

Canadian Forestry Journal

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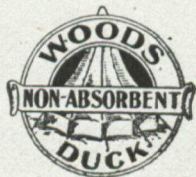
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Canadian Forestry Journal

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Vol. XIV.

WOODSTOCK ONT., MAY, 1918

No. 5

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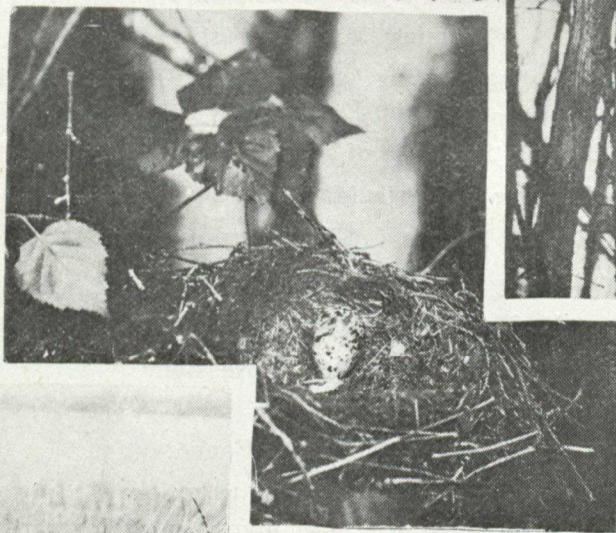
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Black Tern Incubating



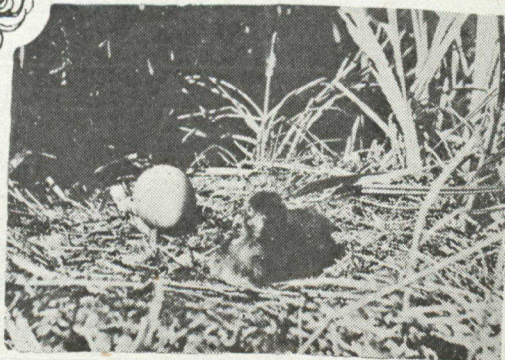
Canada Jay



Solitary Sandpiper's Nest With Egg



Holboell's Grebe Incubating



Young Loon With Unhatched Egg

Britain Turns to Canada's Forests

An Imperial Call to Stop Deterioration of Canadian Forest Resources and Realize New Profits.

"There appears to be no reason why the Canadian forests should not supply the United Kingdom with coniferous timber and meet its growing needs for many generations.

"Meanwhile the forest capital of Canada is growing less year by year. This we submit, is an Imperial question of the first magnitude which deserves the immediate attention of the Imperial and Dominion Governments."

The foregoing statement sums up a conclusion of the Forestry Sub-Committee of the British Reconstruction Committee which has particular interest for Canadians. Probably few readers of the Forestry Journal have thought in times past that the forests of Canada held such a vital relation to the needs of the Mother Country. Yet the fact cannot be contraverted that Great Britain has been to the extent of 60% of her daily needs at the mercy of the Russian timber exporter. Who shall say in these uncertain times what degree of freedom the Russian exporter will enjoy during the next ten years at the hands of his German master? The radical re-arrangement of the political conditions in Russia has given new weight entirely to the counsels of those Canadians who have striven for a larger share of Britain's timber orders even in face of obviously higher freight rates. At the same time if the Canadian people are to take any profit whatever from the conclusions of the British Reconstruction Committee, they will have to recognize that no permanent trade arrangement in timber supplies can be founded upon a deteriorating source of raw materials. Canada cannot reasonably present any plea for a greater proportion of John Bull's timber trade until some guarantee can be given that

the forestry policies and practices of the country are capable of assuring permanence in production of forest materials.

At Russia's Mercy

The Forestry Sub-Committee was composed of men of unquestioned standing and practical knowledge of world wide conditions, such as Lord Lovat, Sir John Stirling-Maxwell, Sir William Schlich, Lord Cavendish, Hon. F. D. Acland, and others.

"The United Kingdom," they observe, "is dependent for more than 60 per cent. of its timber on the virgin forests of foreign countries which are being steadily depleted. The proportion derived from sources within the Empire fell from 22 per cent. in 1899 to 10 per cent. in 1913. Every year we become more dependent on Russia, which in 1913 supplied us with nearly half our total imports. We have no means of reckoning how long the virgin forests will last, but unless they are brought under systematic management their exhaustion can only be a question of time. The arguments advanced on this subject by competent students have been supported since 1895 by a steady rise in price.

Canada's Importance

The only large reserves within the British Empire are those of Canada which are rapidly being depleted by fire. The Dominion Government has initiated measures for their protection, but the problem is both large and difficult. It is one in which the United Kingdom has a deep interest since the Canadian reserves are the only source on which the United Kingdom can fall back if supplies from Russia fail. The arrangement prevailing before the war under which the exports from the Canadian forests were absorbed by the United States, while the

United Kingdom, drew its supplies from Russia, no doubt found much justification in economy of transport, but unless the Canadian forests can be adequately protected and made available in case of necessity for the United Kingdom, it is certain that the area of timber within the British Isles must be increased far beyond that recommended in the proposals made in the following pages. We commend this Imperial question

to the attention of the Conference meeting in London.

"It is urgent because preparations made now cannot mature for many years, and unless provision is made now either in Canada, Russia or the British Isles, it is practically certain that the United Kingdom will find timber difficult to procure in sufficient quantities before such preparations can mature."

Russia's Grip on Britain

"Russia, as will be evident from the facts already given," continues the Forestry Sub-Committee, "is now the crux of the whole question. She is, and has been for several years, the only source on which we could, under present conditions, rely to make good the decline in our imports of coniferous timber from other countries and meet our ever-expanding demand. She has accomplished this by increasing her supplies to us from 2,241,000 loads in 1889 to 5,401,000 loads in the year preceding the war. We have now reached the point when any check in the Russian supply would inevitably cause a timber famine in the United Kingdom."

The Russian forests are something of a mystery, and the reports which reach us are conflicting. The area of land classed as forest in Russia and Siberia is enormous, amounting to 1,260,000 square miles, of which by far the greater part belongs to the State. Much of the so-called forest is without commercial value. Of the million square miles belonging to the State, less than two-thirds are true forest land. Applying this proportion to the whole area the total extent of true forest land in Russia and Siberia is estimated at 814,000 square miles. To this must be added 82,000 square miles of forest in Finland, making a total of 896,000 square miles for the Russian Empire. These forests spread over a very wide area and in climates ranging from temperate to arctic,

vary greatly in the amount of timber they carry and in the rate of growth. The forests of Central Russia appear to be generally of poor quality, and with regard to Siberia railway construction on a large scale would be necessary to make its timber available for export. Devastation by the inhabitants and fires have also deprived a great part of the Siberian forests of their value. The timber imported into the United Kingdom has hitherto come from the virgin provinces and from Archangel. While the information at our disposal indicates that the timber produced by these northern forests could be very considerably increased without exceeding the annual growth, it is evident that permanency of the supply must depend on the introduction of systematic management. The growth in the northern forests is extremely slow and it will take a long time to replace the pine, spruce and larch now being felled. It must also be remembered that the development of the Russian Empire is certain to be accompanied by an increased home consumption, which may, as in the United States, gradually curtail or even extinguish the reserves available for export. We have already indicated what this would mean for the United Kingdom.

Planting Programme

The Sub-Committee recommends the immediate institution of a planting programme to cover 1,770,000

acres of waste land, two thirds to be planted within the first forty years. It is estimated that probably

£15,000,000 will have to be invested in the project over a forty year period.

Farming Muck Lands

Some Practical Suggestions Applicable to Clay-belt Development in Ontario and Quebec.

BY DR. B. E. FERNOW

In these days of movements to make the extensive peat bogs of the Dominion useful for fuel and to provide for the settlement on farms of returned soldiers, it is of interest to inquire also into the agricultural possibilities of these muck lands.

The first thing to realize is that such lands are a specialty and a specialized study of their nature and their requirements must precede the attempt at farming them. They are a rich resource if properly treated, but without this proper, special knowledge enormous waste of human energy may be experienced in futile attempts to farm them. Attempts at settlement on these lands without that knowledge may prove a disaster.

The United States Department of Agriculture has lately brought together information on this subject in a bulletin* The information is simply a record of actual happenings, not of theories or scientific investigations. While the experiences may perhaps not be immediately translated for use in the clay belt, for instance, they are suggestive as to the difficulties and the possibilities of such farming.

An analysis of the results of 140, muck-land farms in Southern Michigan and Northern Indiana leads to the following summary:

1. The muck soil of this region is well suited to the growing of celery, onions, peppermint, cabbage, corn, and hay, and, when properly fer-

tilized or manured, is fairly well adapted to oats, wheat, and rye.

2. The use of fertilizer, especially potash, on muck soils is very profitable, the yields being increased in most cases from 50 to 200 per cent. Manure also gives excellent results.

3. Celery and onions require an enormous amount of man labor as compared with corn, oats, and hay. Peppermint, cabbage, and potatoes occupy an intermediate position with regard to man labor.

4. The gross acre value of intensive crops is high, but the value of these crops per day of man labor is not as high as in the case of extensive crops.

5. The average labor income for 28 celery farms was \$394; for 23 onion farms, \$1,732; for 10 peppermint farms, \$1,519; for 39 grain and stock farms, \$1,056; and for 7 of the more successful grain- and -stock farms, \$1,994.

6. Grain and stock farming is a much safer type of farming than any intensive type, although the profits per acre may be much less.

7. A small muck farm, even though operated intensively will usually return only a moderate labor income.

8. Tile drains were used on most of the muck farms studied. The best results have been obtained with 5 or 6 inch laterals laid 5 to 12 rods apart and at a depth of 3½ to 4 feet, although small open ditches are very satisfactory in some cases, especially on the celery farms.

9. The growing season on muck land is considerably shorter than on other land in the same region, on account of later frosts in the spring and earlier frosts in the fall.

*Farmers' Bulletin No. 761, U. S. Dept. Agr., 1916, pp. 26. Management of Muck-Land Farms in Northern Indiana and Southern Michigan, by H. R. Smalley.

10. Nearness to a market or shipping point is of great importance in the profitable production of truck crops.

The intensive crops of vegetables require an enormous amount of labor, and hence on that ground alone will have to be ruled out. Moreover, the market is only limited, even if it were near enough.

Difference in Labor

An interesting table shows that, while hay, oats, rye, wheat can be grown with less than five labor days per acre, potatoes require nearly double and other vegetables up to six and eight times the labor. While one man may tend as much as 75 acres of the first mentioned crops he may not handle more than five of celery and onions. The farmer who has to depend largely on his own labor will almost invariably make better labor income from the extensive crops, so that, while the average per acre production of 100 farms showed somewhat over \$18 for extensive crops, and nearly \$102 for intensive crops, the result per day of man labor was \$8.73 for the former and only \$5.54 for the latter.

Clearing muck-land of a growth of tamarack, black ash or elm is found to cost \$15 to \$30 per acre, but in some cases going up to \$75 and \$100.

All muck-land must, of course, be drained. The rapid settling of new muck-land necessitates the laying of tile drains deeper than usual (3.5 to 4 feet). If placed nearer the surface, uneven settling of the soil will frequently throw the tile out of line, thus ruining the drain. Open ditches may, of course, answer for a temporary measure.

Next to drainage, fertilizing or manuring is the most important factor in determining crop production on muck-land, even on the mild hardwood muck to which this study refers.

"Many muck soils have produced fairly good crops for a year or two, after which production diminishes rapidly unless fertilizers or manures are applied." The deficiency is mainly in potash and phosphates. "The most experienced muck farmers

use fertilizers from the very start without waiting to see if a crop can be produced without it." From 100 to 200 pounds of muriate of potash per acre are needed for small grain crop every two or three years. This expenditure is, however, reflected in the increased yield; without potash, muck soils usually produce very light crops.

Compacting the muck by means of heavy rollers does not only produce a better seedbed, but is claimed to reduce danger from frost.

Details of soil management are given which every muck soil farmer ought to study. While the conditions in the clay belt may differ, there is much suggestive advice found in this bulletin.

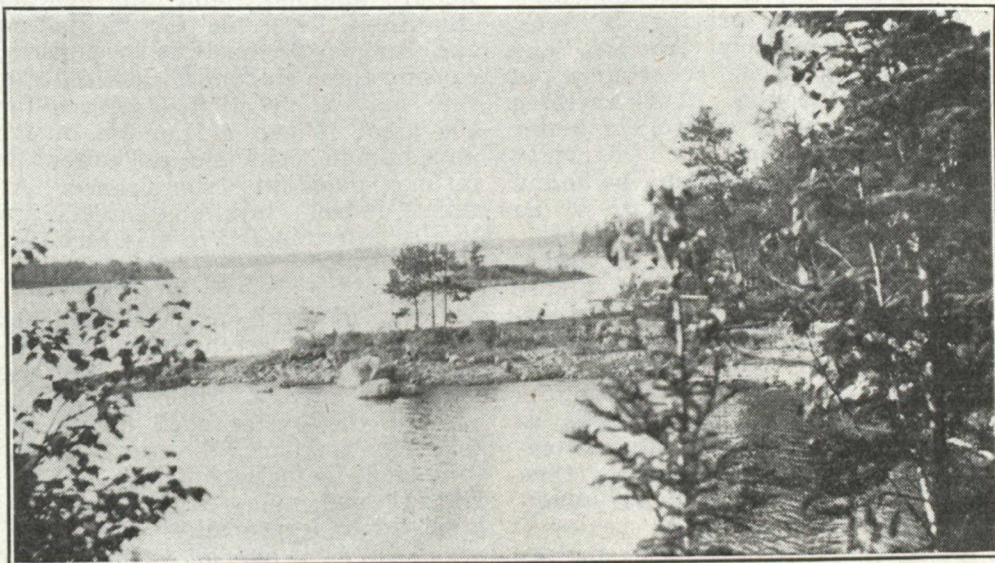
B. E. FERNOW.

