and Wales is only 65,766 acres, made up mostly of the historical estates of the crown.

What is a Forester?

(By Frederick Olmstead, Consulting Forester, San Francisco.)

At the meeting of the Society of American Foresters in San Francisco last October George M. Cornwall, editor of *The Lumberman*, read a paper on "The Forester's Duty Toward Lumbering" and the writer discussed "The Lumberman's Duty Toward Forestry." It seems to me that these two discussions deserve more than passing remark, mainly because of the different points of view advanced by the lumberman and the forester as to what constitutes the duty of the one to the other. Let me state that I do not assume to represent the opinion of all foresters on this subject, nor, perhaps, would Mr. Cornwall care to assume such a responsibility for all lumbermen. Nevertheless, owing to the national character and importance of the meeting before which the papers were read the two divergent views should command more or less attention.

Briefly put, Mr. Cornwall's idea of the forester's duty toward lumbering was that he should specialize in such problems as over-production and under-consumption in the lumber trade; the purchasing power of farm tenants; the replacement of wood by cement and other materials; the utilization of by-products for pulp; the manufacture of wood for paving, excelsior and many other things; the elimination of waste in sawing at the mill; constructive advertising of wood, and the business of distributing and selling forest products.

Work for the Lumbermen.

This is not forestry, nor are the men engaged in such work foresters. I admit that these problems are of vital importance to the lumberman's business and that they should be studied and solved, possibly to a large extent by the lumbermen themselves. I suggest, however,

that such problems are not essential parts of the forester's profession and that they may best be attacked and settled by experts other than the forester.

As his name implies, the forester's work is in the forest. He is concerned in measuring the amount, kind, quality and value of growing timber, and in determining and applying methods for its protection; in mapping the land to show how the various bodies of trees are located and how they may best be cut and removed; and, where conditions warrant, in designing and putting into practice such cutting methods as will make present operations profitable while leaving the lands timber-productive. His highest duty and most difficult work is this problem of using a natural resource without destroying it. It is odd, incidentally, that this problem has so far made but a slight impression on the lumberman; he has not only generally overlooked the possible advantage to himself in cases where he intends to hold his logged-off lands, but has also failed to realize that the state, when it begins to acquire for itself lands best suited to tree growth, will acquire first, and pay highest for, those lands which have been kept producing timber, not those which have been turned into non-productive wastes.

Logging and Forestry.

Mr. Cornwall stated that "a knowledge of logging engineering is the basis of true forestry." I should put it otherwise. Logging engineering is an incident to, not the basis of, true forestry. It is essentially civil and mechanical engineering and has to do, for the most part, with mechanical devices for the transportation of logs to cars and mill. Of this, to be sure, the forester should

have a general knowledge. A part of logging engineering—the determination and detailed analysis of logging units—is true forestry; but a forester can no more pretend to be an expert in civil and mechanical engineering than an engineer can assume to be an expert in forestry. When the forester's plans involve technical details of railroad construction or the installation of logging apparatus nicely suited to given conditions it is manifestly wiser to instruct the practical solution of these matters to men trained in the profession of civil or mechanical engineering.

One who specializes in the advertising of lumber or in problems connected with the distribution and sale of lumber is an advertising or traffic expert or a lumber salesman. He is not a forester. When the forester enters such work he leaves the profession of forestry and adopts advertising or salesmanship as a business. One who specializes in the preservative treatment of wood, or in the mechanical strength of wood, is an expert in chemistry or mechanical engineering. He is not a forester.

Abolish Forest Schools?

I admit that a man trained as a forester can be switched to a capable expert in one or more of the branches of work emphasized by Mr. Cornwall; but I believe it to be a waste of time, money and training to adopt such a course. Experts in lumber economics, wood utilization, wood advertising and wood selling might better be obtained from the ranks of economists, engineers, chemists, advertising specialists and those versed in salesmanship; for the training and experience of the forester is of merely incidental advantage in such matters. The forester has a definite field as a forester in both governmental and private work.

It may be argued that the field for the forester's services as here defined is too limited to employ the

large number of men now being ground out each year by the many forest schools of the country and that, as a consequence, the forester must be lead into other callings. There are twenty-two forest schools in the United States which give degrees. The remedy for this state of affairs lies not in training an over-supply of foresters and then shunting them into lines other than their training, but in the abolishment of nineteen of the twenty-two forest schools; for fully that number have no legitimate excuse for existence.

Then again, why should not most of the experts mentioned by Mr. Cornwall be developed from the ranks of the lumbermen themselves? From the nature of their practical training and experience should not lumbermen be well qualified to specialize in these fields? Moreover, if the forester be expected to diagnose the lumber business and become an expert in all its branches from tree to consumer,—what is a lumberman? Has he made the best of his opportunities?

Douglas Fir for Australia

D. E. Hutchins, forester for the British Government in South Africa, and recently transferred to Australia to continue his investigations is of the opinion that Douglas fir can be cultivated on a very extensive scale in both Australia and New Zealand. Mr. Hutchins advocates the cultivation of this tree with a view of reforesting many of the denuded areas in those countries which were once covered with commercial timber. He reports that the Douglas fir is one of the hardiest trees and can survive in the most unfavorable conditions, pointing as an illustration the remarkable growth of self-seeded areas in the Queenstown Park in Queenstown, Australia.

