

Conservation

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

VOL. VIII

SEPTEMBER, 1919

No. 9

Garden Suburbs in Canadian Capital

Modern Town Planning to be
Exemplified—Brisk Demand
for Lots

The laying out of grounds, said Wordsworth, may be considered, in some sense, a liberal art, like poetry and painting. The exercise of the art in the past has been largely for the benefit of royal persons, the aristocracy and the wealthy few. The foundation and development of garden suburbs for the common people, where children may play in safety in outdoor schools in touch with beauty and the wholesome influences of nature, where householders may have the opportunity of growing flowers and vegetables and have an outdoor home in the hot summer months, where the noise of traffic and the ugliness of industrial life may be banished for a time, where adults may indulge their tastes for sports and find common ground for social and intellectual interests in the winter time in club-rooms and community halls—this is a new movement and has for its inspiration that better life for the people that has been promised and prophesied as one of the results of the struggle and sacrifice of the war.

The garden suburbs in the Old Country—such as Hampstead—are accomplished facts, and the testimony to their sociological importance is written in a score of books and in thousands of articles. Canada cannot lag behind in this movement and continue to justify its claim to be governed by the people and for the people. A beginning has been made in the capital city and before the present year has closed substantial progress will have been made with the developments of two garden suburbs, east and west of the city, called Lindenlea and Parkdale. The Ottawa Housing Commission has bought two estates of about twenty acres each, which have been laid out on town planning lines by Mr. Thomas Adams, Housing and Town Planning Adviser to the Commission of Conservation. The estates have been bought at a reasonable figure, and lots will be sold to the future residents at from \$340 to \$600.

The applications for lots at Lindenlea have exceeded the number

(Continued on page 37)

Proper Precautions Enable Settlers to Burn Slash Safely

Expert Gives Advice as to Best Methods—Fire Ranger will Issue
Permits when Due Safeguards are Taken

The settler must always bear in mind that the fire ranger is his friend, and is always willing to help him out by giving good advice in the burning of his slash to clear his land. Having burnt many slashes he is more or less of an expert in this work and can help the settler materially by having the slash piled and fired with the maximum results and minimum danger and trouble. The fire ranger is just as anxious as the settler that his slash should be burnt without causing any damage or trouble.

The first duty of a settler who wants to burn his slash, is to see if it is properly piled and at least 50 feet from any standing timber or building and it would be advisable when possible to have it at 100 feet, in which case it would reduce the danger. Once this is done, he should then obtain a written permit from a duly appointed ranger who will visit his slash and gladly issue a permit if he finds that the slash is piled to avoid any possible danger to the standing timber or buildings, and if weather conditions are favourable.

A settler should never set fire to his slash at midday or when there is a heavy wind blowing. He should always set fire in the evening. Then if anything should go wrong he will have more facilities in extinguishing it. He should never set fire to too many piles at a time; he should burn one or two at a time, as otherwise he would never be able to control them. He should have the necessary help on hand according to the size of slash that he has to burn and always have pails and shovels with him so

HEMLOCK BARK USEFUL

The feasibility of using waste hemlock bark from paper mill operations for tanning purposes has been further demonstrated in recent tests made by the Forest Products Laboratory, Madison, Wis. The product is satisfactory to the tanner, and can be prepared at a cost that will allow it to compete with leaf bark. The use of paper mill bark for tanning would mean a source of income to the paper mill from a material which is now of little or no value.

he can extinguish fire if it should happen to spread. If the fire is still burning in the morning it should be extinguished, except during wet periods, as the heavy winds during the day may cause it to spread. A good time to set fire to a slash is just before it is going to rain, then he will be assured that his fire will never run and cause any damage.

The very best time to burn slash is in the early spring when there is still snow in the woods. There is no reason why a settler burning a slash should cause any damage if he takes the necessary precautions. He should always remember the following:

1. To pile his slash in heaps.
2. To have the heaps at least 50 feet from any standing timber or building.
3. To obtain a written burning permit from the fire ranger.
4. To never set fire at midday but in the evening.
5. To never set fire when a heavy wind is blowing.
6. To have the necessary help at hand to extinguish fire if it should spread.
7. To have pails and shovels with him.
8. To never leave a fire burning it is completely out.
9. To try to burn during a wet period.
10. To always remember that the fire ranger is his friend.

