

Conservation

A monthly bulletin published by the
Commission of Conservation, Ottawa, Canada.

VOL. VI.

MAY, 1917

No. 5

Forest Research

Economic Life of Canada Demands Conservation of Forests

The developments of the war have demonstrated that in any intelligent plan of preparedness for either war or peace, the basic industries are of vital importance. The necessity for close co-operation between science and industry has become recognized as never before.

The development and perpetuation of basic industries necessarily implies not only far-reaching plans for the conservation of the raw materials, but also the conduct of scientific research that new uses and the most efficient methods of utilization may be determined.

The raising in Canada of several Forestry Battalions, for the cutting of timber overseas, emphasizes the vital importance of forest resources in connection with war operations. In Canada, we must recognize that, whether a war or peace basis, the lumber and pulpwood industries are essentially basic industries, that upon them depend a host of secondary industries of vital importance to the economic life of the country, and that the best utilization of our forest resources, including the development of new uses and new markets, both domestic and foreign, will offer a wide field for industrial research. We should be able to increase the intelligent use of wood by learning more about its qualities. This, in turn, means more and better business for Canada and an increased capacity, from both direct and indirect revenues, for the payment of the great war debt with which the country will be confronted.

An excellent beginning has been made in such investigations by the Forests Laboratories maintained by the Dominion Forestry Branch, in co-operation with McGill University at Montreal. Particularly valuable are the investigations of pulp and paper manufacture which promise results most important to the industry.

In many cases scientific research may pave the way for vastly increased markets for Canada's surplus forest products. In addition to such opportunities, there is need

for research to determine methods for better utilization of wood waste. Under present conditions, only about one-third of the solid contents of the tree is utilized in the form of lumber, the balance going to waste in the form of sawdust, slabs, edgings, tops, stumps, etc. Ultimately, it should be possible, with proper methods, to use to advantage at least a considerable proportion of this waste material.

Summer Fires

Grave Danger from Stoves in Summer Kitchens Without Chimneys

A serious fire hazard is the summer kitchen or lean-to. Frequently there is no chimney attached, yet stoves are moved out for the warm season, and a stovepipe put through the wall or roof. This is a very dangerous practice, and should not be permitted.

Stoves should be at least eighteen inches from any wooden wall or partition. The floor should be covered with zinc or iron beneath the stove to catch any live coals, the covering should extend beyond the stove for eighteen inches in front and on the side on which the fire door opens. Where pipes pass through partitions, proper thimbles with air spaces should be provided. Brick chimneys should be used, and these should be at least eight inches thick, and start from a foundation on the ground. If chimneys be lined with tile forms made for the purpose, a single brick thickness is satisfactory. This is the only safe way, and, while more expensive, the reduction in the fire danger more than compensates for the added cost. Again, as insurance companies will not knowingly insure a building where a stovepipe passes to the outside through a wall or roof, the insurer risks being unable to collect the amount of his insurance policy.

School children should be taught fire prevention.

To avoid having to stop while street cars take on or discharge passengers, motorists frequently drive at excessive speed to overtake the cars. This dangerous practice should be dealt with severely.

Saving the Waste Paper

Enormous Quantities are Lost Which Might be Again Utilized

All available sources of information report shortage in raw material for woodpulp. Recruiting for the forestry and other battalions has taken many woodsmen out of the country, and during the past season the cut of wood has been very much below the average.

The demand for Canadian woodpulp is rapidly increasing. One of the more important factors is the cutting off from the United States of the supply from Norway and Sweden, owing to lack of shipping. The heavy sale of newspapers, with news of the war, has also greatly increased the demand for paper.

The Canadian and United States governments have enabled the newspapers to secure their supply of paper at a price which they can afford to pay. Without this action, many of them would no doubt have been compelled to cease publication.

Canadians are wasting an enormous amount of paper daily. Very small, indeed, is the supply available for reclamation compared with the amount distributed daily by the newspapers alone. All of this paper, if saved, could be used again for other purposes, such as the making of building papers, box-board, roofing felts, filling for pasteboards, etc., thus relieving the shortage of new materials.