Using Up Ontario's Capital

(Toronto Globe, June 2, 1916.)

Some time ago Sir Clifford Sifton, whose opinions are especially valuable because of the information at his command as head of the Conservation Commission, estimated that at the present rate of cutting and burning the forests of Ontario would cease to exist in thirty years. The spruce required for papermaking will, it is hoped, reproduce itself indefinitely under the care of the owners of pulp mills, who will guard their raw material with jealous care, but the white pine areas will be of no value to the people of the Province until reafforested, or, if the land is suitable for tillage, cleared and occupied by settlers.

In permitting the extinction of her forests, Ontario is living upon her capital. They might be so managed as to yield an annual crop of timber in perpetuity by the cutting of mature trees and the leaving of the immature until their full growth is reached. In continental Europe the harvest of the forests is one of the most important sources of wealth, supplying, as it does, the raw material for industries largely located in the forest areas. Ontario has something like two thousand industries that depend on the standing forests of the Province for their raw material. Many of them would cease to exist were they compelled to draw their supplies from the Southern States or the forests of the Pacific slope. Manufacturers who use oak and other hardwood lumber in their business have even now to obtain the bulk of their lumber abroad, although at one time the southwestern area of the Province was covered with a magnificent growth of hardwood.

The Canadian Forestry Association has been trying to convince Ontario that the policy of using up the

forest capital of the Province is bad business, but has not succeeded in the degree hoped for. Ontario's system of forest protection is far less effective than that of either Quebec or British Columbia, the two other great timber producing Provinces. In Quebec settlers are not permitted to clear land by the use of fire without first obtaining a permit to do so from a qualified ranger. This obviates largely the ever-present risk of settlers' fires being set out on excessively dry or windy days, and also insures that the heaps of slash shall be kept in the centre of the clearing. Quebec is also awake in its efforts to make incendiarism in forest areas punishable to the same degree as fires in a town or village. Under Quebec laws several scores of prosecutions of settlers who caused forest fires last year were undertaken. In many cases fines were imposed, and in some instances reckless offenders were sent to prison. British Columbia's contribution to forest conservation is a modern and energetic forest protective service. The rangers have already greatly lessened the risk of wholesale losses from forest fires. The men of the forest service do much to educate the local residents in the use of safety devices. They build trails and lookout towers, construct safe camp fireplaces for hunters, fishermen and campers, and are ever on the watch against the carelessness of the inexperienced settler.

Ontario requires the reorganization of the fire-ranging service so that adequate supervision and inspection shall be secured. An application of the Quebec permit system to the clearing of land is needed also. The regulation works no hardship to the settler and insures the advice and supervision of the ranger when clearing fires are con-

sidered desirable. The Province gets much of its revenues from the forests. Would it not be sound public policy to energize and bring up to date the forest protection service, which at present does not yield an adequate return for the amount expended upon it? Are reforms in forest administration to be deferred till there are no forests to guard?

Big Timber Deal

What is stated to be one of the largest timber deals ever put through in British Columbia occurred recently, when W. A. Anstie, managing director of the Forest Mills of British Columbia, acquired from the Arrow Lakes Sawmill Company their entire holdings of over one billion feet of standing timber and their big sawmill and plant at Arrowhead. It is reported that with the acquisition of this property the Forest Mills Company became the largest owners of timber and have the largest manufacturing capacity in the province. During April the Alberni Pacific Lumber Company shipped 116 cars of lumber to points in the East.

Silk From Sawdust

Making artificial silk from sawdust and other lumber waste is the latest experiment of the United States Forest Products Laboratory at Madison, Wis. The use of artificial silk made directly from wood is increasing by leaps and bounds. Originally its principal use was in the manufacture of braids and trimmings, but recently the manufacture of hose from artificial silk has become an industry of importance. Other uses for artificial silk are woven goods of all kinds, linings, tapestries, etc., neckties, ribbons, sweater coats, etc. About five and one-half million pounds of artificial silk are used annually in the United States.

From Hon. W. R. Ross, Minister of Lands, Province of British Columbia.

Victoria, May 12, 1916.

"From the time it was first organized, the Canadian Forestry Association has assisted effectively in the advancement of forestry in British Columbia, as undoubtedly it has all over Canada. Especially at the present time, in view of war conditions and the need of husbanding carefully all Canada's resources, I feel that the association has the opportunity to be of service. Educational work, such as that which has produced such good results in fire prevention should be extended to other forest problems, such as the development of the export trade in lumber and paper, the encouragement of the use throughout the Dominion of Canadian forest products, the planting of trees on the prairie farms, and the use and care of farm wood lots. Forestry, after all, is simply one form of agriculture, to which, on account of conditions of climate and soil that cannot be changed, the greater portion of Canada must always be devoted. Owing to various circumstances, forestry is also the most backward and unorganized of all the great sources of production.