It is easier to burn slash by taking the necessary precautions beforehand than to try to extinguish a large forest fire.—*Henry Sorgius, Manager, St. Maurice Forest Protective Association.*

FOREST REGENERATION

"If we should begin to-day to protect our cut-over lands from fire and to use wholly practical methods of forestry to secure reproduction after logging, we could secure in the next 50 or 60 years an annual production of over 60,000,000,000 feet a year without lessening our forest capital. And this would be done without devoting to tree growth land that is not chiefly valuable for that purpose."—*Henry S. Graves, United States Forest Service.*

Local Associations Would Protect Game

National Conference Recommends
Formation of Local Bodies to
Promote Wild Life
Conservation

It is a well recognized principle that, in a democracy, a law is difficult of enforcement unless it has behind it the force of public opinion. It is also a fact that public opinion is ineffective unless it is organized.

One difficulty with the laws protecting our resources in game and fur-bearing animals has been that too frequently the game wardens have not had the public behind them in the enforcement of the law. Accordingly, in some districts, local societies have been formed to promote the protection of wild life.

Such a society should be composed of sportsmen and others interested in the objects of the association. It can perform valuable service by educating public opinion, by supporting the game wardens, by recommending to the Provincial governments improvements in the law and means by which the law may be better administered and by calling attention to infractions and abuses.

Among societies already in existence may be mentioned the Essex County Wild Life Conservation Association, the Sudbury District Game and Fish Protective Association, the Potawawa Camp Fish and Game Club, the Vancouver Angling and Game Association, and the Vancouver Game Club.

The National Conference on Conservation of Game, Fur-bearing Animals and other Wild Life, at its meeting this year passed the following resolution:

"That this National Conference of officials, sportsmen, and others concerned in the conservation of game animals and other wild life, is of the opinion that, as one of the best means of promoting the conservation of these animals is by the promoting of local game and wild life protective associations, the organization of such associations be encouraged by every means possible and that the Provincial governments be recommended to make special efforts to promote the organization and to assist in the maintenance of such associations."

Conservation of Canada's Forests

What the Commission of Conservation Has Accomplished toward Perpetuating Forest Industries

Dr. B. E. Fernow, Dean of the Faculty of Forestry of Toronto University, and Chairman of the Forests Committee of the Commission of Conservation, in commenting on the work of the Commission of Conservation in connection with Canada's forest resources, has this to say:

"I take advantage of the opportunity to congratulate the Commission on the work it has so far done through its Forestry Committee and through the Chief Forester of the Commission, who deserves unstinted praise for his active push, persistency and efficiency.

"The Commission has to its credit, first of all, the inauguration of most thorough control over forest fires along railways, which was brought about through co-operation with the Railway Commission and with Provincial and Dominion authorities. In this connection, it has to its credit the publication of some three volumes of discussion on means of suppressing fires and has successfully stimulated private endeavour in this direction.

"In this connection, also, the Commission has made an extensive study and demonstration of the result of cutting and subsequent fires on cut-over lands with regard to reproduction. This study was made on a 2,000 square mile sample, the Trent watershed, and a similar investigation has been made in British Columbia, showing that our optimistic anticipations of natural replacement of the valuable timber without human assistance are largely doomed to disappointment.

"The Commission was very properly engaged early in ascertaining the status of our forest resources and has completed and published exhaustive forest surveys of two provinces, Nova Scotia and British Columbia, and has surveyed part of a third, Saskatchewan. It has been also instrumental in bringing out, encouraging and aiding stock-taking in a fourth province, New Brunswick.

"These are all legitimate and praiseworthy activities of the Commission, whose functions are largely educative. But I would have particularly applauded the latest development of the Commission's forestry work, namely, the establishment of permanent sample plots to study in detail the results in reproduction and growth and different treatment and logging of our pulpwoods. This work has been conducted by Dr. Howe, in co-operation with several paper companies. The readiness with which this co-operation (financial and otherwise) was secured is proof of the practical value of this investigation. Indeed, this is the first systematic attempt to lay a basis for silvicultural practice, without which the forester is help-

less, and the Commission is the best agency for securing this fundamental knowledge, as could be readily argued.

"That this work of the Commission is done largely in co-operation with the staff and students of the Faculty of Forestry of Toronto University is, of course, specially gratifying to me.