With the scarcity and increased cost of pulpwood, the public should make every effort to assist. Much can be accomplished by saving waste paper, and various organizations have had good results. In one day, eight schools in Winnipeg turned in 5½ tons of old paper to the Red Cross Society. This achievement can be repeated all over Canada. In many of the smaller places, schools could combine their collections. Boy Scout or Girl Guide troops could collect and deliver to a headquarters, or collecting boxes could be placed at street corners where the public could deposit parcels of old papers. Through the use of collecting

boxes in Ottawa the Daughters of the Empire are securing 35 tons per month. All qualities of paper can be used: newspapers, books, magazines, manilla or kraft wrapping, cartons, etc.

Numerous organizations could with advantage undertake this work, looking after the gathering, packing and shipping of the material. A large revenue could be derived from this source, and valuable service thus rendered to Canada in relieving our forest resources of a heavy strain.

Replacement of War Losses

Protection of Child Life Must Receive Greater Attention

The importance of infant welfare work at this stage in the nation's crisis is daily becoming more generally recognized by all classes of the community. For many years our public health authorities have been sowing on what seemed very barren ground, but the outpouring of the nation's blood, the willing sacrifice of thousands of the best and most virile of the race, has caused the apparently lost seed to germinate, and there are now prospects of an abundant harvest. Had we looked after our infant life during the last forty years there ought to have been to-day between the ages of 18 and 40 another 1,300,000 men available for the fighting forces. In other words, we have allowed, through our blindness, thousands of men to die in their infancy, male babies born often healthy and in all respects capable in due time, if proper attention had been given them, or if their home conditions had been better, of growing up and doing their full duty to the nation as our splendid sons to-day are doing in the battlefields of the world. Because of ignorance which is curable, because of improper conditions around them which are removable, thousands of these fellow citizens of ours whom we shall 'too late' wished we had saved, now die within twelve months of their arrival in the world.—W. H. Edmunds, in *Journal of the Royal Sanitary Institute*.

Pine Blister in Canada

Action Necessary to Locate and Eradicate the Disease

The extreme gravity of the pine blister disease in the United States is evidenced by the recent appropriation of \$300,000 by Congress for assisting the respective states in their efforts to eradicate this menace to the white pine forests of the country. In the several states where white pine occurs, appropriations for this work are now pending, which aggregate some \$220,000. The white pine forests of the United States are variously estimated to have a value of from \$260,000,000 to \$425,000,000.

The white pine of Canada is valued roughly at \$200,000,000. At the recent annual meetings of the Commission of Conservation, Canadian Forestry Association, Canadian Society of Forest Engineers, and Canadian Lumbermen's Association, urgent resolutions were adopted, favouring the appropriation by the Dominion Government of \$50,000, to provide for supplementing the work which will be done by the Provinces of Ontario and Quebec in locating and eradicating the pine blister disease, and for making a general survey of the situation throughout Canada. Scouting is necessary in New Brunswick and Nova Scotia, to determine whether the disease has yet become established in those provinces; and attention must also be given the forests of western white pine in southern British Columbia.

During 1916, much work was done by the Province of Ontario in locating and eradicating the disease. In this work the Dominion Department of Agriculture co-operated, and conducted also, through the office of the Dominion Botanist, some very valuable research work along lines which have an important bearing on the control of the pine blister. Should the proposed appropriation of \$50,000 be granted, these efforts can be materially increased, especially in connection with scouting and the eradication of diseased plants. The Department of Lands and Forests of Quebec will wage a vigorous campaign against the pine blister disease during the current year, and in these efforts it is important that the Dominion Government should co-operate on an adequate scale. The whole situation is now being considered by the Government, and it is anticipated that favourable action will be taken.—C.L.

In piles of trash or old rags a process sets in that, under certain conditions, may produce heating, and sometimes, in the end, fire. Greasy or oily rags are especially dangerous.