"The place forestry must occupy in Canadian life is, however, gradually coming to be recognized by the thinking men of the country and the present is the most propitious time to enlarge the activities of the association. I am sure that you will find that business and professional men are in accord with the plans of the association and that they will co-operate and assist you in every way possible."

The 1916 Fire Situation

According to available reports the season of 1916 in respect to likelihood of fire losses is so far favorable. Precipitation has been heavy in most sections and few serious fires have been reported. New Brunswick reports some losses. The information thus far received from the prairie provinces, does not indicate serious trouble. British Columbia's report, printed below, contains a hopeful forecast for 1916. In the 12,000 square miles patrolled by the Lower Ottawa Forest Protective Association nine fires have broken out, one of them a settler's fire, burning 200 acres. The rainfall, while abnormally heavy in Ontario and Quebec as a whole, is said to be no more than normal in some of the forested sections, where a few hot days have caused serious lamage.

Fire Outlook at Coast

Victoria, B. C., May 15.—Advices to the Minister of Lands from the southern interior of the province mark the beginning of the fire season, small fires being reported from the Cranbrook, Nelson and Vernon forest districts. In the first-named district the late spring is retarding the growth of vegetation so essential as a check upon fires running along the ground and burning the carpet of pine needles, twigs, dry leaves, etc. A hot and dry wind from the south is drying up the vegetation in the Okanagan and Similkameen districts, while hot weather prevails throughout the Vernon district generally. Farmers and settlers are reminded that permits are required for all fires set from the beginning of May, for which application should be made to the local fire wardens. Campers, sportsmen and travellers are urged to exercise every care in extinguishing camp fires, and the co-operation of all sec-

tions of the community is desired in order that damage to property may be avoided.

It is worthy of mention that in 1915, 305 fires out of a total of 1031 outbreaks, were traced to campers and travellers, while 267 were caused by land clearing operations. Damage by fires to the timber in 1915 amounted to \$109,000, and other property, viz., logging equipment, farm houses and buildings, etc., \$58,000. The majority of all fires in 1915 were, as usual, due to human agency, and were, therefore, preventable. Particularly this season, when the Empire is engaged in a vast and wealth-destroying war on a scale hitherto unthought of, it is the duty of every citizen to assist in preserving all resources from avoidable destruction.

Fires Near Prince Rupert

(Prince Rupert News)

The bush fires which have been raging along the line of the G. T. P. for the past few days still continue and the company has had a strenuous time in saving several of their stations from being wiped out. Special trains of fire fighters were sent from various points to help the men of the forestry department in fighting the flames. It was discovered last night that fire had wiped out the bridge on this side of Lake Kathryn and a special party of bridge men was rushed from Prince Rupert. It is expected that they will have the bridge rebuilt today in time to allow of the passenger train from the east getting through.

New Brunswick Fires

St. John, N. B., May 20.—The serious nature of the forest fires which had been raging in the vicinity of the city during the early part of the week has been determined now that the fires have been quenched by the rains, and a survey of the burned ground has been made possible. Definite information as to the cause of these fires is lacking, but it is stated positively, in at least two of the cases that they had their origin through negligence on the part of fishermen.

The fires in the vicinity of Welsford were the most serious. There were three conflagrations, all of large proportions, and for a time matters looked very serious. The worst one was between Welsford and Clarendon. It started about noon last Sunday, and as everything was dry spread with much rapidity. Part of the area burned had been cut last year and the tree tops, which had been piled up in that district, afforded great facilities for the spread of the blaze. In one case the fire reached a point about half a mile from the railway track, and on Tuesday night forty men went up from Welsford, but it was impossible for them to do anything to stay the progress of the flames. Some lumber camps, owned by Hugh McDonald, which were used during the past winter, were destroyed.

Another fire was raging in the Gaspereaux district; another in the vicinity of Olinville, and yet another near Fowler's Corner. These blazes at times assumed serious proportions. There is no doubt but that for the heavy rainfall all these fires would have assumed enormous proportions, but it is now reported that they have been quenched and that the danger is over.

The fire at Black River is also reported as about finished, the heavy rains having put a check to its further progress.

So far as can be learned there was no damage beyond the loss of the

lumber camps and the destruction of the trees, but the loss in timber will, in itself, be no light one.

Forest Fires and Reforestation

The following resolution introduced by Prof. P. S. Lovejoy, of the University of Michigan, was adopted by unanimous vote at the Spring Meeting of the Technical Association of the Pulp and Paper Industry, held at Kalamazoo, Mich., May 11, 1916, and the secretary was instructed to send copies of it to the various state forestry associations, the governors of states and the press generally:

Since wood is an essential raw material of the pulp and paper industry, and

Since the supply of timber suitable for pulp manufacture is rapidly decreasing and its cost is rapidly increasing, and

Since there are great areas of non-agricultural lands in the lake states, which lands once produced splendid timber, but are now practically barren as the result of lumbering and repeated fires,

We therefore urge that the pulp-producing states take immediate action.

(1) Looking toward the better protection of these non-agricultural lands from fire.

(2) Looking toward the restocking of such lands where necessary by planting.