BRITISH FORESTS IN WAR-TIME

A wholesale destruction of woods was going on in the country, said Major Couthope, M.P., at the annual meeting of the Royal Society for the Protection of Birds. "Tens of thousands of acres of woods have been destroyed, but in many cases the destruction is hidden by means of leaving narrow belts of trees. By this time next year there will be comparatively little soft-wood timber left in the country, and hardwood timber will have very much decreased. The stumps of the recently felled trees provide breeding grounds for insects."

BRITAIN'S 4 PER CENT.

The inadequate provision of the forests of the United Kingdom for national needs is shown by the fact that only Portugal of all European countries ranks lower than Britain in percentage of total area under forest. Great Britain has just 4 per cent. in woods, Sweden 47 per cent., Russia in Europe 37, Germany, 25, Norway 21, France 18.



LAKE OF THE WOODS

Some Notes on the Control of Foliage Eating Insects Under Forest Conditions

BY JOHN D. TOTHILL

*In Charge of Natural Control Investigation, Entomological
Branch, Department of Agriculture*

How many readers have witnessed an insect outbreak in the woods? Swarms of caterpillars; trees for miles stripped of nearly all their greenery; and a sense of depression like that produced by a forest newly swept by fire! Outbreaks of this character occur at irregular intervals on most of our valuable forest trees. At such times the losses involved are often very great.

About thirty years ago, for instance, an outbreak of saw flies occurred on the larch or tamarack in New Burnswick. The insects were present in such numbers that practically the entire tamarack stand was killed and since that time the tamarack swamps have been practically unproductive. In recent years the same

forest area has been exposed to an outbreak of the spruce budmoth. This has resulted in the weakening and death of a large proportion of balsam fir (*Abies balsamea*) now of great value for the production of pulp. In this case the loss involved will probably be greater than the sum total of fire damage for the past fifty years in the forests of the same Province. Other cases could be cited for all our Canadian forest regions, but these two cases will serve perhaps to indicate how great are the losses often resulting from outbreaks of forest insects.

Camping in woods rendered desolate by an insect outbreak and far from human habitation, one is faced with the apparent hopelessness of the situation. Cre-

osoting of egg masses, tanglefooting of trees, spraying of trees, intensive forestry practice, and all such methods are simply out of the question. Can anything else be done to control, or better still, to prevent such damage? An answer can perhaps be found by considering the nature of an insect outbreak.

In the case of any particular insect, the struggle for existence is so intense that an outbreak is usually impossible. New Brunswick, for instance, probably supports at least ten thousand different kinds of insect but the competition for a livelihood is so keen that most of them are uncommon or rare. An outbreak then results from a set of peculiar conditions favoring a particular species.

A great many different factors tend to keep insects in a condition of numerical stability or control, or, in other words, to prevent outbreaks. The more important of these factors I will rapidly review.

In the first place the vagaries of climate are powerful factors in control. Hailstorms in July will sometimes free acres of forest lands from a destructive caterpillar. Ever so light a frost in June will often kill millions of tender larvae. In fact 'unusual' weather at any time is liable to produce direful results in the insect world.

Value of Birds

The useful work of insectivorous birds can scarcely be over estimated, particularly in reducing the numbers of succulent larvae feeding in the north woods. The wood warblers are pre-eminently useful in this respect as any one can testify who has camped in June and July beside one of the countless brooks in the north woods region. From dawn until the day grows hot groups of these shy little birds may be seen busily searching out a meal of insects from the leaves, from the twigs, or from the bark according to their respective preference.

Then again epidemic diseases play an important part in reducing the numbers of insects. With the insects

unduly abundant and the weather conditions favorable for incubating the fungus or bacteria organisms, causing these epidemics such a death rate may result that statistics for the great plague of London or for any human epidemic recounted in history pale into significance. At times, indeed, injurious insects are locally exterminated in this way.

Predatory Insects

Other powerful aids in reducing the numerical strength of certain kinds of injurious insects are the predatory mites and insects. In the case of the oyster shell or mussel scale, for instance, the most important single factor in control in Eastern Canada and many other places is a tiny eight legged mite. This little organism ekes out an existence by feeding on healthy eggs of the scale. In this way the scale is often reduced from a condition of great numerical abundance to one of extreme scarcity. As to predatory insects the importance of their work can be likened in a general way to that of insectivorous birds. In a favorable year such insects were estimated to destroy three quarters of the entire forest tent caterpillar crop of New Brunswick and better tribute could scarce be paid.

No account of the factors tending to reduce or prevent insect outbreaks would be complete without referring to the work of insect parasites. Among all the insects of the earth there are two groups that stand out from the rest on account of a method of existence involving parasitism on other insects. I refer to the parasitic two-winged flies (Diptera) and to the parasitic four-winged flies (Hymenoptera). In Canada there are several thousand species of such parasites and they are among the most useful members of our wild life. Some of them attack eggs, others small larvae, others older larvae, and some again attack only pupae; so that an insect like the forest tent caterpillar is liable to attack by parasites in any of its first three stages. Any of my readers who have tried to rear adult insects

from larvae or from eggs will know how effective the parasites often are. In the northern woods, under average conditions, these insects cause an immense annual mortality among such pests as the fall webworm, forest tent caterpillar, and spruce budmoth. Under particularly favorable conditions these parasites may so supplement the work of other factors in control as to all but eliminate such an injurious insect as the forest tent caterpillar from an area as large as New Brunswick.

Thus the actual killing value of insect parasites is fully as great as that of any of the various factors making for numerical reduction of injurious forest insects. It may be noted, moreover, that the parasites, and, to a lesser extent, the predacious insects, are distinguished by having a regulative value in control. When the forest tent caterpillar, for instance, is scarce in a district it is usually true that the percentage of parasitism is low; when such a caterpillar increases so, as a rule, does the percentage of parasitism. Thus the tendency of these organisms is to keep their food supply neither exceedingly scarce nor overly plentiful.

A Disturbed Balance

With this kaleidoscopic and necessarily sketchy review of the more important restraining influences upon insect activity in the woods, we have a clue to the causes of insect outbreaks. Outbreaks result when for some reason one or more of these restraining influences have not come into play. Probably more often than not, the prime cause of an outbreak is a lack of insect parasites before the insect host concerned is noticeably abundant. When an abundant insect is suddenly eliminated by climatic vagaries, or epidemic diseases, or what not, over a comparatively large area such as Prince Edward Island, the parasites are also eliminated from the same area, that is, they perish of starvation. If into such a parasite-free area a few moths be subsequently blown, their progeny in a few years' time may produce an outbreak.

With a consideration of the nature of an insect outbreak in mind it is now possible perhaps to answer the question as to whether or not anything can be done in a practical way to control, or better still to prevent, insect outbreaks. Man is impotent to manipulate the vagaries of weather or to do very much in the way of starting epidemic diseases. He can, however, and should to the utmost of his ability encourage and protect insectivorous birds.

Distributing Parasites

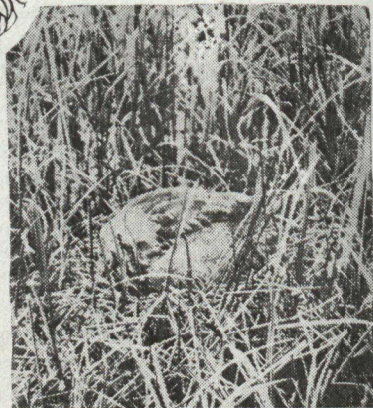
Moreover, through a knowledge of the insect parasites and insect predators of given destructive species throughout their geographical range, he may in many cases discover that certain of these parasitic or predatory species present in one part of the insect host's range are lacking in another. By collecting, transporting and colonizing such species, he may help to check or may even prevent outbreaks. Such operations must of course be based upon careful study. The Dominion Entomological Service has an unusually clear-cut case of this kind under consideration at present. The forest tent caterpillar which ranges from coast to coast through the Canadian forest regions is at present comparatively uncommon in most of this range. At Sylvan Lake, Alberta, however, an outbreak of the insect has been in progress for some three years. Upon investigation it was discovered that none of the insect parasites effecting this forest pest in other parts of the country were operating there. It is proposed that certain of these parasites, known to be abundant on the lower end of Vancouver Island, be colonized at Sylvan Lake.

WOOD MEAL MANUFACTURE

The production of wood meal as a foodstuff will soon be realized. A factory for this purpose is connected with the eastern army headquarters at Souvaki; there are two factories using **Steffen's** method, and another being built. The War Committee for Cattle Food Substitutes controls the use of this meal.—German official report.



American Bittern Nest and Eggs



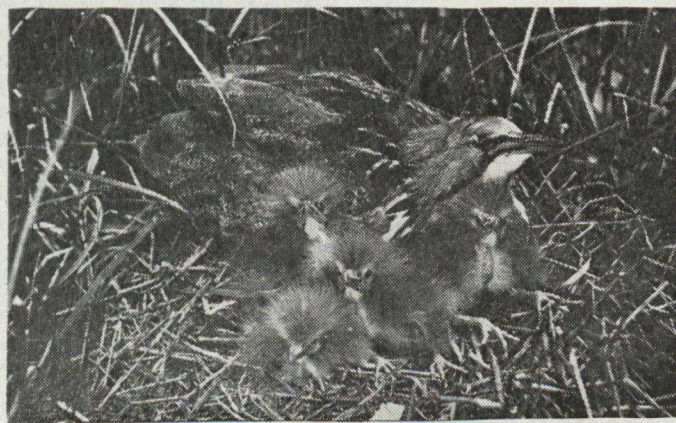
American Bittern Hiding



American Bittern Shielding Her Young



American Bittern Watching Photographer



American Bittern With Young



Facing The Truth of Forest Exhaustion

United States Lumbermen Invite Scientific Guidance in Cutting and Logging.

In any "alarmist" statement regarding depletion of the Canadian forest resources are several patent dangers to the cause of conservation. At the same time, the great millstone on the conservation cause in Canada undoubtedly is to be found in the public belief that the forest supply is practically illimitable. A deep rooted conviction that we are drawing our wood supplies from an inexhaustible bank account is the real factor behind public indifference and administrative slothfulness.

To demonstrate that Canadian white pine for example is being cut and burned without provision for reproduction may suggest to some persons that they should ask their dealer for wood substitutes, to replace boards with cement and shingles with asbestos. The very contrary is the conservationist's purpose, for he is an advocate of the most thorough utilization of forest products, and has no brief for the wood substitutor. Obviously the greater the public demand for wood products, the higher the value placed by private and public administrators on the raw materials and consequently the more efficient will be methods of fire protection and cutting operations.

Truth is truth and sooner or later will out. As concerns the forest resources of Canada the earlier the truth is known and published broadcast, the lighter will be the handicap placed on the people of Canada in days to come. In the spreading of facts relating to the forest conditions of the Dominion, incidental disadvantages to private investments must be borne with what patience is possible.

Across the American border, the forestry problem at the present time is inviting the frankest discussion. The old-time inclination to hush any and all references to fire damage on private timber tracts has apparently

gone with a lot of other hobgoblins of pre-war days.

Who would have said five years ago that the Western United States timber owners would ask the government to introduce scientific control of cutting on their limits. And yet, here is what the "Timberman" of Portland, Ore., says in its most recent editorial:

"The lumbermen and the Forest Service should get together and work out some definite plan for perpetuation of the timber supply on some scientific and workable basis. The Government is interested primarily in the available supply of timber for the nation's use. Herein lies the marked distinction between governmental and private interests. The time for the lumberman to consider this question is now. There never was a more opportune time than the present for the lumbermen of the country to initiate a broad national movement looking to the assurance of the future timber supply."

And again:

National Business

"The growing of timber is a national function. It is not the business of an individual.

"Another step in formulating a national forest policy would be the purchase of all timber lands belonging to private interests lying within the National Forests in the West.

"Then should follow the purchase of areas of timber land lying within a zone ten to twenty miles around the National Forests.

"With this as a basis there might be evolved a co-operative plan between the national Government and the private holders of timber lands whereby exchanges could be made of cut-over timber lands for cutting rights within the National Forests. The basis of exchange could be determined, in a measure, by the size of the tract, its location and adaptability for

reproduction. The condition in which the land was left after cutting would also be a factor in the exchange value. The land suitable for agriculture would be opened for settlement, the idea being to make every acre of land sustain either trees or people.

"The eyes of the nation as never before are focused on the lumbermen. There are no bigger, more broad-minded or patriotic men in any in-

dustry than are to be found in the lumber fraternity. Let us have the breadth of vision to go forward and give the country an example worthy of a mighty industry which seeks to maintain itself, not for its own sake alone, but for the country's as well. The lumber industry is the one of the few basic industries which has within itself the possibilities of perpetuation. Let us grasp them—NOW."