Concrete on the Farm

The Laying of Walks Around Farm Buildings a Convenience

This has been called the age of concrete. The statement applies to the farm as elsewhere. Concrete floors and walls in a granary will keep out rats. Concrete floors in the stables will prevent the loss of the liquid manure and assist the farmer in the conservation of its fertility. Concrete is useful in



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A Convenient Farmyard Walk

curbing and covering the well to keep out dirt and disease. It can also be used for the floors of garages, which are rapidly increasing on farms. Other uses for concrete are numerous, but there is one purpose for which it is seldom used, i.e., laying a walk from the house to the barn. The accompanying illustration shows a concrete walk. If such a walk were provided from the barn to the house the farmer could come to the house without getting his feet muddy, which would be highly appreciated by the housewife. The man upon whose farm this picture was taken stated that he had laid this walk two years ago, but that, if he had known what a convenience it would be he would have constructed it many years ago. He says he would not now be without it for three times what it cost.—F.C.N.

IMPORTANCE OF AGRICULTURE

Agriculture must not only be self-supporting, but, in large degree, agriculture must support our other great industries. Without agriculture, the coal and iron would be left in the earth, the forest would be left uncut, the railroads would be abandoned, the cities depopulated, and the wooded land and waterways would again be used only for hunting and fishing. Shall we not remember, for example, that the coal mine yields a single harvest—one crop—and is then forever abandoned; while the soil must yield a hundred—yes, a thousand crops, and even then it must be richer and more productive than at the beginning, if those who come after us are to continue to multiply and replenish the earth.—Cyril G. Hopkins, of University of Illinois.

B. C. Forest

Service

Staff to be Selected and Controlled Under Civil Service Regulations

For many years there has been agitation in favour of civil service regulation of the appointment of officials in outside services of the Dominion and Provincial Governments. So far as forestry and for-

est fire protection work is concerned, this reform has been consistently advocated by such agencies as the Commission of Conservation, Canadian Forestry Association and Canadian Society of Forest Engineers.

A notable beginning in the actual accomplishment of this reform has now been made in British Columbia, as the result of a report made for the Provincial Government by Dr. Adam Shortt, of the Dominion Civil Service Commission, following an investigation of the conditions on the ground. Like other branches and departments of the provincial service, the British Columbia Forest Branch will benefit largely by the new plan of making field appointments. Beyond question, both efficiency and economy will be promoted under the arrangement recently adopted, which will govern in the selection of all assistant forest rangers to be employed by the Forest Branch in the future.

Examinations have been held during the months of March and April at some 35 points throughout the province, to test the qualifications of applicants for the positions of assistant forest rangers. At least 65 such appointments are to be made, the employment to be for a period of six months each year, with opportunity for advancement to the permanent force. Returned soldiers with the necessary qualifications will be given preference. The examination is of a thoroughly practical nature, consisting of questions on logging, cruising, surveying, forest protection, etc., in addition to a full statement of the candidate's previous education, training and experience.

The selection of men to fill the

vacancies in the position of assistant forest ranger west of the Coast range will be in the hands of the newly-constituted Forest Protection Board. The Board consists of the Deputy Minister of Lands, the Chief Forester, the Assistant Forester in charge of fire prevention, and two lumbermen selected by the coast associations of lumber and shingle manufacturers, loggers and timber owners. The lumbermen's representatives are E. J. Palmer of Chemainus, and D. Rector of Vancouver. For the work east of the Coast range, there is a similar board, the two lumbermen representatives, selected by the Mountain Lumbermen's Association, being C. D. McNab of Waldo, and Neale Murray of Kamloops.

These two boards will not only make appointments to the forest ranger staff, but will have general supervision over the important matter of protecting the provincial forests from fire. This is a new departure, but is justified by the fact that the timber owners are required by law to contribute one-half the fire protection fund, which aggregates more than \$250,000 annually. In addition to the permanent ranger staff, and to the assistant rangers who will be on duty six months of the year, a number of patrolmen will be selected, for short term employment during the height of the danger season. The two boards will also have the selection of these men, thus taking the whole matter out of politics and placing it on the basis of business efficiency.