Toronto Weekly Sun on "Forestry and War"

We have heard a good deal about the shortage in horses, meats and wool which will exist during and after the war and a lot of more or less valuable advice to farmers has been based on conditions alleged to exist in regard to these matters. But there is one natural product the supply of which has been shortened by war by a much greater extent than

is the case in any line of live stock and concerning which very little is being used. This product is timber.

In no one direction has destruction, due to war, been so great as in forest growth; in no other direction will the work of repairing loss be so slow after the restoration of peace. Live stock, household goods and merchandise can be moved out of the way of an invading army. Forests have to be left to take whatever war brings in its train. Over large areas in France, Serbia, East Prussia, Austria and Russia hostile armies have already passed; over still larger areas other hostile armies will pass ere the war ends. And wherever artillery comes into action in a serious way forests which stand in the line of fire are blasted as by a cyclone. In addition to the destruction caused by artillery there have been and will be vast quantities of timber used as supports in the trenches with which a large part of mid-Europe is being seamed. Unless peace comes soon considerable areas in Continental Europe bid fair to become a treeless land. Even in England forests that have stood for centuries are being sacrificed largely to meet war demands in construction work.

Before the war began the world's forest reserves were insufficient for world needs. The shortage will be greater after the war ends and that shortage cannot be made good overnight. Wrecked buildings can be replaced in a few weeks; a new crop of hogs can be matured in a year; beef can be brought to maturity in two years. But it takes a generation to create a merchantable tree. **One of the first needs in reconstruction after the war, in so far as this Province is concerned, will be a well-devised forestry policy. Such was needed before the war; it will be still more necessary when the present work of destruction ends.**

Carrying Cost of Timber

E. T. Allen, forester of the Western Forestry and Conservation Association, representing 13,000,000 acres of standing timber, presented the case of the timber owners to the Federal Trade Commissioner at Washington, D. C., on March 14th. Mr. Allen contended that unless conditions improved timber owners would be unwilling to carry their holdings. He declared that only a general reorganization of the entire industry could save the situation. Elimination of profits of too many middlemen was suggested by Mr. Allen. Timber owners, he contended, have given up all idea of holding timber for speculative purposes. The increased carrying costs are mounting faster than stumpage values. Mr. Allen contended that the carrying of raw material for the lumber industry has become a project of such vast magnitude and difficulty that it is a great factor in the situation and must receive equal consideration with manufacturing problems.

From "Canada Lumberman"

"The Canadian Forestry Association hit upon a very clever means of popularizing the work of forest conservation when it decided to present a Boy Scout Forest Book to each of the sixteen thousand boy scouts in Canada as part of its educational propoganda for forest protection. In the thirty-two pages of text and illustration the boy is introduced to the Canadian forest in a way that is bound to arouse his interest therein as a personal and national necessity, and give a new turn to the study of woodcraft that is part of every boy scout's training. The sound business reasons for putting an end to our annual plague of forest fires are presented in convincing fashion."

Stopping Fires By Publicity

Are Canadian Lumbermen Utilizing Modern Educational Weapons
As Their Own Financial Interests Demand?

The use of publicity in the building up of forest protection sentiment has been employed only to the minimum degree by the lumbermen of Canada. Inspired by the excellent results achieved by the Western Forestry and Conservation Association of the United States, the British Columbia Forest Service and some commercial firms have gripped the idea and set it to work. So satisfactory and promising have been the results of popular education in forest guarding as to justify an extension to every forested province of the Dominion. Quebec, particularly within the zone of the co-operative associations, has accomplished something in the distribution of educative literature and the carrying out of a personal propaganda by the precept and example of the fire rangers.

The adherence of all wide-awake lumbermen to the needs of vigorous mutual and governmental action in the cause of forest protection against fire is growing at a rapid rate. Limit holders who a few years ago shook their heads at the thought of employing protective devices other than natural rainfalls, have quit their old-fashioned position and lined up with the "moderns." The first experimental years of the St. Maurice and Lower Ottawa co-operative associations in Quebec have helped greatly in a general conversion. Actual saving of timber has become an accomplished fact. Old-time losses have been cut to fractions. Statistical proof has been produced not only in Quebec and British Columbia but from many parts of the United States,

where brains have been given a chance to demonstrate the folly of tolerating wholesale fire damage in timber areas. No longer need the progressive lumberman point to results accomplished in Europe; he has results at his own door. No longer have the provincial and federal administrations the excuse that forest fires are a necessary evil peculiarly associated with the Canadian timberlands. Facts have shown this to be false ground, and have also shown that whenever any of our government forest departments care to institute genuine forest protection, they need not step beyond the borders of the Dominion to find how it should be done.

The immediate causes of forest fires differ somewhat with the locality. Settlers' clearing operations cause enormous losses in one district, and in another the railway, sportsman, river-driver, prospector, may equally share the onus of damage. Nearly always, however, human hands and human heads must bear the responsibility.

Fires Mostly Accidental

Laws that promise punishment will do much in curbing some classes of incendiaryists, but it must be remembered that nearly all forest fires are, in the main sense, accidental. Few settlers *deliberately* burn the timber of the limit holder, although their carelessness is almost as guilty. Few campers *deliberately* desire to destroy the haunts of a thousand other campers; so with the river-drivers and the prospector and the others.