Forests of South May Last 25 Years

Charles S. Keith, president of the Southern Pine Association, recently made the statement before the Federal Trade Commission that the South is denuding its yellow pine forests at the rate of one and a half million acres annually, and further that not a foot of timber is being grown to replace that cut from the virgin forests. Mr. Keith based his principal contention for an advance in lumber prices on the South's rapid inroads on the nation's supply of timber. To the average lumberman, Mr. Keith's further unchallenged statement carries deep significance: **That within the next twenty-five years the South will become an insignificant factor in lumber production.** The high water mark he placed at 1911. Mr. Keith's utterances are deserving

of consideration in the formulation of a definite national policy to insure our future timber supply.

As Mr. Keith has so forcibly pointed out, the supply of timber in the South alone is diminishing at the rate of one and a half million acres a year, and reforestation is not even considered on private lands as an element in production.

Canada's White Pine

In view of the foregoing statement, it is pertinent for Canadians to inquire how long the white pine forests of Canada will last when they are called upon to take up the burden of the vanished Southern Pine? Could the entire white pine possessions of Canada last under such circumstances, five years?

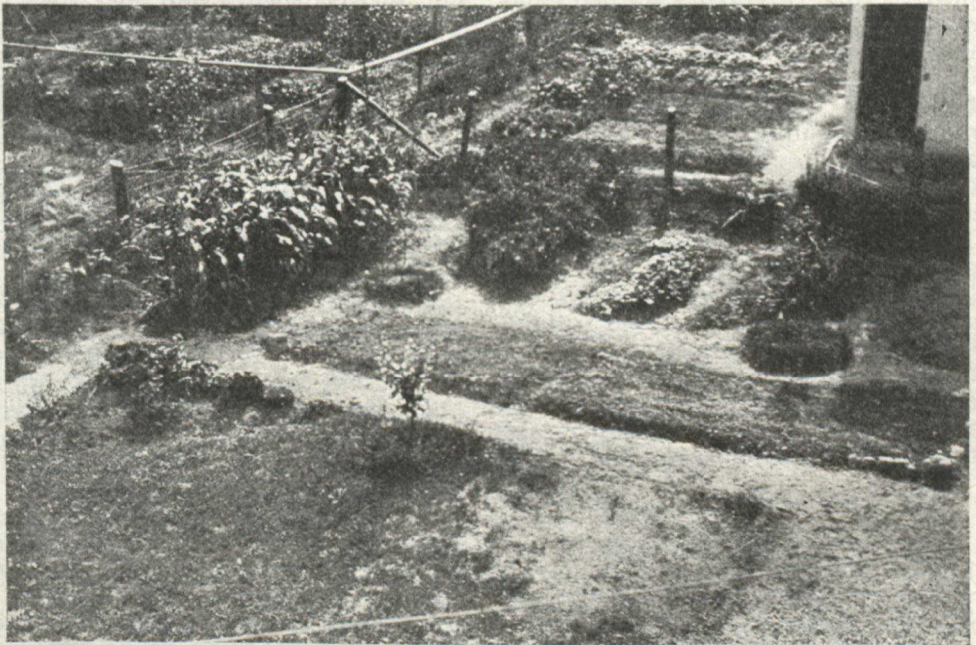
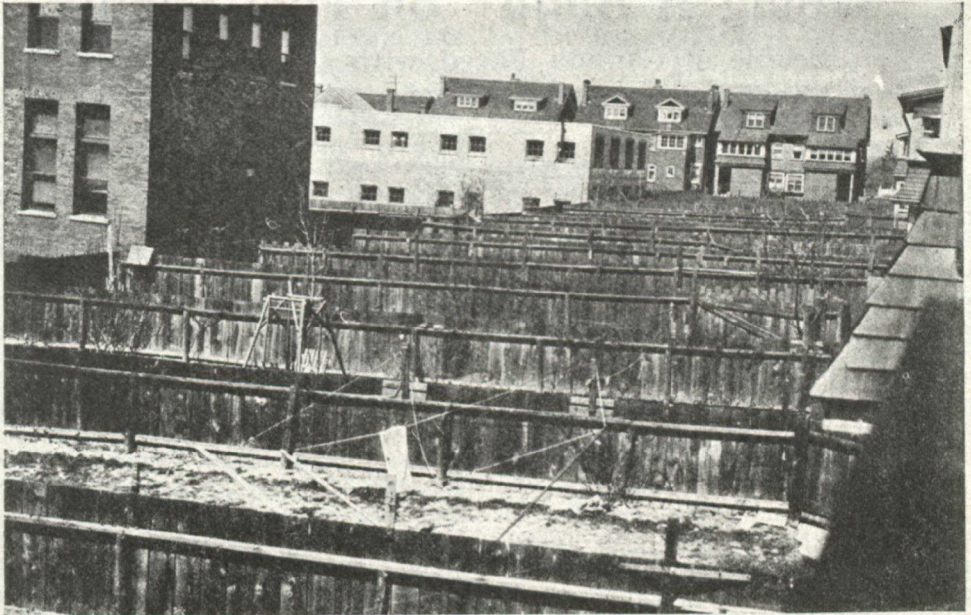
Wooden Fences and Yard Improvement

In the efforts towards improvement of back yard conditions in the City of Toronto, much emphasis is given to the riddance of unsightly back fences and the old-fashioned laneways. A member of the Forestry Association in submitting the accompanying photographs made the following comment:

"It is hardly necessary to draw attention to the fact that there is a very serious waste of lumber. Not only is there this waste of lumber, there is also a loss in productiveness, and a condition detrimental to the best sanitary state of affairs, and in addition there is a considerable loss

in community development. The smaller picture shows the junction of four back yards with wire fences. When shrubs and plants are in full bloom, the backs of these houses appear like one large garden and the neighbors vie with each other in their maintainance and productiveness.

"Can something be done to prevent the enormous waste of lumber in this way? Incidentally if open fences were adopted the fuel situation in many communities would be greatly relieved by the use of the old fences."



(See opposite page)

“Going It Blind” on Fuel Supply

People of Canada Faced with Certain Coal Shortage must Organize for Wood Reserve.

Canada is, in the main, “going it blind” on the wood fuel supply for next winter. Six months from the date of issue of this Journal will see the cold weather back again. How many municipalities have taken the U. S. Fuel Administrator at his word and have supplemented the inevitable coal shortage with fuel wood, is hard to ascertain, but judging by scores of reports in various local newspapers, amazingly little has been done. As in other campaigns the people have been waiting for leadership. They waited for it in February and March, the best months for getting the cutting done so as to allow time for seasoning. Scarcely a hint of the danger of delay appeared from any quarter save through the Commission of Conservation and the Canadian Forestry Association.

Now with winter five or six months distant, some effort in the direction of public education and warning appears. Advertisements are being circulated in the papers by the Ontario Government inviting municipalities to undertake to supply their wood fuel needs from the abundant supplies in Algonquin Park. The newly appointed Provincial Fuel Administrator, R. C. Harris of Toronto, has announced to some of the Boards of Trade that Canadians need not expect to have their houses at the same temperature as last winter nor to be able to secure a normal coal supply. Doubtless, provincial action will extend beyond a warning for very few municipalities will be found to take action of themselves if that is the limit of official co-operation.

Action Comes Late

Canadians may rest assured on one important point that we are six to eighteen months behind our United States neighbors in preparing for the coal shortage, which the U. S. Fuel Administrator says is certain to

arrive next winter.

Recent issues of the Forestry Journal have contained abundant information going to show the remarkable activity displayed by the Eastern States and the U. S. Government in supplementing the coal shortage with a wood reserve.

The Secretary of the Canadian Forestry Association recently spent a day in a small village, seventeen miles from Toronto. February had passed, March had passed and yet very few of the villagers and farmers had cut more than a few cords of wood, just sufficient to act as kindling for the anthracite coal fires they expect to enjoy next winter. At their back doors lay enough dead and dying hardwood trees to keep their homes at summer heat through five or six winters. In such communities across the border the State Fuel administrators tacitly informed the villagers and farmers that they need not expect their usual coal supply. This early warning, given six months or more ago, had the effect of driving every citizen into the nearest bush for a few days hard work.

A Grave Warning

What says the U. S. Fuel Controller, as reflected in the official statement of C. A. Macgrath, Fuel Controller for Canada?

1. That anthracite coal supplies to the points in Western Canada will be very materially restricted during the present coal year.

2. Under the circumstances, it is safe to predict that no American anthracite coal will be available for shipment to points west of Winnipeg.

3. It is also proposed to restrict shipments of anthracite to Canadian lake ports during the early part of the present season.

4. That the public, both east and west, must be given to understand that conservation of coal must be

practiced to the utmost extent by all classes of consumers.

Mr. Macgrath's memorandum said that Sir George Foster had been able to announce that the attitude of the United States fuel administration was that Canada would receive precisely the same treatment as the various states of the union. The western states had been given to understand that they must use the softer coal of the west and that the available anthracite would have to be conserved for the purpose of supplying the eastern part of the union and the provinces of Ontario and Quebec.

"Worse than Folly"

In the face of the unfounded public confidence, in next winter's developments, there is tonic effect in the recent call to action of Governor Bickett of North Carolina.

"It is worse than folly," said he, "for the people of North Carolina to depend on coal for fuel next winter. He who chops a tree in this cause serves his country no less than he who digs a trench. This is my appeal to the people of North Carolina."

This alarm is echoed by practically all the North Eastern States. Under the leadership of the United States Government the states have been organized for wood cutting purposes. Readers of the Forestry Journal who failed to read the article in the February issue on "How Uncle Sam attacked the Wood Fuel Problem," will be repaid in going back to the graphic story of Mr. Hawes.

Have Canadians any right to think that their super-confidence in an unknown factor is going to keep their homes warm next winter when Uncle Sam himself is making every effort to create an auxiliary supply of wood fuel?

It is only reasonable to suppose that if any persons are to freeze for lack of coal, it will not be the people of Massachusetts first and Canadians second.

Possibly the coal situation may work out nicely for both countries. But that is only an effervescent guess,

and will remain so until next winter actually arrives. Peat beds may be developed but not in time for 1919. Briquetting of lignite may be developed, but not for NEXT WINTER.

The only sure thing about NEXT winter is that it will bring many months of bitter cold, and that Central Canada cannot lay its hands on a single ton of hard coal, within its own boundaries.

Peat and lignite coal may serve Central Canada some day, but six months passes quickly and six months from to-day means another winter.

The Waste in Rural Parts

For the large town and city, hard coal will always be the staple fuel. But for the small town, the village, the cross roads and the farmstead, cordwood is certainly the logical safeguard. The United States Fuel Controller, while not issuing a specific mandate on the subject, has hinted plainly enough that those villages and farm homes surrounded by abundant hardwood supplies cannot expect coal to be diverted for their use next winter. The consequence is that local clubs, war fuel companies, school boy groups, etc., have been organized months ago to lay in a stock of cordwood and give it time to season.

To what costly extremes the people of Ontario may be forced six months from now is known to only too many citizens of Ottawa and other cities who were obliged to pay \$12 a cord for abominable examples of "wood fuel," consisting of green and rotted pine, mixed with green poplar, Ironwood, pieces of fence rail, old ties, and soft maple—a mixture almost impossible to burn without a previous immersion in gasoline. Such wood at such a price is at least equal to \$30 a cord for good hard seasoned maple, beech, elm, etc. However, another failure of the coal supply, coupled with a shortage of wood will bring thousands of householders to just such an experience.

The people are willing to accept advice. They are willing to act. They are keen to avoid a repetition of last winter's experience. All that is needed is rousing leadership.

A Model Municipal Wood Yard

Virginia, Minnesota, has established and successfully operated a model municipal wood yard. It has always been a problem to obtain anything but temporary and transient labor for city work because there was no form of employment which could be offered in the winter months. This possibility of using the city labor in the wood yard in the winter and thus creating a permanent employment for a better class of labor was a strong incentive to the city.

Once the idea had taken root they promptly proceeded to put it in operation in true business fashion. A considerable tract of birch and maple timber within three miles of the city was purchased at a stumpage cost of about fifteen cents a cord. An eighteen-horse-power kerosene saw outfit was installed on this tract and enough six-cord racks, divided into two-cord compartments, to take care of all the delivery teams. In this way there was no delay in measuring the wood while the teams waited. The wood was measured up and waiting for the

teams at all times. The city teams were used for delivery. Iced roads and a down-hill grade to town made it possible to haul two full cords—the minimum delivered to any one address—at a load.

The office work was handled by a manager in the court house. The city papers advertised the fact that the city had wood for sale at \$3.00 per route for 16-inch wood, \$4.00 for 24-inch, \$5.00 for 32-inch, \$6.00 for 36-inch and \$8.00 for 48-inch. Full payment to be made in advance. The applicant filled in the order.

Both the citizens and the city have been greatly benefitted by the operation. They expect to do even a larger business next winter, and are so well pleased with the way the thing has worked out that they hope to make it a permanent institution.

Many other towns on the range have established city yards on one system or another, but none of the others are so well organized or so well operated as the one in Virginia.—From "The North Woods."

How to Save Coal

Many people believe that it is impossible to get cordwood into the cities at anything but fabulous prices and that no one would use it even if it were cheap. This is very largely a superstition that has been built up and carefully fostered by the coal men. A recent experiment tried in St. Anthony Park North, a part of St. Paul, shows pretty conclusively that both assumptions are poorly founded.