This is the first example of a non-political forest fire prevention service in Canada. The Dominion Government is definitely pledged to a somewhat similar course as to outside appointments in the Dominion Forestry Branch, but action has been delayed pending further consideration by Parliament of the report made by Sir George Murray, which strongly advocated the extension of the civil service principle of making all appointments on the basis of merit only.—C.L.

CONSERVATION OF NATURAL RESOURCES

One of the great movements of our time is the movement for the conservation of our natural resources. We have gone on as if the world were coming to an end when we were dead. Now we are getting a better perspective. The conservation movement, as was natural, was at first most conspicuously identified with the conservation of our forests and our water power, but it must extend beyond the forests and water power. It is our more immediate concern, in connection with the conservation of the soil, for even our brief history tells us that fertile fields may become abandoned farms through other causes than lack of rainfall.—Governor Frank O. Lowden, of Illinois, in inaugural address.

Commission of Conservation CANADA

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CONSERVATION is published the first of each month. Its object is the dissemination of information relative to the natural resources of Canada, their development and the proper conservation of the same, together with timely articles covering town-planning and public health.

The newspaper edition of CONSERVATION is printed on one side of the paper only, for convenience of clipping for reproduction.

OTTAWA, MAY, 1917

WEEDS

With the call for more production there may be a tendency to increase the acreage of high producing crops such as the root and no crops on the farm. In preparing for these crops this year it will be well to thoroughly bear in mind that no amount of cultivation after the crop is in can make up for a lack of cultivation before the crop is planted. If the ground is properly prepared for the seeding and planting, the battle is largely won. By thorough tillage of the soil before planting, thousands of tiny weeds will be killed which would otherwise cause trouble in the growing crop. By preventing the weeds from growing the crops are given a better opportunity to develop and produce the food which is required by Canadians in Canada and the Allies in Europe.—F.C.N.

PROTECTING THE STURGEON

A bill now pending in the New York State Legislature provides for the prohibition of sturgeon fishing, within the waters of Lake Erie, bounding the state of New York, for a period of three years. Pennsylvania has already passed a similar bill which, however, becomes operative only when the states of Ohio and New York and the province of Ontario impose restrictions of like effect. The history of the sturgeon fishery, not only in Ontario but throughout the Dominion, has been one of vigorous competition followed by extreme exploitation. Whether or not it is desirable, especially in view of the present call for increased food production, to immediately impose the restrictive measure suggested in New York state, there can be no question as to the necessity for taking effective steps to revive this fishery as circumstances permit.

New Brunswick Forest Survey

Good Progress Reported and Splendid Results Achieved

Plans are now being made for the resumption of field work on the New Brunswick forest survey, of which P. Z. Caverhill is in charge. A report recently submitted by Mr. Caverhill to the New Brunswick Government shows that, of a total of some 7,500,000 acres of Crown lands, 550,000 acres have been surveyed and examined by the field parties. The mapping and compilation have been completed for a total of 371,000 acres. Of this area, 76 per cent is covered with merchantable timber, less than 2 per cent with second growth of less than merchantable size, 11 per cent has been burned but now contains young forest growth in sufficient quantities to replace ultimately the former forest, and on 9 per cent of the area mapped, fires have caused such damage that satisfactory reproduction has been made impossible. Of the remaining 2 per cent, less than half represents the area of lands cleared or cultivated, and the balance is made up of caribou barrens, cranberry bogs, swamp land not supporting commercial growth, etc.

The cruise shows that the 252,064 acres of timbered land mapped to date contains 447 million feet of saw timber and 728,000 cords, equivalent to 364 million feet, of pulp wood, spool wood, etc. The grand total is thus 811 million feet, or an average of 2,900 board feet per acre.