This lack of deliberateness in the setting of dangerous fires in forest

areas supplies the reason why all who have standing timber exposed to risk or who have the more remote interest of a lumber yard or a furniture factory should get acquainted with and stand behind any organized Canadian effort to fight forest fires by education. The goodwill of an informed public is worth all the forest laws ever written.

"This is not conjecture," said the National Conservation Congress at Washington, D. C. "Progress differs locally almost exactly with the degree in which propaganda has been successful."

The limit-holders of the Western States agree to such a pronouncement; they back it up to the tune of from \$200,000 to \$300,000 a year. There is not more than a trifling fraction of such an amount spent on educative work by the lumbermen of Canada, outside of the two co-operative associations in Quebec, but the plentiful indications of an awakening to the needs of the situation are most encouraging.

Work Gets Its Reward.

The work of bringing the masses of the Canadian people into intimate touch with the forests and forest industries of the country is mainly in the hands of the Canadian Forestry Association. Without any governmental or other affiliation, this association, composed of public-spirited Canadian citizens (now numbering over 3,700) has waged a campaign for seventeen years. The hard labor expended in the long discouraging period when conservation was a disjunctive term is bearing fruit. Even in the past two years of war heavy additions to the membership and a wide extension of the association's activities have been carried out.

Three-fourths of the day-to-day energies of the association are expended on forest fire prevention through winning public co-operation. Experience in the United States, and to a considerable extent in British Columbia and Quebec, has plainly proved that skilful and

persistent education must travel hand in hand with lookout towers, trails, telephone lines and rangers. How the educative portion of the work is carried out by the Canadian Forestry Association may be briefly indicated.

Practically all newspapers in Canada, daily, weekly, commercial, religious, etc., give the association the fullest assistance in spreading information about the importance of the wood-using industries and the need of guarding their supplies. Hundreds of articles, many illustrated, are prepared and placed. Newspaper cartoons, putting a sermon in a nutshell, are placed with about three hundred papers twice a month. Co-operation is also given to public and private forest agencies in getting important news to the newspapers and magazines, such as prosecutions of settlers, changes in regulations, etc.

Illustrated lectures under the auspices of public societies are given in many parts of Canada. Motion picture theatres are freely utilized to show special fire cartoons between the reels. "Ready-prepared" lantern lectures are sent to ministers, teachers, etc., who have facilities for gathering audiences.

The Printed Word.

One of the most fruitful activities in which the Canadian Forestry Association is engaged is the encouragement of Boards of Trade, Municipal Councils, clubs and societies to take an interest in the forest conditions of their localities and to bring pressure to bear upon provincial and federal authorities for needed reforms in administration or in laws.

The influence of the printed word was never so definite and real as today. The association makes use of print and illustration to an extent limited only by its finances. During the past seven months fifteen thousand copies of "The Boy Scout's Forest Book" were placed in the hands of school boys and girls and their

elders. Colored instructive pamphlets were issued in French and English to the extent of about thirty-five thousand. Twenty-five thousand copies of "A Matter of Opinion," a propagandist novelty of 24 pages, and fifteen thousand copies of "Your Enemy's Photograph" in two languages, have gone through the country. The banks, railways, forest departments and private corporations undertake to give all these issues very careful distribution to settlers, railwaymen, riverdrivers, campers, etc., etc., from coast to coast. The association also maintains "The Canadian Forestry Journal," which has been found of marked value educationally. The foregoing are some of the more tangible concerns to which the attention and revenues of the association are directed.

It will be noted that in no department of its work is the association taking up cudgels for anything but the most practical and proved methods of forest preservation through the sure channel of education.

(Article reproduced from "Canada Lumberman")

How to Prune Your Trees

Always use a pole saw and pole shears on the tips of long branches, and use the pole hook in removing dead branches of the ailanthus and other brittle trees where it would be too dangerous to reach them otherwise.

Do not "head back" or cut off the top of a tree except where the tree is old and failing, and then under special instructions.

Be as sparing and as judicious in pruning as possible, and do not raise the branches so high as to make the tree look like a telegraph pole.

Commerce pruning the tree from the top and finish at the bottom.

Make every cut as close and parallel to the trunk as possible.

To make the cut perfectly smooth the saw must be well set and sharp.

Leave no stubs, dead and dying wood, or fungus-covered branches behind you.

Do not fail to cover every wound with coal tar, not allowing it needlessly to run down the trunk.

Do not remove several large branches on one tree at a time. They must be removed gradually, the work extending over several seasons.

The Forests of Paradise

The following quaint expression by one of his friends of the views of the future felt to be those of M. Desjobert, the old and respected forester of the forest of Tronçais, who has recently died in France, will find an echo in the hearts of other foresters for what it anticipates both in the presence and in the absence of some of the things that go to make up the forester's life in this world.

"A fervent and consecrated Christian, Desjobert was not one of those who see death approach with terror. I have always thought that in the face of eternity he imagined Paradise like a great forest of Tronçais, more magnificent certainly, more spacious, an ideal forest where the wind of politics does not blow and which is lighted by a great sun of justice."