A community of about five hundred families was chosen as a basis of the experiment. The members of the Forestry Club of the University volunteered to distribute some order blanks as their bit in helping out the fuel shortage. A little later they collected the orders for one hundred and ten cords of tamarack wood, a species that the coal dealers claim cannot be sold at any price.

The wood was bought up North, shipped to the city in carload lots, sawed into 12, 16, and 24-inch lengths and delivered at \$9.00 per cord. A carload of oak was handled in the same way and sold at the same price.

If the same plan could be worked throughout the city, and every community of this size could be sold the same amount, and there is no reason why it could not be done, it would mean a sale of eleven thousand cords of wood in St. Paul alone. Ten thousand tons of coal saved for Uncle Sam.

—From "The North Woods"

The Forestry Journal will be sent to any address in Canada for One Dollar a Year.

The Fire Fighter's Profession

BY E. T. ALLEN

MANAGER, WESTERN FORESTRY AND CONSERVATION ASSOCIATION

The modern forest officer, whether ranger or firewarden, is accorded great respect and responsibility because of his highly trained and specialized public service. Few men except naval and aviation officers, who also must combine practical experience with technical knowledge and trained intelligence, are expected to be so proficient with hand and mind alike. Out of a service which a few years ago was not even skilled labor, and was assigned to any inhabitant of a forest region, has developed a profession of forest fire prevention which requires all the abilities of a thorough woodsman, knowledge of many engineering sciences, successful command of men, and a talent for law enforcement and enlisting public co-operation.

This new profession has been able to develop largely because improved organization of private and public fire forces has created both rivalry and co-operation among those with joint problems to solve. It has been stimulated by the very fascination to an active and inventive class of men of its ever-widening field, challenging them to devise new methods and equipment and to keep abreast of invention in other fields in order that such may be seized and adapted. Telephony, heliography, meteorology, aviation, topography, range-finding—these are but some of the sciences which have been made part of methods for detecting and controlling forest fires, to say nothing of the mechanical perfection of equipment and the systematizing of feeding, transporting and handling men under the most adverse circumstances. To educate the public into greater care with fire, new trails have been blazed into the fields of psychology and publicity. The technique of forest legislation and the processes of enforcement is an essential knowledge. Finally, there is the actual fighting of fire, never the same, defying all rules, profiting by all previous experience but calling always for new and decisive reasoning.

Ranger Specialists

The most rapid development of fire prevention knowledge will be obtained by the engaging of each officer in specialized study of the subjects which interest him most, and his contribution of the results to his colleagues at meetings and in reports. But the development of maximum efficiency in actual field application requires that every officer study the progress along all lines. As the successful surgeon or engineer keeps abreast of everything done in his profession, from time to time adding his bit, so does the successful forest officer. It is this spirit which advances the profession in value and public estimation, thereby insuring its support, and which increases the opportunity of each individual member to gain reputation and financial return.

Relation to Public

Much has been said of the proper relation of the forest officer to the public. As a rule greatest stress is laid on his personal relations. He is enjoined to be tactful and helpful; to educate his neighbors in the importance of forest protection to every citizen, to reduce fire hazard so as to have fewer fires to fight, to teach compliance with law so punishment will be unnecessary, to be popular in order to win voluntary co-operation. All of which is so well recognized nowadays as important that few if any forest officers need it repeated to them. None know it better than they do. Enough is seldom said, however, of the assistance in gaining such community influence which lies in making the job stand for the professional competence described in the foregoing pages.

People respect, and usually admire, a man who has authority because he understands a difficult subject. No matter how superior the passerger may

feel personally, he thoroughly respects the officer of the ship that carries him. He knows seamanship is as necessary as it is mysterious to him. The public is now fairly well educated in the importance of forest protection and, in time of hazard at least, it is appreciative of protective organization. But it is not sufficiently accustomed to regard the forest officer as master of a peculiar profession, who for this reason alone has been given grave responsibility for life and property. Just as he acquired greater dignity when he became the representative of a public or quasi-public organization of high public service than he had when merely the local employee of a timber owner, he has now acquired an immeasurably higher dignity with the exactions in this service for training and knowledge beyond that of other men. It is this standing, above all, which the forest officer should have in the community.

To gain it, he must take keen pride and interest in all the technic details of his profession and see that its progressiveness is realized by the public. The type of officer who will do these things is the one that will prevail.

The New State-Sense and Conservation

"We have in general left behind us the days of crude plenty, but have not adjusted our ideas nor our habits to correspond with new economic conditions. Here the need is intellectual and moral education,—a

better vision and more altruism. We need a keener social consciousness and a new state-sense, if we are ever to solve the problems of conservation."—*Foundations of National Prosperity.*

From the Log Book of a Lecturer

The welcome accorded to lecturers sent out by the Canadian Forestry Association may be gauged by reading the following excerpts from a letter by Mr. A. H. Beaubien, who has had remarkable success in Western Quebec, where he has given illustrated addresses on forest protection in the back settlements.

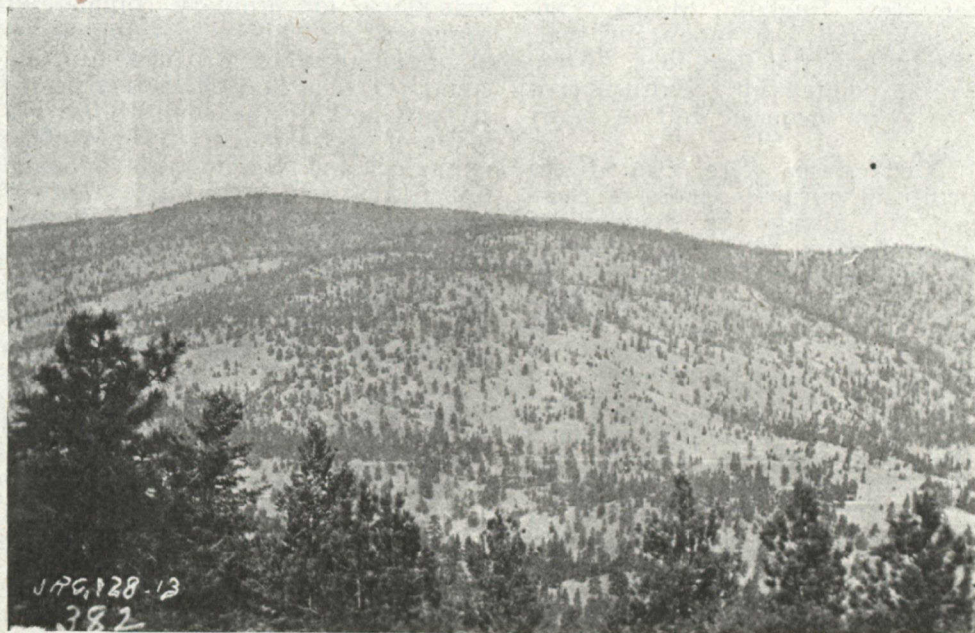
"I got to Ferme Neuve after a 12-mile drive through pouring rain," reports Mr. Beaubien, "and was much elated when I faced a hall packed to the doors with very eager people. There were over 200 present.

"On Wednesday, Mr. Mullin, the Chief Fire Ranger, arrived at Ferme Neuve, and took me to Ste. Anne du Lac. We made the 18 miles under pouring rain again and arrived at seven o'clock p.m. The school house was filled with over 100 people which is practically the whole male population. Ste. Anne du Lac is just a little clearance on the shores of Lake Tapanee and it was inspiring to see these brave people coming through the woods with their lanterns, or

paddling down the lake toward the village.

"On the morning of the next day we started on a 32 mile tramp to Mont Laurier and had not been going long when our buggy gave way. Luckily the fire ranger was at hand and repaired our rig but we had to walk for four miles because it was all that the horse could do to pull himself and the buggy. We got to Mont Laurier at 7 p.m. I hunted up the moving picture operator and hurried to the hall. We had a full house. M'gr Brunet, the Bishop was present with seven or eight of his priests and the main hall and gallery were packed. I reckon that over four hundred people were present. After the lecture, congratulations were offered to the Canadian Forestry Association by M'gr Brunet Dr. Cartier and some other prominent gentlemen for the good work being done."

These are the first educational meetings along forest protection lines ever held in the Quebec settlements.



SHINGLE CREEK, OKANAGAN VALLEY, B.C.

showing Yellow Pine type on slopes. This forest has sustained several fires and the hill is slightly eroded. There is little undergrowth and fair grazing.

The Menace To Our White Pine

BY PROF. J. H. FAULL, PH. D., UNIVERSITY OF TORONTO

Canada's Greatest Timber Tree Rapidly Losing Its Rank. Blister Disease Makes Headway.

White pine is the basic tree on which the forest wealth of Canada, east of the Great Plains and of the North Eastern States, has rested; it has been the source of the success and the fortunes of our great lumber companies, it has contributed largely to the revenues of our government—in Ontario to such an extent as to free us so far from direct taxation—and it has brought comfort to the home of every citizen, for it has been used inside and out as has no other in the building and furnishing of the dwelling and its surroundings, in which the home resides.

“This is the forest primeval. The murmuring pines and the hemlocks,”

so Longfellow pictured the Acadian forests of Evangeline's people. With the hemlock we are not concerned here, but what of the pine? That primeval forest of the Annapolis Basin with its closely-spaced “murmuring pines,” the plumed crowns waving a hundred feet or more above the darkened floor, and the clean straight shafts three to four or five feet in diameter, stretching up sixty to seventy feet without a break but a small corner of the glorious primeval forest of pine that covered the maritime Provinces, Quebec and Ontario south of the Height of Land, Minnesota, Wisconsin, Michigan, Ohio, New York, Maine and the

other New England States, Pennsylvania and the mountains well on down into the Carolinas. From the first coming of the Europeans it has been menaced and in many ways:

1. Vast areas were cleared for agricultural purposes; most of these areas will always be devoted to food production, but we now realize that lands of no inconsiderable proportion are unsuited for such purposes and that the removal of the forest was a mistake, and so we discover in the majority of cases the reason for the abandoned farms and fields to be found in all parts of the white pine area, and not alone in New England and the Trent watershed of Ontario; the problem of reforesting these sections has been confronting us for many years and is now more acute than ever.

2. Prodigality on the part of the early settlers and of their descendants. They and we have looked upon our pine as on our wild game and other natural wealth, as something that could be destroyed, often without rhyme or reason, often for very temporary gain, without regard to the future—happily we are coming to a more reasoning attitude, but necessity may be given some credit for that.

3. Unscientific methods of lumbering, which includes waste—often criminal in extent, disregard of provision for the natural restoration of the forest and failure to dispose of the slash, leaving it as the almost certain starting point of fires and as a nursery for various destructive fungi.

The Toll of Fire

4. Fire has been from the first and still continues to be much to our shame and our countless loss—the agent most destructive of our pine and other forest wealth. It has been and continues to be a veritable demon of destruction in spite of the fact that it could be largely controlled. It is said that “through fire waste alone more timber had been destroyed in the Dominion than had been felled by the woods-

man’s axe for ordinary commercial purposes.” “This is nothing short of appalling when we take into account the fact that the primary forest products of the country have a value of approximately \$175,000,000 annually, and the output is being imperiled through a waste that is largely preventable.” In this connection Senator Edwards has declared that “it will be only a few years when lumbering will be so reduced that, excepting west of the Rocky Mountains, it will be a very small industry indeed in Canada.” It is also affirmed that “white pine, which was long the leading commercial tree of Canadian forests, is supplying less lumber than it did five years ago by over forty per cent., while its proportion to the total cut of all kinds is only about one-fifth.”

Timber-destroying Fungi.

5. These have always been at work but never so destructively, proportionately at least, as now, for the stronger trees have been removed, slash has accumulated, and fire has made open scars which make their access sure and easy. With the diminished stock left, the losses from this source become constantly more significant. If anyone doubts this statement he has but to examine any run of logs and note the number that are defective. Little attention has been paid to this matter because there have been enough good trees to supply the demand; but this factor must receive attention, for the effect of removing the strong and healthy from the forest, leaving the weakened members is certain to produce much the same effect in the forest as in human society.

The Blister Rust of the Pine

6. The blister rust is a new comer from Europe and a very real menace—one that may render nugatory our efforts at reforestation with white pine, one that may spread with disastrous results to some of our most highly-valued western pines and one that may in time render futile the efforts we are making to preserve our white pine from des-

truction by fire, unless it can be eradicated or held in check.

This disease is caused by a fungus. The fungus attacks the living bark, causing death by girdling. All 5-needled pines are susceptible, all other kinds so far as is known are immune. The disease continues from year to year in an infected tree, but cannot spread from one tree to another. The fungus also causes a leaf disease of *Ribes* (currants and gooseberries). All species of *Ribes* are susceptible, but some, such as the cultivated black, and the red currants, more so than others. The disease spreads rapidly from *Ribes* to *Ribes* by means of spores, wind or animal-borne, but with the falling of the leaves at the end of the season, the affected plants are free from it and can be infected again only from rusted pines. It also spreads by spores from *Ribes* to 5-needled pines, and this is the vital feature with respect to the disease on the pine. This relationship was discovered in 1892. The dependence of the fungus on these two hosts is so complete, that without both its existence is impossible. Observations and tests so far made have shown that under natural conditions there is probably little likelihood of the disease passing from one host to another if they are separated by a distance of one-third of a mile.