If it be assumed that the 371,000 acres mapped to date is fairly representative of the 7,500,000 acres of Crown lands, the total stand will be in the neighbourhood of 16,220 million feet estimated to be worth in stumpage at least \$48,000,000. Mr. Caverhill estimates that the harvesting and marketing of this crop will distribute among the people of New Brunswick not less than \$300,000,000.—C.L.

Greater Production

Increased Output from Canada's Fisheries to be Undertaken

The Canadian Fisheries' Association is to be commended for its commercial enterprise and patriotic service in undertaking an extensive campaign for an increased output from Canada's fisheries. It is the intention of the Association to not only have the splendid fisheries of the Dominion contribute as largely as possible to the relief of the immediate grave shortage of food, but also to promote permanent development of our fisheries on a much greater scale. In serving the particular interests which it repre-

sents, the Canadian Fisheries' Association, like the Canadian Forestry Association, Canadian Mining Institute, Pulp and Paper Association, the great farmers' organizations and numerous other influential bodies identified with promoting and protecting primary production in its various phases, can at the same time be of great service in assisting more proportionate national development than Canada has been securing during the present century.

The Electric Furnace

Rapid Growth in its Use for the Production of Steel

The use of the electric iron and steel furnace has made exceptional progress under war conditions. When the demand for steel exceeds the supply, and junk piles are searched for available metal, the electric steel furnace experiences a boom because it is capable of making an excellent quality of steel from a comparatively poor quality of iron and steel scrap. As more natural resources becomes necessary, electrical processes steadily gain ground because of their greater economy in the use of raw materials.

At the beginning of 1916 there were 73 electric steel furnaces in the United States producing 100,000 tons per year; to-day there are over double this number with a yearly production exceeding 1,000,000 tons. These furnaces require in the neighbourhood of 150,000 h.p., one of the largest single installations having a total capacity of 70 tons in units of 15 and 20 tons.

The relative growth in Canada is even greater; the electric furnace steel production has increased from 61 tons in 1915 to 43,790 tons in 1916. In Montreal alone, according to figures supplied by the Civic Investment and Industrial Co., there are in operation, or being installed, 11 electric furnaces requiring a total of 17,000 h.p. The larger furnaces, when fed from high tension lines and properly controlled, offer no serious disturbances to their circuits, but a plant of less than 5,000 h.p. capacity should not attempt to carry single phase furnaces of 400 k.v. or over. The possibilities as an off-peak load are good as the usual length of heat is only about three hours, which condition would adapt itself excellently to a limited service operation. The furnaces can be operated economically at from 1c to 1½c per k.w.h. and such rates are now in force in many Canadian centres for ordinary service such as house lighting.—L.G.D.

There is no place where the spring clean-up is more necessary than on the farm, and in the farm home.

Farming Co-operation

Buying and Selling in Groups Not Being Taken Advantage Of

Co-operative selling and buying requires no argument to-day to sustain its advantages. The saving in cost of handling large orders instead of numerous small ones is recognized by every business house. The wholesale houses do business on this basis, and are consequently able to sell their goods at much lower prices. The retailer has to break bulk, has many packages to weigh out and parcel up, has many accounts to make out and many orders to record. Over and above these costs is the very large item of delivery. This item is a serious matter in urban centres, but it is much more so in the country, whether the dealer delivers them or the farmer drives in for his supplies, the cost is there.

In a recent rural survey by the Commission of Conservation, among 100 farmers in one township, it was found that 63 of them lived five miles or more from a shipping point. Of these 63 farmers, not one was either selling his produce or buying his supplies co-operatively. Each farmer was driving this ten miles (5 miles each way) to his market place, covering largely the same ground as his neighbours, using his team and wagon, his own time and energy. In many instances the great waste of time and energy and the monetary loss due to the smaller business transactions might be materially reduced by extension of the co-operative system.

The Split Log Drag

Good Roads conventions are excellent. Much information and many helpful suggestions are to be obtained from attending them. Unfortunately very few country pathmasters attend them. We all hope that, eventually, good roads, with proper surface and under-drainage and foundation will become general. Meanwhile it would be well for us to exercise the proper care that should be given to many existing earth roads.