Prevent tearing the bark off the trunk in removing large limbs by first making an "undercut."

Make the cuts on a slant. Some trees, like the elm, sycamore, linden and willow will stand the process of heading back more than others, and the poplar is a tree that must be cut back every few years to keep its crown from becoming too tall and unsafe.

When shortening a branch, leave a few twigs at the end to draw the

sap to the freshly cut wound and thus enable the growing layer under the bark to heal it over.

In trimming small branches or shoots, the cut must be made just above a bud.

When several branches come out from the trunk in a whorl, they should not all be cut away at the same time lest the tree be girdled. This arrangement of branches occurs most frequently in the coniferous trees.—American Forestry.

Ship Shape Raft for Lumber Cargoes

A novel method of getting needed timber and lumber overseas without using up shipping so urgently needed for other purposes, has been enunciated by Captain A. G. Midford, of Ottawa. His plan, in brief, is to tow it across in the form of huge timber rafts, and he states that from one to twenty million feet of timber can be taken over at once. His suggestion has received commendation both in Canada and in Great Britain and it is probable that the suggestion may be productive of practical results.

The Timber Trades Journal, a well-known British publication, refers to the suggestion as follows:

Scarcity of Tonnage.

"The difficulty of all nations, beligerent and neutral, is the scarcity of tonnage. Although this is in a great part due to the large number of mercantile ships engaged in carrying supplies for war purposes, so great must be the wastage that, notwithstanding the releasing of a large amount of tonnage at the close of hostilities and the continued building of new vessels, ships will be in greater demand after the war than now.

"The best way to economize in the matter of ships is to do without them altogether, and though this is

impossible, at least at present, for the transport of certain classes of goods from overseas, we are pleased to hear that as regards the transport of timber it is not only possible but likely to be brought about by sheer necessity. We have been favored with a copy of a letter received by the Timber Trade Federation from A. G. Midford, of Ottawa, a civil engineer, who has had a life of experience in executing maritime work of magnitude and in solving maritime problems. He also holds a master's certificate and is well known throughout Canada, the United States and South America. This gentleman, we understand, has shown certain plans for the transport overseas of wood goods to Senator Edwards, of the well-known Edwards Lumber Company, who describes Captain Midford's project as an inviting one and deserving of consideration.

Ship Shape Raft.

"Captain Midford's object is to construct the ship-shape raft of timber and lumber in such a manner as to provide against the incessant and usual strain to which any floating body or ship is exposed and must encounter and in meeting the vicissitudes of a stormy sea. According to Captain Midford, the ship-shaped

GETTING ON

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

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

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

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

Just suit yourself.

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

Here is the coupon. Start at it now.

Secretary, Canadian Forestry Association,
Booth Building, Ottawa.

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

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

.....

.....

.....

raft is built entirely of mercantile and marketable lumber and timber, is in no sense water-tight and therefore depends entirely upon buoyancy and not displacement in the ordinary acceptance of the technical meaning. The ever-changing strain which must prevail is provided for, without which any floating body would go to pieces in any storm. The midship section is decidedly ellipsoid, the deck being turtle back for economic reasons readily apparent to the competent ship designer or marine architect who will give due consideration to the problem.

Towing Problem.

"Towing has been fully considered, including the cause and prevention of the snapping of the tow-line

and the ship-raft will be steered from the after-deck of the towing vessel. Sea rafts of the type suggested may be made up entirely of marketable timber and lumber, and no lumber need be cut or bored for constructive purposes. The entire outside layer could be composed of slabs which have no marketable value in Canada, but would be useful here.

"This is an outline of Captain Midford's project. If he can make it successful he will be doing a service to humanity, for the ships can thus be relieved of wood cargoes for more pressing services."

Captain Midford is taking up his suggestion with the authorities in Canada.

The Taxpayer's Soliloquy

Reprinted from "A Matter of Opinion" a Booklet Issued by the Association.

"I never knew how much red blood there is in Figures until the Council made me Chairman of the Finance Committee down at the City Hall. When a fellow realizes, as I soon did, that every dollar in the local treasury rings a bell in the taxpayer's pocket, he gets an uncanny feeling that tax money belongs to a different tribe from any other money.

"Last winter I spent a week on the borders of the Temagami Forest Reserve in North Ontario. Two miles from the village a lumber firm were taking out pine logs for their mills in Quebec. I said to the woods superintendent one day: "This business looks like easy money; Nature does all the work and you step in and lift the crop." And then I began telling him about the hard time I had, running a Finance Committee in a city of fifteen thousand.

"You don't know how much harder it would be," he replied, "if this forest-crop was left unharvested a few years."

"What difference would that make?"

"You are a taxpayer?" I nodded.

"And provincial administration is not paid for direct by municipalities, but by special revenues."

"Quite true."

"Did you know that the Ontario government takes from \$1,500,000 to \$2,500,000 tolls from the timber every year?"

"I certainly never heard of that."

"And that British Columbia gets \$2,300,000 and over from her lumbermen?"