Origin in Siberia

The history of this disease is both interesting and instructive. Its home is in Siberia and the Ural Mts., and its natural host is the stone pine of Europe and Siberia—*Pinus cembra*. Two hundred years ago our white pine was introduced into Europe and planted there extensively, for ornamental purposes and in some cases as a commercial forest proposition. About fifty years ago it was observed that the rust on *Pinus cembra* had spread westward and had attacked the imported white pines, and that, as so often happens, it was more virulent on the new host than on its own natural host. Now follows the story of its intro-

duction into the western hemisphere. A little more than 15 years ago a planting movement gained great impetus in America, and the cry was—"Plant white pine." The American nurseries were unable to supply the sudden demand for pine seedlings, and because of the greater cost of production made no effort to compete with the established European nurserymen. The result was that vast quantities were imported from Europe and with little or no question as to the health of the stock. Up to 1909 nearly 5,000,000 seedlings had been imported, about 95% of this from Germany, and distributed to hundreds of localities in the U.S. and Ontario. In 1909 it was discovered that large numbers of the shipments of that year were diseased. Then the door was closed. Examination proved that the 1908 shipments had been bad, too, and there is good reason to believe that diseased stock reached our shores even earlier than 1908. The suspected plantations that could be located were destroyed, but the records did not reveal the whereabouts of all of them, so that we have waited with fear and trembling, though with some hope that the danger had been averted. Three years ago, however, the blow fell, and reports from Ontario and a dozen states announced more or less serious outbreaks. Consternation has reigned, but state, provincial and federal governments have lost no time in determining the extent of the affected areas and in attempting some control or eradication measures. Massachusetts, New York and southern Ontario are known to be especially hard hit. As yet our great northern pine forests are scarcely reached; but it is unescapable that they are in imminent danger of widespread infection.

Infections have been reported from: Ontario and Quebec; Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Minnesota, and South Dakota.

To be Concluded in June Issue

Firmer Handling of Crown Forests

During the passage of the two Bills in the New Brunswick Legislature creating a Forest Service, the personnel of which will be under control of a non-political Board, Hon. E. A. Smith, Minister of Lands and Mines made some interesting explanations of the problems which the forest administration of the province has been called upon to solve.

"The tremendous rise in the price of pulpwood has given an impetus far beyond anything ever experienced before in this province, to the cutting of this wood. As a natural sequence trespassing is a common occurrence requiring great vigilance on the part of the scalers in reporting these trespassers, who are now required to pay a penalty stumpage of \$3.75 per cord or in superficial feet \$7.50 per thousand. One of the hard problems I found in taking over the administration of affairs in this office was to know how to deal fairly with the settler on Crown lands in disposing of the pulpwood he cuts in making his clearing.

"If it were a matter dealing with bona fide settlers, then the problem would be a simple one, but where the records of the department show that a very large proportion do not fulfill the requirements of the settling act, it will be seen at once the question of dealing out justice is approached with a great deal of difficulty. Accordingly I gave orders that all green pulpwood cut outside of the first ten acres be subject to a stumpage of \$3.75 per cord, burnt wood \$1 per cord and payment be exacted by the department. When it is shown that the settler has complied in every way in homesteading his lot, then 75 per cent. of the stumpage collected will be returned to him.

Get Clear of Politics

"My proposal for this new Crown land policy is to remove the administration of the forests to a very large extent, if not altogether, from the sphere of politics. It is proposed

to combine the following services, viz.: Protection of forests from fires; scaling of lumber cut on Crown lands, and protection of game, with one efficient staff the chief officer of which will be the director of forest surveys under a board consisting of the Minister, the Deputy Minister, the Director of the Forest Branch and two others, one representing the leaseholders and one representing the owners of Crown granted timber lands.

The board will have authority to appoint the necessary staff to carry out these duties and the men employed to possess the necessary qualification after examination.

A new up-to-date fire service to be inaugurated to include the organization of sufficient competent men to cope with forest fires in all parts of the province, whether on Crown or granted lands; building telephone lines in the forest; erection of lookout stations; cutting fire trails; necessary tools for fighting fires; gasoline engines for railway work; in short, everything that experience has taught is necessary in the prevention of the great fire evil.

More Money for Treasury

On the first of August, 1918, the licenses which were sold in the year 1893 and not renewed under the legislation passed in the year 1913 will expire. There was strong influence brought to bear that we shall allow the licensees to pay the bonus and interest, an amount that would equalize the payments made by those who renewed their licenses under the legislation referred to, but the government thought it would be more advantageous to the province to allow these lands to go up for sale.

In these days of high stumpage values it was our opinion the tariff rates existing when we came into office were not in keeping with those charged by owners of private lands, accordingly we raised the rates on spruce from \$1.50 to \$2.50 per thousand, other lumber in proportion. The increased rate has been well received, so far as can be ascertained, by the licensees. The renewal rate of \$8 a square mile annually has been left the same.

During the year arrangements have been made for the placing of five parties in the field, whereas last year there were but three. These parties completed the survey and inspection, under forestry methods, of 925,000 acres, which is now being tabulated and mapped in this department. The total area surveyed so far amounts to 1,245,000 acres, or 16½ per cent. of the Crown lands. While the cost of labor and supplies has increased from last year the cost per acre of the survey makes a very favorable showing. The figures are as follows: 1916, \$27.20 per square mile; 1917, \$27.07 per square mile. The total amount expended since the inception of the survey is \$44,574.57.

There has also been introduced in the New Brunswick Legislature, important measures with the object of giving greater protection to the forests of the province and to stop the wastage which has been going on for years. In speaking of the proposed new Acts Hon. Mr. Smith said in part:—

Stop Deterioration

The most casual observer could note that the forests are failing. It would take only a visit to the rivers or mill ponds to see the change that had taken place within a comparatively short time, in the size and quality of the saw logs. Fir, which a few years ago was left standing in the forest, had come to a compromise thirty or forty per cent. of the operations. This was prima facie evidence that the spruce was being depleted rapidly. In the early days of New Brunswick, white pine formed the most valuable part of the forest,

and huge quantities of that timber were exported to Great Britain. White pine failed to reproduce to any extent and little remains in the province at the present time. Later spruce was in demand. Large mills and scores of portable mills were operated to meet the demand for spruce and in consequence of the indifference and the wasteful methods of the jobbers, spruce fast was going the way of the pine.

Scalers' returns from 1910 to 1917 inclusive give a total cut of 2,228,337,215 feet, an average cut of 275,500,000 feet per year. This would indicate that the present assumed commercial softwood stand is about eighteen times the average cut of the last eight years. This did not mean that the softwood would be exhausted in eighteen years, because the annual growth was applied against the annual cut.

An annual growth could be expected on the greater portion of the timber estimate given before, and also on under size spruce and fir, which would be in the vicinity of 5,000,000,000 feet. Some of the under-sized timber would reach commercial size in eighteen years. The average annual growth would apply to not more than five million acres.

Supervise Scaling

The outlook for a large return for the present logging season was not promising. From the information at hand the cut would not be more than fifty per cent. as compared with last year. One of the first questions that the government had taken up was the unsatisfactory method of obtaining a true account of the lumber cut on Crown lands.

The general principle, he said, was to pay the scaler a flat rate of seven and one-half cents per thousand on the logs he scaled, this presumably being thought an incentive to the scaler to get as large a count as possible to remunerate him for his activity. However well this may look in principle, in practice it is not borne out.

We have therefore decided to commence building up an outside service

by utilizing to some extent the forest engineers, and gradually eliminating the objectionable features of the present system.

During the short time I have been in office, I am convinced the present methods of scaling are antiquated and very often not much more than a guess, said the speaker.

Having been convinced of the difficulties of lumbermen in estimating the size of the tree to be cut in accordance with the regulations, I have seen fit to change this regulation by providing the simple requirement of a stump diameter, viz., 12 inches for spruce and 9 inches for fir inside of bark, said the Minister.

Early in the season I sent a circular letter to every operator on Crown lands under the authority of legislation passed at the last session, asking for the cut on both granted and Crown lands. The responses from the lumbermen, to a very large extent, were unsatisfactory. As the law was enacted after the operations were completed last season, I have concluded, however, unwillingly, not to press the matter too strongly against the lumbermen in this connection, but should proper returns not be forthcoming during the present season the law will have to be invoked and the penalties claimed as provided by the timber regulations."

New Brunswick Forest Club

The second annual meeting of the New Brunswick Forest Club, Ltd., was held at the University of New Brunswick on Friday, April 12th, at 8 p. m., and the following officers were elected for the ensuing year.

President—W. B. Snowball, President of J. B. Snowball Co., Ltd., Chatham.

Vice-President—R. B. Miller, Dean of N. B. Forest School.

Secretary-Treasurer—L. S. Webb, Forester N. B. Forest Service.

Executive Committee—R. R. Bradley, Consulting Forester New Brunswick Railway Co. and J. R. Gareau, Forester J. B. Snowball Co., Ltd.

Hon. Dr. E. A. Smith, Minister of Lands & Mines was unanimously elected a life member of the Club, in view of his great interest in Forestry work and importance of the work being carried on under his administration.

Other new members elected were—Mr. J. W. Gill of Barnaby River, Mr. J. W. Maloney of Rogersville, Prof. R. P. Gorham of the Provincial Normal School, Mr. Donald Fraser and Mr. Archibald Fraser of the Fraser Companies, Ltd., Mr. A. T. Murchie, Inspector of Scalpers, Mr. L. A. Gagnon, Chief Game Warden, L. P. Roy, Campbellton, F. A. Barkhouse, J. G. B.

Pugh, J. D. McKay and E. R. Rutledge of the New Brunswick Forest Service, Geo. F. Burden, Assistant Inspector of Scalpers.

An instructive paper prepared by Donald Fraser of the Fraser Companies, Ltd., dealing with the administration of forest lands was read by G. H. Prince, Mr. Fraser being unable to be present.

Prof. R. B. Miller gave a very interesting address on the utilization of by-products from sawmills.

Mr. J. R. Gareau led in a very practical discussion on the methods employed and the possibility of eliminating the unnecessary waste in logging operations.

A number of important resolutions dealing with the administration and protection of forest lands were prepared for transmission to the Government of New Brunswick.

WANTED!

Accountant—A first-class opportunity for the right man is open in the Logging Department of a large paper company for an accountant. He must write and read both languages. One who has had previous experience in this line of work is preferred. Box XY, Canadian Forestry Journal, 206 Booth Bldg., Ottawa.

Forestry and the War

By DR. B. E. FERNOW

Dean, Faculty of Forestry, University of Toronto

Has the Public Opinion Yet Been Convinced That Forest Maintenance Is State Business ?

The relations of the war to forests and forestry are many; they can be discussed from a variety of points of view. There is a rôle which forests are playing in military evolutions—the consumption of materials for war uses, the destruction of forests in the war zone, the disturbance of regulated forest management where such existed, etc.

It is not my purpose to exhaust the theme, but to direct attention particularly to what I consider the most important and possibly most lasting effect, namely, upon the development of future forest policies in our country. I shall only briefly touch on other relationships.

The war has taught us, in the first place, new appreciation of the value of forests and forest products. We have been made aware of the fact that, as in olden times, forests play a not unimportant rôle in modern military tactics—important enough to pay particular attention to the maintenance of boundary forests as a matter of State policy. Indeed, the aeroplane development as a most efficient reconnoitering means imparts a particular, additional value to forest cover as a screen against observers.

Next, we have found that in modern warfare, forest products are needed in large quantities, and that home supplies are preferable to importations, not only because of the possible inability of securing such, but on account of transportation difficulties.

The average trench requires alone about one cubic foot of wood to 10 feet of trench—say, 60,000 feet, board measure, to the mile, or 15 billion to the French front, not to account for shelters, artillery screens, block-houses, etc., and fuel. Such structures consume on the French front

as much as \$500 to \$1,200 worth of wood apiece.

Again, forest industries which were on the decline or entirely abandoned have been revived by the war and new uses for wood products developed.

In Germany, cut off from the outside world, the long-abandoned naval-stores industry, based largely on spruce, and the tan-bark industry, based on oak coppice, have been revived, while in France the need of pine timber has made serious inroads in the turpentine woods of the Landes.

Wooden ships and aeroplanes call for special materials. The substitution of wood cellulose for cotton in the manufacture of explosives and the use of sawdust for cattle feed are among the new uses.

Moreover, we have learned to appreciate that certain classes of forest products are rare and of special value. Sitka spruce, once a despised material, is now found almost indispensable for aeroplane construction, furnishing long, clear, light, yet strong, material. The limited supply of such material suggests the propriety of Government control.

French Forests Destroyed

One of the first thoughts which the theme suggests leads us to the battlefields in Flanders, where a wholesale destruction of forest cover has desolated the country. While the territory occupied by the enemy represents only a small fraction of the whole of France, it includes a proportionally large part of the French forest area; perhaps one-fifth to one-fourth of the total forest area—the most extensive and richest portion of French forests—is located in the war zone and much of it destroyed—a sad loss, which it will take many years to

repair. It is mostly privately owned, but private endeavor by the impoverished owners will prove entirely inadequate to undertake the work of restoration. There is little doubt that State aid will be needed.