While travelling through Dundas county the middle of April, it was distinctly noticeable that the road upon which the split log drag had been used were in decidedly better condition than the undrugged roads. Do not wait until the road is to be reconstructed. Do something to keep it in good shape. If the split log drag is used in the spring, or, after rains, earth roads can be very much improved. Instead of having a road full of holes and ruts an earth road can be kept smooth and in much better condition than many of the undrugged roads of the present day. The cost is small but the improvement is great.—F.C.N.

Protection of N. B. Forests

Imperative Need of Adequate Fire Protection Shown by Survey

The thorough survey of Crown lands undertaken by the New Brunswick Government has already revealed very important facts. The progress report recently submitted calls attention to the fact that while one-third of the total stand consists of hardwood species, including maple, beech and birch, yet these species form only 1.5 per cent of the annual cut of the province. This indicates clearly the opportunity and the need for the development of industries to utilize this class of material. Those hardwoods are eminently suitable for the manufacture of flooring, chairs, turnery, etc. There is also a large amount of poplar suitable for the manufacture of soda pulp.

It is estimated roughly, on the basis of present information, that on the entire Crown land area fires have, during the past 40 years, caused a loss of stumpage that would now be worth \$14,280,000, with a potential manufactured value of some \$80,000,000. These figures indicate the enormous losses that result from repeated forest fires. The results thus far secured from the investigation amply prove the wisdom of the New Brunswick Government in starting and continuing this study, which will furnish a scientific basis for the administration of Crown lands for many years to come.

As elsewhere throughout the forest sections of Canada, the immediate imperative need is for adequate protection against fire. The New Brunswick Government now has this whole matter under consideration, and it is to be assumed that modern and up-to-date methods will be put into effect, following the progressive lead taken in some of the other provinces.—C.L.

Expansion of Fishing Industry

Under the stimulus of exceptionally high prices, the exploitation and food production of Canada's fisheries during the coming year should be substantially increased, despite the absence of many fishermen on military service. It is gratifying to note from the fishery statistics for the last two or three years that the marked decrease in the number of fishermen actually fishing in Canadian waters appears to have been arrested. During 1915, as compared with 1914, the total number of fishermen increased by nearly 5,000 and the number of persons employed in all branches of fisheries' work was the

highest on record. For many years the development of the fishing industry has encountered serious difficulties. While there has been a steady and even rapid growth in capital investment and in the secondary operations, such as canning, similar progress has not been in evidence with regard to the primary occupation of catching fish. With improved equipment and organization and with a continuance of current market conditions the industry may be expected to evince a productive capacity far beyond any yet attained.

Summer Camps in the Forests

Fresno, California, has secured the use of 15 acres on the shores of Huntington lake, in the Sierra national forest, on which to establish a camp to provide summer outings for 11,000 school children and their parents. California State Normal School now occupies a portion of the same forest. In connection with the regular six-weeks summer course, this school gives a course in woodcraft and general forestry subjects. The students visit the nearby Forest Service ranger stations and lookout towers, and study the Government's methods of fire protection.

Los Angeles was the first city in California to establish a vacation camp in the national forests. A tract of land in the Angeles forest has been rented, and a large camp built, costing about \$8,000. This camp consists of a log and stone lodge, four furnished cottages, tennis and croquet courts, baseball grounds and handball courts. A ten-day trip can be made at a cost which is within the reach of practically everyone. By this means thousands of residents of the city have been able to spend their vacations in the mountains.

The careless housewife, with the table not cleared for hours after each meal, assists the flies very materially in contaminating food, by allowing them to settle and feed on milk, sugar, butter, etc.