"Sounds impossible."

"While Quebec is made richer by about \$1,500,000 a year from the same source—the timber."

Bovril develops big reserves of strength

When Sir Ernest Shackleton was selecting extract of beef for his Antarctic expedition he said:

"IT MUST BE BOVRIL"

His knowledge of plain facts had me at a disadvantage.

"New Brunswick collects a cool half million and more"—

"That much?"

"With about \$400,000 coming to the Dominion Government from Crown forests on the prairies."

He must have noticed my growing interest.

"If the forests were not developed by lumber and plup and paper mills, all that money—seven and a half millions a year—would have to be collected from taxpayers direct."

The New Idea.

I assure you I went home with the germ of a new idea in my head. For years I had put aside the forests as the property of wealthy corporations. I thought the governments had 'given away' all the country's timber. I was satisfied that the general public had no concern what happened to the big storehouse of wood supplies. Did you ever think that way?

Promptly I set to work to learn the truth about these forests of ours, who owned them, who got the money. Now—

No lumberman gets a dollar bill out of a felled tree until he has spent three other dollars for labor and supplies. That is, the workman, together with the food, clothing, hardware and other manufacturers and dealers have three shares in the profits to the lumberman's one. If the

CONFEDERATION LIFE ASSOCIATION

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Are liberal up-to-date contracts which guarantee to the insured every benefit consistent with safety.

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which will gladly be furnished by any representative of the company or the

HEAD OFFICE, TORONTO



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After all day in a boat, rainstorm, or wet snow. Ask your dealer for

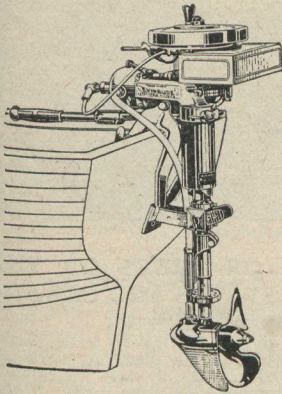
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man working the limits does not first advance the worker and the supply-man their part of the cash, the woods operations come to a standstill and the whole investment may be thrown away.

Look this over! \$40,000,000 a year are paid out in wages in the making of timber and its manufacture.

Investors have backed Canadian forest industries with over \$260,000,000 of capital.

One hundred and ten thousand men get their livelihood from living forests. A Dead Forest means a Dead Paysheet.

Where do these men live? One hundred and fifty of them and their families are in my own little town. Have you seen our cooperage and box mill, the boat works and the saw mill? There are 3500 of them on the payroll of a single firm in Ottawa during an average season. Look over your own town. See what would happen if wood supplies suddenly ceased. Count the mills and



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the workmen affected. Figure out what wood means to you as fuel, lumber, furniture, railway ties, boats, boxes, flooring, paper—I cannot begin to count the jobs that a tree performs in an average town.

Real Patriotism.

You agree with me that Canada must keep the smoke in every possible factory chimney during the next five years. To do that we have got to keep smoke out of the timber lands.

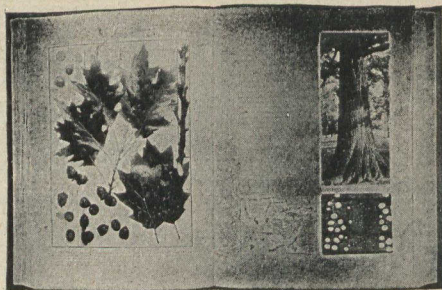
A fine lot of business managers! Pointing with pride to 5,000 wood-using factories, and shrugging our shoulders when the Fire-Thief threatens to blot out their sole stock of raw materials.

I am no alarmist, but every lumberman, explorer, forest engineer I have met assures me that this carnival of forest fires cannot **continue**. They say, and I believe, that fires have been cutting down our reserve stock at a rate that brings us today fact to face with a crisis. Think you we can burn this candle of precious resources at both ends—use up millions of trees yearly for lumber and pulp and other manufacturers, and toss even more millions to the flames? Which end had we better retain, the end of Use-and-Profit, or the end of Fire-and-Waste? We cannot keep both. One must go.

Those statistics about the wood-using industries make out a case for a Strong Concern, don't they? But the strength, by friend, is likewise the weakness. The foundation of living forests is helpless against fire. They cannot protect themselves. It is up to you and me.

What would you think if we gradually killed off the cattle that bring Canada \$37,000,000 worth of butter and cheese every year?

Forest fires threaten to kill wood industries that give us today more than five times the value of all our butter and cheese.



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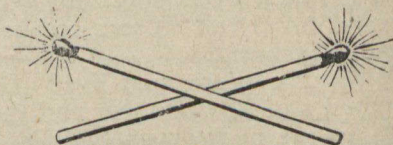
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What would you think of flooding the mines of Canada and turning the workmen adrift?

Forest fires are burning out the mainstay of industries pouring forth \$54,000,000 a year in excess of all our mines.

A Job for the Reader.

What, then, can a taxpayer do? Incorporate this forest protection business as an immediate personal interest.

Don't let your own hands ever become responsible for setting a forest in flames.