Not only outside the war zone in France, but in Great Britain, the woodsman's ax has been busy cutting available supplies for war purposes. That in this cutting Canadian and American lumberjacks have been largely employed may be assumed to have made for efficiency in operation, but it may also have been secured at the expense of all silvicultural considerations. Many a forest managed under a natural regeneration system will have been cut without regard to the needs of reproduction, and French foresters will for many years to come find difficulties in returning to a sustained-yield management, which has been deranged by premature harvests.

The magnificent fir forests of the Vosges and Jura Mountains, the show pieces of French foresters, managed in selection forest, are being dismantled without regard to reproduction and with the maximum of damage to young growth.

Effect in Britain

In Great Britain the utilization of home-grown timber on a large scale will have waked up the people to the possibilities of increasing its production, and we may confidently expect a more serious effort on the part of the Government to inaugurate a forest policy which will encourage private endeavor to replace the cut plantations and for the Government to attempt the ambitious pre-war schemes of wholesale afforestation of waste lands.

The British Empire Resources Development Committee bids fair to outlast the war and become a part of the Reconstruction Committee, which has begun its work.

While in our country these more or less direct war influences are not felt to a great degree, yet there is one development which has no direct bearing on forests and forestry, but promises to be of the highest importance in

the development of forest policies; it is the development of socialistic tendencies.

Nationalizing Industry

We are learning rapidly that government is a tool which can be made efficient, and we are learning to realize community interests as superior to individual interests. The extension of government functions has grown marvelously in all belligerent countries, so that Bellamy's description of the communistic state is not any more so Utopian as it was when first published, forty years ago.

The States that have gone perhaps farthest in nationalizing industries are the Australians.

In New South Wales not only are railroads and coal mines operated by Government, but woolen mills, cement, and even harness factories.

West Australia adds brickyards and quarries, sawmills and steamships, hotels and laundries, agricultural implements, and now even retail bakeries, butcher shops, and fish markets. The Ontario Government has undertaken at least the last enterprise, namely, to furnish fish at reasonable prices.

Under the influence of the Farmers' Nonpartisan League, the North Dakota legislature has gone so far as to declare for the principle that the State may enter upon any manufacturing or industrial field, and has taken up first State ownership of flour mills and grain elevators.

These socialistic developments have not altogether been merely dictated by war needs, but are bona fide changes of attitude toward private enterprise. We may, to be sure, not claim so much for the many Government activities which the belligerent countries, including the United States, have developed as war measures.

Congress itself has become more and more an exponent of Government ownership and control, with a tendency to State socialism. As Mr. Mann declares: "We are undergoing the greatest revolution in government which this country has ever seen."

After the war, to be sure, a formidable reaction may set in and we may

experience a return to unregulated industry and to the wasteful competitive system, at least in part. But while this reaction may take place in directions of temporary character, there are other directions in which Government control will have shown itself so superior as to suggest its continuation. May we not expect that if these activities are successfully carried on there will be arguments developed for carrying on at least *some* of them beyond the war?

The control of public utilities has been under discussion long before the war, and now we shall gain experience as to how efficiently the Government can manage enterprises such as railroads, shipping, munition work, mines, not to mention the food control and control of profits.

Before the war it would have been by most statesmen considered Utopian to undertake to regulate, as we do now, production, distribution, and even consumption. Now, we attempt all these things, cutting out competition as a factor in regulating prices and substituting a co-operative system. Are we bound to return to the wasteful system of competition? Or shall we have learned that, at least as far as the natural resources that are exhaustible are concerned, communal management is the only rational method.

There is no doubt that the war and its incidental requirements have forced us into abandoning at least temporarily long-cherished theories of individual *versus* communal functions; and the opportunity for making the change permanent, for making radical changes in industrial and economic conditions after the war, will never be better, provided the opportunity is seized immediately and the pendulum is not allowed to swing back too far.

Will Competition Lessen?

For many of the Government activities which the war has developed convincing arguments can be brought forward in favor of abandoning them (to more or less unrestricted private enterprise after the exigencies of the war, which called them into existence,

have ceased; but we may assume that the general attitude favorable to an extension of Government functions will remain and the *public* interest will more than heretofore be considered in the new adjustments.

Can we not make use of this attitude in furthering the public interests in our own special business—the conservative use and management of our forest resources? Is it not timely to point out that, if anywhere, in the handling of these resources communal interest is paramount and calls for Government control?

The arguments for such State control are familiar to you. They may be summed up in one sentence, namely, that forestry—the management of forests for continued production—is not attractive business for private enterprise for various reasons.

At any rate, the idea of using our forest resources so as to produce continuous wood crops has so far gained little acceptance in America—none at all among the holders of the bulk of our remaining standing timber. Indeed, we may agree with Coolidge's statement, that "individual ownership has proved eminently uneconomical, and even destructive of the permanent productivity" of their lands. He does not, however, draw the proper conclusion when declaring that "there is no economic necessity for State production of timber."

Nor do we agree with Professor Toumey, who also pins his hope on private ownership, although admitting that "it is far more important to the *nation* that the second growth be adequately safeguarded than it is to the individual."

Profits too Far Distant

He proposes "by liberal tax laws and technical assistance to help the private owner to attain a protected reproduction, etc."

We, on the other hand, do not believe that there can be enough incentive created by these means for private forestry.

In vain have we striven for decades to interest the lumberman and timberland owner in a more conservative

treatment of his property with a view to a future, to substituting silvicultural management for exploitation. Outside of protection against destruc-

tion of their property from fire, we have practically secured no response, and that naturally, for such management is financially not attractive.

The Balance of Present and Future Needs

Private interest in any industry can only be a financial one, but financially forestry—a sustained-yield management—means curtailing present revenue or making present expenditures for the sake of a future revenue, and that in a distant future which is of no interest to the individual.

This time element, which is peculiar to our business, is a natural deterrent to private enterprise in this field, for self-interest works only for the present. Only a long-lived, stable, permanent ownership can assure us of conservative management; only State ownership can afford to exercise providential functions, can guard the interest of a distant future and wait a century for returns on its outlays.

That in some localities the forest cover, in addition to the mere material function, exercises a protective function on waterflow, soil, and climate, affecting local as well as distant interests—this protective function only adds argument for State control.

Is Regulation Possible?

I repeat, we have tried persuasive and promotive methods to induce private enterprise to engage in forestry, but the inherent troubles which surround this business have rendered the result negligible. We might apply methods of control and supervision over the use of private property which might insure continuity of supplies. Experience in the old countries has shown that, in spite of much more perfect machinery for enforcing laws, and in spite of much more ready disposition to submit to laws, the attempts to control private management have been largely without the desired result.

We may come as well now as ever to the realization that forestry is and must become State business.

—From "Foundations of National Prosperity."

\$8 AN ACRE. YOUNG GROWTH

The question of the value of young growth in dollars and cents often occurs in discussions of Canadian foresters. The United States Forest Service has placed a value of \$8.00 an acre on young coniferous growth sixteen years old on the Columbia National Forest in Washington.

LUMBER IN THE MOVIES

Two carloads of lumber a day, approximately 15 million feet a year, are used by the studios of the Famous Players-Lasky Corporation at Hollywood, Cal., in the construction of "sets" and scenery for producing motion pictures which appear to the public as "Paramount" and "Artcraft" releases.

The time was when the canvas wall and painted window satisfied the film-going public. Now nothing less is sufficient than a wooden wall finished in fine grain papered or hung with heavy drapes; practical windows of real glass; doors that slam and lock. Everything is built substantially.

The Forestry Journal will be sent to any address in Canada for One Dollar a Year.

A Survey of Sugar Groves

By G. C. PICHE, CHIEF OF FOREST SERVICE, QUEBEC

A survey of maple sugar groves in various parts of the province was begun last fall by the Forestry Branch. The object of this survey is to gather accurate data on the following:

1. The proportion of the various species of trees in each grove, to determine the influence, if any, of a mixture of trees on the yield of the sap, etc., etc.

2. The influence of the soil.

3. The influence of the topography of the ground.

4. The temperature.

Notes are also made on the equipment available, the methods of tapping the trees, of gathering the sap and also on the yield of sap, by species of maples, by a number of trees, and as influenced by the frost.

Information is also being gathered on the methods of making syrup and sugar, and, finally, a statement showing the profits or losses of the industry will be made up.

All reports will be compiled at the Forestry Branch by counties and by districts; thus before long complete and careful statistics concerning this valuable industry will be available.

Sugar now sells at a high price. It is, therefore, in the interest of our farmers to work their sugar groves so as to secure their own supply of sugar and syrup.

All the owners of sugar groves desiring to help in the survey are invited to write to the chief of the Forestry Branch, Quebec, who will be glad to receive any information that can be given.

B. C. Gets Forest Products Laboratories

Efforts which have quietly been exerted for several months past, looking to the establishment in Vancouver of a branch of the Forest Products Laboratories of Canada, are now certain of success. The new laboratory will be equipped at the outset with all necessary machinery and appliances for the carrying out of wood testing experiments on the lines pursued at the parent laboratory maintained by the Dominion Forestry Branch at McGill University, Montreal, where invaluable work has been carried on. Scientific demonstrations in tree chemistry were initiated in 1913, the wood-testing department being added in 1914. It is proper to mention here that the setting up of the Forest Products Laboratories by the Canadian Government was due to recognition of the great work done for the lumber and pulp industries at the United States Laboratories at Madison, Wis., established six or seven years ago.

This institution really represents the joining up of a number of wood-testing stations built up in various parts of the United States years earlier by Dr. Fernow, who at that time held the position of chief forester to the United States Government.

The result of the many requests reaching the Dominion authorities from the coast—the more especially since the starting of the spruce production campaign by the aeronautical branch of the Imperial Munitions Board—was seen in the arrival at Vancouver late in March of W. B. Campbell, B.Sc., assistant superintendent of the Montreal Laboratories, with instructions to communicate with the B. C. Forest Branch, the Munition Board, B. C. University heads, and leading lumbermen, with a view to the speedy establishment here of a wood-testing unit which doubtless will, after the war, form the nucleus of a much larger scheme to be carried out in behalf

of a better utilization of British Columbia woods. Conferences held with the bodies mentioned disclosed a hearty desire on the part of all to cooperate in every way possible with the Ottawa Government so as to secure the needed facilities with the least possible delay. As a result, Mr. Campbell was able to return east on April 15 with a draft of a comprehensive scheme for approval by the Director of Forestry at Ottawa which will permit of certain wood-testing data being available by the end of May, by which time it is expected the new building being erected by the British Columbia Government at the University for laboratory purposes will be ready for occupation and at least partially equipped.

B. C. A Great Gainer

On the evening of April 5, Mr. Campbell was the guest of the B. C. Forestry Club, when about 40 lumbermen and others were present.

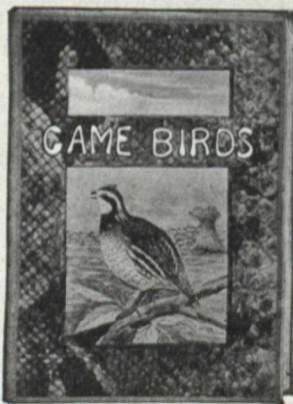
"In British Columbia," said Mr.

Campbell, "the study of timber is by far the most important work that the new laboratory can take up at this time. One of the prime factors is the study of strength in its various phases—strength in bending, strength as regards shock, resistance, hardness, tension stiffness, etc. The suitability of timber for any particular purpose cannot be judged by its characteristics as shown by any of these factors separately—they must be taken in combination. For instance, Douglas fir is one of the strongest of woods for its weight that we have, yet for aeroplane construction it is not as suitable as the much weaker wood—spruce. The first series of tests are necessarily on the pure wood—i.e., the characteristically straight-grained pieces. Without the knowledge to be derived from such tests it is impossible to proceed with tests of larger-sized material containing knots, checks, and other defects. At Montreal we have completed a study of the characteristic strength of the clear, straight-grained material of

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The Forestry Journal secured five hundred copies at such a price as enables it to quote to its readers, as long as the five hundred last.

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CANADIAN FORESTRY JOURNAL

206-207 Booth Building, Ottawa.

Douglas fir, so that we have progressed that far on the road to an exact knowledge of this species. Another thing that will be very important out here in the future is built-up stock, including three and five-ply veneers and bigger stuff. The possibilities for British Columbia manufacturers along this line are tremendous. The work of the Forest Products Laboratories in the East has been very heartily endorsed by the pulp and paper manufacturers, who have manifested their appreciation by offering substantial aid. One great benefit that is certain to follow from the establishment of a wood-testing branch in British Columbia will be that architects and engineers will have definite data concerning the properties of British Columbia woods which they will be able to use when designing structures, in the same way they now have knowledge of the definite properties of steel, concrete, and other standard building materials. This information will be especially valuable also in the export trade when it is a matter of introducing a new wood in competition with some that have been long in use. An instance of this is shown in the advantage which long-leaf pine has over Douglas fir on account of the scientific grading and the branding of all grades by the mills. Constructors are enabled to select the class of material which exactly suits their needs, without the necessity of buying high-grade material for purposes which would be equally well served by lower quality timbers or lumber. Per contra, they also are able to avoid the danger involved in buying low-grade material where high grade is necessary.

Aeroplane Work First.