CIVIC IMPROVEMENT LEAGUE CONFERENCE

The Commission of Conservation is co-operating with the Dominion Civic Improvement League in the organization of a conference to be held in Winnipeg on Monday, Tuesday and Wednesday, May 28, 29 and 30th. The conference will be held in the lecture room of the Industrial Bureau under the presidency of Sir John Willison. Addresses will be delivered by Sir James A. M. Aikins, Lieutenant-Governor of Manitoba, Hon. T. C. Norris, Premier of Manitoba, Mayor Davidson of Winnipeg, and Sir Clifford Sifton, Chairman of the Commission of Conservation. The conference is one of exceptional importance. It is believed that, apart from the prosecution of the war, there is no more urgent national question than that of securing greater efficiency and economy in connection with municipal government. The conference will assist in achieving that object by the opportunity it offers for an exchange of views and by its general educational value. A joint session will be held with the National Council of Women which holds its annual meeting in Winnipeg during the same week.

Purification of Water Supply

Sewage Treatment Essential to Protection of Primary Source

Progress in water purification constitutes one of the brightest pages in the history of sanitary engineering in America during the past 25 years, but much remains to be done both as regards its general adoption and its application where local conditions call for special treatment. Apparently, progress in water filtration has been somewhat retarded through efforts to make chlorination serve as a substitute under conditions where it is not entirely adequate. Chlorination has done much to improve public water supplies. But it is not a cure-all, and its limitations are far more clearly appreciated with the practical proofs now existing than when academically recited six or eight years ago.

Under certain conditions chlorination secures public water supplies of good quality without filtration. The great difficulty lies in gauging the proper amount to be introduced. For many water supplies subject to chlorination without filtration, real difficulties are encountered in so adjusting the dose of chlorine as to guard against objectionable taste and odours on the one hand, and inadequate destruction of objectionable bacteria on the other.

Present day consideration of sewage disposal as related to water supplies assumes that the primary source of supply is not grossly polluted and that any sewage affecting its purity has been treated so that its filtration for domestic use may not be rendered ineffective through the overloading of the filters. The methods adopted must involve the recognized principle that any water filtration process must begin by the treatment of the sewage before it is allowed to contaminate the source of water supply.—L.G.D.

Railway Fire Protection Work

Satisfactory Results have been Secured under Competent Direction

The railway fire protection work in the establishment and administration of which the Commission of Conservation has co-operated, the Dominion Railway Commission, has produced remarkably satisfactory results. Under provisions of the Railway Act and the regulations of the Board, railways subject to its jurisdiction have assumed full responsibility for the extinguishing of fires, sumably due to railway causes. Admirable co-operation has existed between the railway organizations and the several Dominion and provincial fire-protective agencies, with results thoroughly satisfactory to all concerned. Railway fires have been reduced to a position of very minor importance, and railways have also rendered a service in the extinguishing of many fires, for the origin of which they were in no wise responsible.

During 1916, 558 fires were reported as originating in 76 sections, within 330 feet of subject to the Railway Commission's jurisdiction, being fires less than in 1915. Of the 69 per cent were definitely attributed to railway causes, 18 per cent to known causes other than railways, and 13 per cent to unknown causes. Of the 388 chargeable to railway causes, 175 or 26 per cent were incendiary fires which did no damage, 113 or 15 per cent were larger fires which burned over 11,290 square feet, valued at \$35,566. The damage from all fires is estimated at \$39,482. Of this the railways are charged with 90 per cent, known causes other than railways 8 per cent, and unknown 2 per cent. Thus, on all 112 sections of the Dominion Railway Board throughout Canada, the forest fires definitely attributable to railway agencies did damage amounting to only \$35,566, a remarkably good showing, considering the unfavourable weather conditions.

Of all fires reported, the percentages were as follows: Locomotive 1 per cent; railway employees 1 per cent; campers and travellers 1 per cent; settlers, 8 per cent; unknown causes, 3 per cent; unknown causes, 13 per cent.

The use of tank cars for fighting purposes is now in evidence on the Canadian Pacific, Grand Trunk, Temiskaming and Northern Ontario, and Canadian Government railways. Such equipment has proved its effectiveness, and wider use is to be hoped for.

Fight the fly with cleanliness and ventilation.