Examine your provincial and federal forest guarding systems. Are they dealing squarely with the country's priceless forests? Most of them surely are not. Inform your local members of the legislature and Commons that you are a Conservationist, that you demand progressive forest administration.

Tell them you believe in a ranger staff of competent men, thoroughly supervised in their field work—and tell them you do **not** believe in turning over the vast trust of forest wealth to a batch of appointees, having no permanence in their jobs, badly inspected and rendering second-class service. Tell them the forests of Canada belong to 1988 as much as to 1916 or 1853.

Rest assured, you speak the only argument worthy of a patriot.

Mr. Jean J. Guay, a 1913 graduate of Laval Forest School and for some time attached to the Quebec forest service, is meeting with success as assistant to Mr. W. F. V. Atkinson, Chief Forester of the Spanish River Pulp and Paper Company. Mr. Guay is stationed at Sault Ste. Marie.

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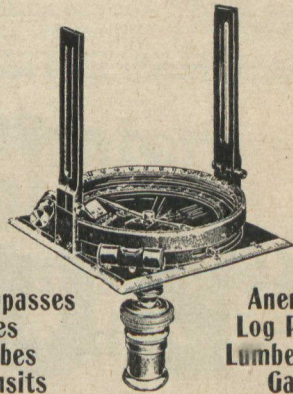
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The Ottawa Citizen recently had the following to say regarding Ontario's system of forest protection.

"The Ontario forest protection system has been practically unchanged in design for twenty or thirty years. Progressive steps taken by British Columbia's forest service and by the Quebec department of forests have not influenced Ontario thus far to supplant a scheme which experience has proved both extravagant and inefficient. Recently the boards of trade of Ontario have taken up the question of reorganizing the protective system and have addressed emphatic suggestions to the Minister of Lands and Forests.

"The contention of forest conservationists is that Ontario's neglect of annual forest fire losses will ultimately force nearly two thousand wood-using industries of the province into serious difficulties; will raise the price of wood products to the consumer; will badly damage the flow of important streams; injure the fertility of agricultural land, and turn thousands of acres into irretrievable barrens. Indeed, these results are already being reaped by Ontario to an extent which few citizens would credit. That the past history of forest management has been one of neglect and bad judgment is the view of these experts.

"Ontario appears to have enough rangers employed, about 500, to give reasonably good service in fire patrol. The chief weakness is the absence of real supervision and inspection. Experience in forest protection has proved that unskilled, uninstructed rangers are of small use in guarding expanses of valuable forest from fire. No branch of employment demands more energy and strict attention to duty. There may be to-day many excellent men in Ontario's forest service, but it is grossly unfair to the worthy men and unwise to the other kind to

R. O. SWEEZEY

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hand out an instruction book at the beginning of a season and let the individual shift for himself. Inspection and supervision must be continuous and close to bring the best results out of any body of men whether in a foundry or a forest.

"The problem of Ontario's forests surely demands prompt and intelligent treatment. Two thousand wood-using industries depend upon living forests for their raw materials. The power value of scores of streams has been badly affected by the burning of tree growth on watersheds. It would seem far more practical and sensible, even as a war measure, to guard the foundations of industry and water powers from needless racking by fire, than to spend time and money on some of the more superficial concerns of the people. One-third of a cent per acre has been demonstrated by the Quebec limit-holders' associations as sufficient to cover the cost of forest guarding. This includes the build-

ing of permanent equipment, such as telephone lines, lookout towers, rangers' cabins, and other essentials, of which Ontario has very little. If real protection of magnificent spruce and pine can be obtained for a third of a cent per acre, the losses resignedly borne by Ontario year by year would seem absolutely inexcusable."

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The Association prepares and places through its Publicity Department, many hundreds of special articles every year, reaching the Canadian Public through daily and weekly newspapers, weekly and monthly magazines, including agricultural, financial, religious, literary, engineering, juvenile, and practically all divisions of Canadian journalism.

Co-operates actively with forest protective associations, Government forest departments and commercial organizations in distributing information on forest affairs to the Canadian public.

Campaigns for forest protection through its Publicity Department, the distribution of illustrated literature to settlers, campers, etc., the presentation of lantern slide cartoons in motion picture theatres, and many other methods calculated to bring practical results.

Holds series of illustrated public lectures on forest protection in various sections of the Dominion.

Issues an illustrated monthly, "The Canadian Forestry Journal," which goes to 3,500 members, and to 200 Canadian editors by whom it is quoted extensively.

Holds conventions in various sections of the country to discuss local and general forest problems, and to arouse interest in public forest policies.

A Free Cartoon Service is supplied to newspapers, also a free "cut" service, campaigning for forest protection through interesting illustrations.

These are a few of the concerns of the Canadian Forestry Association.

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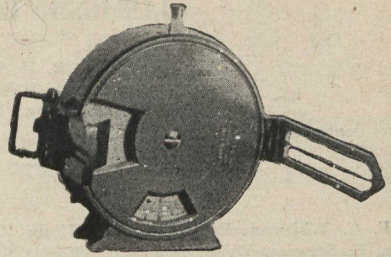
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