The laboratory to be established at Vancouver will at first be limited in its work almost entirely to problems arising out of the production of aeroplane material. Owing to the lack of special knowledge of British Columbia woods and the influence of defects, it is necessary for the Minister of Munitions to de-

mand very high standards of quality in the material reaching them. If an increasing understanding of the properties of the woods required will allow of even a very slight relaxation of the specifications, a very great increase can be made in the amount of material available. It is just possible that further investigation may disclose that the province has other woods which might be used to advantage in aeroplane construction.

B. C. FIRE DOES DAMAGE

Forest fires which swept for three and a half miles along the Columbia river, between Sullivan and Genelle, burned 37 high power line poles of the West Kootenay Power and Light company Sunday and yesterday and temporarily interfered with operations at Trail smelter. But for the fact that one line was preserved the whole plant would have had to close down.

Forest rangers were quickly on the job and the fire last night was under control.

Men from J. S. Deschamps' lumber camps and the West Kootenay Power and Light company cooperated with the forestry officials in fighting the blaze, which burned furiously at times. At one point it jumped about 900 feet across the Columbia river.

It is believed that sparks from a locomotive started the fire. In the same district five or six fires were started during the past two or three days by clearing fires getting away from the ranchers who were burning brush.

Moving a Paper Mill.

A paper mill looks as if nothing could move it.

But a paper mill can be moved by a few careless men miles back in the forest. How?

Burn down the limits and the mill disappears.

No mill remains after its wood supply has been burned up.

Splendid Work by Forest Corps

The following letter, speaking in the highest terms of the work which has been done by the Canadian Forestry Corps, has been received by Sir Edward Kemp, overseas Minister of Militia, from Lord Derby, and forwarded by him to Sir Robert Borden:

"Dear Sir Edward:

"I am writing this letter to let you know, on behalf of His Majesty's Government, how warmly they appreciate the splendid work done by the Canadian Forestry Corps in connection with the urgent demand which was received early in February last for some 40,000 tons of timber to be sent to the front. This was an unexpected demand, and it was requested that delivery should be completed not later than the 31st March. Shipment was commenced from the 10th February and the whole order was completed on the 20th March, eleven days ahead of the specified time.

Worked 90 Hours Per Week.

"I am informed that this satisfactory result is mainly to be attributed to the energy put into the work of production by the Canadian Forestry Corps, who supplied no less than 34,000 tons of the total. When the corps understood that it was an order of urgency, and that the material was required for the front, many of the companies voluntarily worked long hours without any extra pay, some of them doing as much as 90 hours per week. They were at work during the whole of the Easter holidays, so that had any further demand been made at that time it would have been possible to deal with it.

"It is, as you are no doubt aware, largely due to the operations of the units of this corps in France that we have, with the exception of sudden and unforeseen demands such as the present one, practically stopped the shipment of British-grown

timber to France, thus saving cross-Channel tonnage; while we are also able to save the shipment of foreign timber by having the production of the corps in England to meet the various national demands.

"Feel Real Gratitude."

"I hope that the Canadian Forestry Corps will realize the real gratitude which we feel for their admirable work and for the spirit which they have shown throughout, in sparing no exertions whenever an opportunity has been afforded them of assisting the fighting men at the front.

"Yours sincerely,

"(sgd.) DERBY.

GERMANY'S PRICE LIST

The Berliner Boersen-Zeitung states that the prices of all sorts of lumber have risen to astounding heights. Latterly the requirements of the army on the eastern front have considerably diminished but orders from the railway car factories have greatly increased. The most serious factor is the scarcity rather than the high price level. Indeed it is a serious problem how the flying machine factories may be kept supplied with sufficient wood. Material for these factories is so scarce that none of the wood which is usually discarded in the sawing is now thrown away. Concerns which do not belong to the flying machine syndicate have to pay at least \$156 per M at the station in East Prussia; concerns which belong to the syndicate pay \$125 per M, i.e., the price fixed by the war office.

Ash is also very scarce and the price is as high as \$226 per M of round wood; although this figure is the fixed official price for sawed ash it does not even represent the average level of prices paid for "free" ash.

Alder costs \$113 per M, when it is obtainable at all. Basswood is very much in demand.

The Forests of Newfoundland

(BRITISH RECONSTRUCTION COMMITTEE REPORT.)

Newfoundland has considerable reserves of timber, which, though under a separate Government, form part of the same Imperial question. They illustrate incidentally how rapidly forests, which at first sight seem vast, may be absorbed. The Newfoundland woods cover 10,000 square miles, but more than a third has been taken over by a single company. The produce from this area, nearly equal to the whole woodlands of Great Britain, feeds the pulp and paper mills of the Anglo-Newfoundland Development Company and supplies the requirements of four British newspapers. Newfoundland has assisted the United

Kingdom during the war with supplies of pitwood from the three-mile belt round the coast reserved by the Colonial Government for the use of the Colony and not ordinarily available for export except in the form of pulp. Labrador, which is a dependency of Newfoundland, is believed to have considerable resources in timber suitable for pulpwood and pitwood.

India, South Africa, Australia and New Zealand are already importers of soft woods, and no relief with regard to future supplies, but rather the contrary, may be expected from those quarters.

French Lecturers do Excellent Work

The educational propaganda of the Canadian Forestry Association this year has taken an unusually practical turn. The aim has been to carry the educational work directly to the door of the settler in timbered districts in an effort to reduce the annual harvest of settlers' fires. It has been proved abundantly that no system of mechanical equipment such as patrolmen, fire towers, telephone lines, etc., is more than half complete in itself and must fail in its objects if the human material responsible for causing the fires is not brought into an intelligent and sympathetic relation towards the whole forest protection enterprise.

Mr. A. H. Beaubien, a talented French speaker with personal knowledge of Quebec conditions in the timbered areas, was engaged by the Forestry Association to hold public meetings covering three weeks in the territory of the Ottawa River Forest Protective Association which embraces twenty million acres. Mr. Beaubien held his first meeting at Ferme Neuve near Mont Laurier, Quebec, on Tuesday, May 7th, il-

lustrating his address with a large number of excellent lantern slides. Mr. Beaubien's route was confined almost wholly to the country settlements, particularly the newer parishes where the greatest need exists for educational activities. At all of Mr. Beaubien's meetings every auditor is presented with reading material which further emphasizes the common sense of being careful with clearing fires. Co-operation of the parish priests and influential local men was secured in advance, the lectures being well advertised by printed matter and by the announcements at the church services.

It is expected that two additional French lecturers will be made available for Central and Eastern Quebec through the co-operation of the Department of Lands and Forests of Quebec.

Mr. J. A. Doucet concluded a three weeks' tour of Northern New Brunswick on behalf of the Canadian Forestry Association, where his public lectures on forest protection were a pronounced success. Large audiences were secured, in one instance

amounting to 550 persons at Tracadie and without doubt a great amount of splendid service to the cause of forest conservation was accomplished through Mr. Doucet's efforts.

In the French Canadian communities to which he confined his lectures, practically no educational work had been done hitherto, except what has come through the French literature of the Canadian Forestry Association.

The parish priests gave most valuable aid and the reception accorded Mr. Doucet in all quarters was hearty.

Other illustrated lectures are being given on the Ontario and Quebec sides of the Ottawa River by the Forestry Association as well as along the Temiskaming and Northern Ontario Railway which goes through the Claybelt in which a very decided fire hazard exists this year.

Lectures in Western Ontario

Mr. Robson Black, Secretary of the Canadian Forestry Association, has been delivering a series of illustrated addresses in North Western Ontario including Fort Frances, Port Arthur, and Fort William. The meeting at Fort Frances was under the auspices of the Patriotic Fund while the Canadian Club at Fort William sponsored the address in that city.

Motion pictures were freely utilized at all points. Other addresses have been given by the Secretary before Boy Scout assemblies and such business men's organizations as the Rotary Club of Brantford which assembled for the purpose at the Brant theatre, and the Kiwanis Club of Ottawa.

A Lantern Slide Service

There are many roads by which public education may travel and one of those that affords least resistance can be found in the employment of lantern-slide cartoons to be flashed before audiences between the reels in a motion picture theatre. The Forestry Association this year has already placed several hundred lantern slides with motion picture theatres from Nova Scotia to British Columbia. Some of these are in the form of colored cartoons while others are striking statements of some outstanding fact connected with forest protection, the extinguishing of camp fires, care with lighted tobacco and matches while in the woods, etc. These lantern slides have met with a splendid reception and will be continued through the summer, each theatre in a timbered district receiving a new assortment of slides each week. As far as can be ascertained the Forestry Association is now covering every motion picture theatre

in the timbered districts of Quebec, Ontario, and New Brunswick. The French slides have been used to excellent advantage, the motion picture theatre proprietors co-operating with the Association in a thorough and generous manner. The Province of New Brunswick is arranging to place new sets of slides periodically with every motion picture theatre in that province.

His Eminence, Cardinal Begin, says:

"For a long time in Canada, general opinion placed an unlimited confidence in the richness of the wooded districts which were supposed to be inexhaustible. But now that their richness has been considerably diminished, it is high time to save what is left."

"It behooves governments, associations, and individuals to give their most serious attention."

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Good Work on Snowball Limits

The following excerpts from a letter from Mr. J. R. Gareau, Forester of the J. B. Snowball Co., Chatham, N. B., show the progress made in introducing Forestry oversight on private holdings:

"Our field work of last summer extended over three months' time and a total area of 100 sq. miles was covered. We made a five per cent estimates. For part of the time we had a two three-men crews party, while for the rest of the season our party was composed of but one four-men crew.

"We managed, however, under these rather unfavourable conditions and in spite of the high price of everything, to do our work for four cents per acre.

"Since last October, all our time has been devoted to logging operations: supervision of the cutting, scaling, etc., Our plans for the future, briefly stated, are the following: From the time the drives begin, to as late as the end of July, my time will be taken up with first, the looking after the drives, and afterwards the scaling on the booms and the towing.

"When all our logs have reached our

mills we will start with our forest valuation work and we intend to have a three three-men crews party and remain in the field from two to three months, but the time we will spend in the field will largely be determined by our next winter's cut of which we have yet no idea whatever.

"Without any other desire than to let results speak by themselves, I may add to the above that we are beginning to see the results of the work which has been commenced here two years ago. For instance ground has been covered and has been cut this winter shows that our estimates proved to be 94.4% of the actual quantity which was cut on the whole of the ground to which these estimates applied; and as to the elimination of waste I may be permitted the following quotation from a letter from Mr. Prince under the date of January 18th of this year:

".....We have had several examinations made of your camps and on the whole would say that their work is very satisfactory, and in some cases closer utilization is carried on than in any other parts of the province."

THE TEAK FORESTS OF SIAM

The teak forests of Siam are mainly located on the hillsides in the northern part of the Kingdom, some 500 miles from Bangkok. The teak trees are girdled and allowed to stand for several years before being felled, and the logs are then dragged to the nearest stream and floated down, reaching the saw-mills at Bangkok, fully seasoned, in about 5 years from the time of girdling.

Teak logging is regulated by the Government, and only trees of 76.5 inches girth may be girdled. A Government counting station is located at Paknampoh, a village situated on the River Chao Phya, 155 miles from Bangkok. The average number of teak logs arriving at this station each year is estimated at 100,000, and in addition about 20,000 logs, cut from the forest region adjoining Burma, are floated to Moulmien.

The total annual output of cut teak of all grades amounts to roughly 55,000 loads of 50 cubic feet, but of first quality the yearly output would likely reach only about half of the above estimate. On reaching the saw-mills the logs are usually squared and the first-quality squares are graded according to the British Admiralty specifications, and are designated "Europe first class."

Our Coal Bill Affected by Timber Shortage

How Canada's Coal Prices are being added to by Pennsylvania's Scarcity of Mine Timber is interestingly told in the following from the Philadelphia North American.

"One of the most serious problems confronting the anthracite operators is the difficulty in securing sufficient timber to properly ensure the safety of the miners. This is especially true of the heavier timber needed for gangway purposes, and at the present time operations have been temporarily halted on account of the inability of timber contractors to meet the ever increasing demands upon them.

Virtually all of the mountains in the anthracite fields have been stripped of their virgin timber and in many places the young growth has been cut to meet the demand. Owners of the few remaining virgin tracts are demanding fabulous prices. The cost of mine timber has been steadily climbing for the last several months, and while the coal companies have indicated their willingness to pay the prices demanded, they have been unable to get the needed supply. Shipments of heavy gangway, slope and shaft timber from the far south have been greatly curtailed since the freight congestion early in the current year. In many instances timber shipped from Georgia and consigned to the mines has been commandeered by the government for use in the shipyards.

Contractors throughout central Pennsylvania are cutting every available stick of timber. Roadsides once sheltered by giant oaks have been stripped of that protection. Whole rows of big trees that once gave beauty to the farm lands have been cut down and sent to the mines. Small tracts held by estates have been disposed of at unprecedented prices."

HONOR FOR COL. GRAVES

Col. Henry Graves, Forester of the United States Forest Service, has been elected Honorary Member of the Royal Scottish Arboricultural Society of Edinburgh, Scotland, in recognition of his eminent services to forestry.

The Royal Scottish Arboricultural Society was founded in 1854 and shares with the Royal English Arboricultural Society the leadership in forestry matters not only in Great Britain but to a large extent throughout the British Empire. Its list of 1,500 active members includes the names of a large number of professional foresters in the British Colonies and possessions, all over the world, but the Society has less than thirty honorary members, of whom about half are distinguished foreign scientists and administrators, mainly European.

The Society, in addition to the publication of its transactions and the consideration of papers at its regular meetings, makes an annual excursion for field study. It also offers annual prizes and medals for essays on practical subjects and for inventions connected with appliances used in forestry. Such awards have been granted continuously since 1855.

This distinction is shared by Colonel Graves with only one other citizen of the United States, Dr. C. S. Sargent, who was elected an Honorary Member in 1889.

"WOODMAN SPARE THAT TREE"

According to "The Little Journal," published by Arthur D. Little, Limited, Cambridge, Mass., only about one third of a long leaf pine tree is used as merchandise, two-thirds being destroyed or discarded as waste.

War Needs Over-ride Private Rights

The right recently assumed by the British Columbia Government to enter upon and utilize any area of spruce timber for aeroplane construction without the consent of the owner is thus defended by Mr. H. R. MacMillan, forestry expert of the Spruce Production Department, Imperial Munitions Board:

"If we had to wait until everybody that had an interest in a particular stretch of spruce-bearing limits had made up his mind that he could do no better than accept our offer, the war would be over before the spruce would be cut. The owners of the spruce that is available are scattered all over the world, and even with the utmost co-operation on their part when we did get in touch with them, tremendous delays would result owing to the time taken to send paper back and forth. When to this is added the natural hesitation of men to part with what they believe to be valuable property until they are quite sure they are obtaining a fair equivalent, it will be seen that in effect a great deal of spruce is practically tied up indefinitely.

"The spruce bill meets this situation. It gives power to cut spruce and fixes the price the owner must accept. That price is \$6.00 per thousand for first-class spruce, and \$2.50 for second. The money is paid for all logs that are put into the water on the figures furnished by a government scaler. The owner is under no expense. We cut the spruce and we take all the risks of towing to the mill. The owner gets his price net. The money is paid over to the provincial government and is kept in a trust fund, out of which the owners receive their respective quotas.


"The prices we offer are generous. The best evidence that they are the best that anyone could expect is shown by the fact that although they have been published for several weeks the first complaint that they are not high enough has yet to be received.

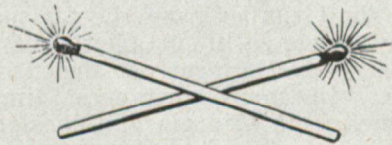
"As things will stand when the bill becomes law we shall be able to go in and take the spruce we need wherever we can find it, regardless of all questions as to ownership, and the owner will get adequate compensation."

AHEAD OF THEM ALL

Quebec leads all Canadian provinces in pulp and paper making. In 1916, 924,000 cords of pulp wood were cut by Quebec workmen, and this huge log pile was worth almost \$7,000,000. Ontario came second, with 637,000 cords cut.

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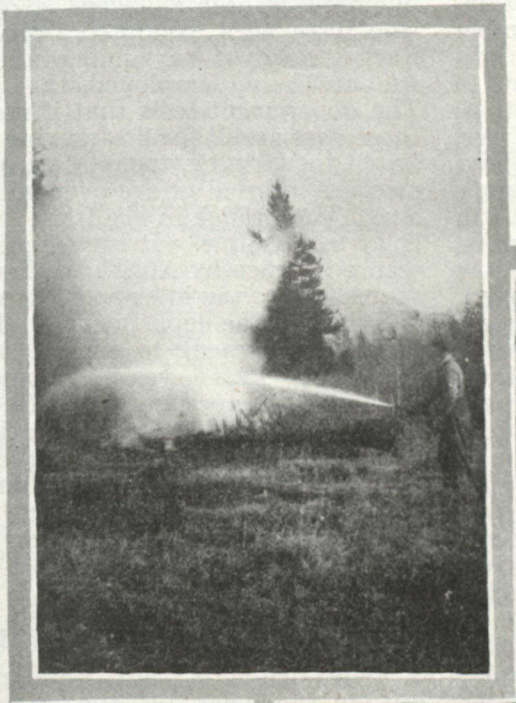
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Slacker Lands in War Times

By J. A. MITCHELL, U. S. FOREST SERVICE

The *great* menace of fire unquestionably is to the future of our timber supply. In the piney woods, particularly, repeated fires are fatal to the establishment of reproduction; while in the hardwoods the trees, though not always killed, are stunted and deformed and laid open to fungus and insect attack. As young growth seldom has an immediate commercial value, its loss is usually ignored—the fact that a *crop* has been destroyed, being overlooked. The loss in such a case is as real as if merchantable timber were destroyed—the destruction of a ten-year-old stand postponing under present conditions, the date of a possible harvest from fifteen to twenty years, if not indefinitely. At the same time, the land burned over has, to all intents and purposes, been rendered unproductive for a corresponding period. Herein lies the importance of fire protection from an economic standpoint, for no potentially productive land should be allowed to lie idle. The community has a right to and will, sooner or later, demand that it be producing something.

Ontario Fire Rangers

Of the personnel of the Ontario fire ranging force this year the Toronto "News" says:

The force this year consists of 1200 men, about seventy-five per cent. of those engaged coming from northern Ontario, many of them being experienced woodsmen. The remaining twenty-five per cent. is composed chiefly of returned soldiers. In the last two or three years fewer students have been engaged for this work and this year none have been taken on the staff.

Last year a number of returned soldiers, suffering from shell shock, were placed on the staff. They were taken from hospitals where they were being treated. The work in the north was found very beneficial to them, and this year an additional

number has been engaged. No men who have been exempted from military service or boys under military age are being employed this year. The department feels that if men of those ages are fit for fire-ranging they are fit for farming, too. Most of the men are married or are over military age. They range in age from thirty-eight to fifty-five. It is necessary to secure the men by April 15, otherwise some of them would be away hunting.

This year the department is adding further equipment to several of its stations. Last year automobile trucks were experimented with, and they were found to be very satisfactory, as it is possible for a truck to carry twelve men with all equipment. These trucks are stationed at such places as Cochrane. This year five more trucks have been added.

FOR BETTER PRAIRIE HOMES

"The demands that were made during the year on the Mitchell Nurseries at Coaldale, twelve miles from Lethbridge, for trees, shrubs and small fruit plants give evidence that farmers' households are improving their home surroundings and adding to their material comfort. The men folks on the farm are usually indifferent in such matters, and they do not seem to appreciate the fact that the money value of a farm is greatly increased if the house and buildings are surrounded with trees; for so long as the human eye will invitingly wander to a bluff of trees, so long will an asset of this nature have an actual money value; the farm animals and poultry, too, appreciate the shade.

The womanfolks have too long been contented with promises that the trees will be planted "next year"; but trees do not grow on promises, although they always do well on summerfallowed land.

The bleak and uninviting appearance of the country school houses

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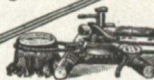
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could be entirely changed by the cooperative effort of a few public spirited farmers, who might very readily arrange among themselves to summerfallow a strip of land in the school grounds, get the trees heeled in the fall, and set them out in the following spring. The teacher and scholars would be glad to look after the work of keeping the ground cultivated to conserve the moisture for the growth of the trees afterwards." —From Annual Report of President Marnock of the Lethbridge Board of Trade.

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My Story

(From an Illustrated Brochure Distributed by the Canadian Forestry Association to 3000 Alberta Settlers in Timbered Districts)

"I'm an Alberta farmer. Fifteen years ago, I owned a place in Peel County, Ontario. In the spring of 1916 I started West.

Queer chances interfere with plans sometimes and I never reached beyond Matheson, a brisk little town on the Temiskaming and Northern Railway. I left the train for a day; I didn't get aboard again for six months. The country looked too good to miss. Splendid rich soil, good roads, a first class railway, and ready markets. Being a new country, most of the clearings were marked off by thick patches of spruce bush.

When midsummer came, the smoke of bush fires was everywhere. Hot mornings gave way to hotter afternoons and still the fires raged. Sometimes a settler would pile his debris against the standing timber on the edge of his clearing and then set fire. Another might attempt a windrow, out of reach of the spruce bush, but with no one watching it the first night breeze sent the flames racing across the peaty topsoil and into the forest. On my brother's farm, we tried to burn during the hottest days and burn safe, too. But you might as well talk of having a safe smoke over a powder keg.

I recollect one day saying to my brother: "This slash burning is bound to put some of us in the graveyard,—if rain doesn't come before Saturday."

He neither agreed nor disagreed. Through the kitchen door I could see the clouds of smoke gathering across the settlement.

"You play with death," I warned, "every time you start clearing fires in weather like this."

"How else will the land get cleared?" my brother asked.

Safe or Unsafe Ways?

"They get it cleared just as quick in Quebec, Nova Scotia and British Columbia, and most of the States," I told him, "but they make the job a safe one. They have a law that settlers can't start slash fires without a written permit from a fire ranger. They can't start a fire during drought, and what's more, they have to pile slash back from the timber. When that is done, the settlers' families are not afraid of being burned out every few years and the newspapers don't argue over the exact number of youngsters caught in the flames."

"A man in a new country must take chances"—but as my brother said that, his eye lighted upon his two little girls, and his boast sounded pretty hollow.

Well, you have all heard about that week—end of July, 1916—when with hardly an hour's warning, all the innocent-looking bush fires joined forces and roared down the country like the Day of Judgment. Fleeing men and women and their children were dragged down as if by hungry wolves. No refuge was safe. Mine shafts were charnel houses, and even the small rivers were a useless protection. My brother, being close to Matheson, brought out his family in safety, but his five years' labour was gone in thin air. Two hundred and twenty-three people, mostly women and children, died that week-end, because settlers did their burning "as they pleased" and without reference to the laws of safety.

Of course, all that is changed in Ontario, for the year following the fire, they started fire ranging in the settlements and made every settler take out a permit for his burn. The fires are supervised just as in nearly

all the other provinces. Life is safe and the people are gradually forgetting the times when forest fire horrors were continually before their eyes.

Inviting Another Horror

Since I came to Alberta, I have seen those same Ontario conditions of the days before the fire duplicated in almost every detail. We have the settlements in the tree-covered country of the north. In fact nearly all the new farmers are homesteading in more-or-less timbered territory. We have to use fire to burn off our slash and we have been doing it just like Ontario used to do—with a strong invitation to a wholesale waste of life and property.

I'm a farmer—couldn't earn my living at anything else—but I can see beyond my farm gate when the good of the Province of Alberta is at stake. I can see that Alberta can't get along on merely bare land and a set of strong muscles. We need coal to keep us warm, wood for buildings, posts and implements; we need towns and cities to provide a near-by market, and we need all the manufacturing industries we can lay hands on.

There's none of these things can come to, or continue in, Alberta, unless we all join in saving the forests. The coal mines are no good to us without wooden pit props, and if pit props get scarce up goes the price of coal. There's not much use having water powers unless they have something to bite on. They must have raw materials, like wood, to turn into products.

What good is cheap land if fence posts and lumber are too dear to purchase? What hope is there for industries in Northern Alberta unless they are *forest industries*.

A neighbour told me the other day that there was no room for the forest in northern Alberta, that every acre would soon be under crops.

"Crops?" I retorted, "what crops? When I tell you that not twenty acres in a hundred in northern Alberta can grow wheat or support stock, I'm not basing my talk on an ignorant opinion. Look at this!" And I unfolded a Dominion Government Report

proving that only about one acre in five in our part of the country was any good for field crops. "What becomes of the four-fifths?" said I.

He didn't know.

A Western Desert

"Will it be a desert waste of blackened stumps and useless soil, or will it produce timber? Will it fetch pulp and paper industries into this country, with their busy towns and pay lists, or will it be a No Man's Land forever? Will it keep the settlers supplied with cheap fuel and building materials, or must we import them at high prices from *British Columbia*?"

Do you wonder that I have no use for forest fires? Every time I see one, I see a cloud of trouble. I see higher cost for farm necessities, and a poorer chance of making Alberta prosperous for my children.

Personally, I never start a clearing fire until every precaution has been taken. I pile my slash fifty to a hundred feet from the standing bush. I burn only in safe weather, usually in the evening, and keep watch on the operation all through. I consult the fire ranger and follow his instructions.

The rangers are not policemen, I take it. They are the best friends the settler has. Some of these rangers have been telling me that the Alberta staff have set out this year to keep Alberta clear of forest fires. They want the personal help of every man, every woman, every boy and girl who lives anywhere near timber.

Every good citizen this year is to look on himself as a deputy fire-ranger.

Watch every kind of fire—but above all, keep a tight rein on the slash burning.

That's all that your country asks. You'll see to it, won't you?"

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This book discusses the chronological development of legislation directed to the preservation of existing forest resources, reforestation of cut-over, burned-over areas, the extension of forest areas, and the systematic management of forests for productive purposes.

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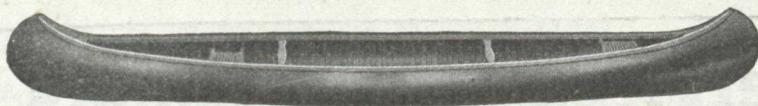
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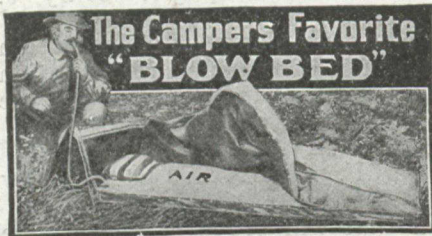


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