"There is one more important political direction in which the Commission, in my opinion, should exert itself, namely, the transfer of the forest resources of the Middle Provinces to those provinces. Such transfer would undoubtedly lead to the exploitation of these resources. Forestry is provision for the future, and such provision means present curtailment of revenue or present outlay for the sake of future revenue. Will and can the provinces afford such a financial policy?"

High Tension Lines for Electric Power

Utilization of Water Power Resources Assisted—Mileage of Important Systems

That the high tension transmission of electric energy has been one of the most important factors in the utilization of our Canadian water power resources is plainly demonstrated in "Electric Generation and Distribution in Canada," recently published by the Commission of Conservation. The tabular statement on transmission lines contained in this report shows a total of 5,940 miles of pole line for transmission lines of from 10,000 to 100,000 volts. This, if stretched out in a continuous line, would extend about twice across Canada. Some of these lines, moreover, comprise a number of circuits each having three or four wires, and if we imagine the latter formed into a continuous length it would cover a distance of over 22,000 miles, more than seven and one-half times the mileage between Montreal and Vancouver over the Canadian Pacific Railway, or 88 per cent of the distance around the world.

Of the various high-tension networks in Canada, the Niagara system of the Ontario Hydro-Electric Power Commission is the most extensive. It includes a total of some 1,200 miles of transmission lines fed from one point, Niagara Falls, supplying over 120 municipal distribution systems. Another very important system is that of the Shawinigan Water and Power Company in the Province of Quebec, whose transmission lines, including those of subsidiary companies, cover a total of 760 miles and supply 76 distribution systems.

High tension transmission is also used in Canada to transmit electric energy from coal mines, notably in the Sydney and Amherst, N.S., districts. The company serving the latter district has adopted the slogan "Electricity from the mouth of the pit."

Some of the more important transmission systems described in the report are:

PRINCIPAL ELECTRIC TRANSMISSION SYSTEMS IN CANADA

Province and District	Pole line mileage
Ontario—	
Niagara System ("Hydro")	1,217
Severn " "	46
Waddell " "	103
Eugenia " "	47
Muskoka " "	26
Central Ont. " "	347
St. Lawrence " "	60
Nipissing " "	60
Essex " "	60
Colbalt and Engleheart (N. Ont. & P. Co.)	152
Copper Cliff " "	47
Port William " "	37
Hamilton (Dom. Pr. & Tr. Co.)	157
Lanarkshire " "	24
Toronto Power Co. " "	160
Orillia Municipal " "	40
Sudbury " "	26
Timmins (N. Ont. L. & P. Co.)	40
Quebec—	
Amqui " "	30
Theftford and Beauce (St. Francis W. P. Co.)	82
S. Can. Pr. Co. (Eastern Tps.)	116
Montreal (Mont. L. H. & P. Co.)	154
Montreal (Can. L. & P. Co.)	27
Quebec and Lévis " "	82
Shawinigan W. & P. Co.	761
Sherrbrooke Municipal " "	37
Nova Scotia—	
Amherst " "	25
Stoney " "	25
British Columbia—	
Cumberland (Can. Collieries)	26
Kanlomoos Kootenai " "	42
Rossland (W. Kootenay P. & L. Co.)	253
Victoria (B. C. Electric)	190
Vancouver (Western P. Co.)	90
Victoria (B. C. Electric)	110
Manitoba—	
Winnipeg Municipal " "	78
Winnipeg Electric Ry. Co.	60
Alberta—	
Calgary Power Co.	108
Edmonton " "	40
Dawson " "	39

New Uses Found for Waste War Material

British Government's Experts Make Ingenious Use of Shells and Other Military Goods

The Munitions Inventions Department of the British Government, near Esher, England, is stated to be using the most expert inventive genius and up-to-date business methods with a view to finding commercial uses for the vast quantities of waste war material which the country has in stock. The *Times* of July 8 gives some interesting results of experiments which are being carried out by the department in sheds specially erected on the riverside estate of Imber Court.

In the construction of special crane piles of wood and wire (piles having the strength of steel with only one-third its weight) for airplanes and airships, large quantities of wood sawdust accumulate. It has been found that this sawdust, on being mixed with glue and certain other substances and compressed, can be planed and worked in the same way as wood; by varying the pressure its solidity can be altered to suit the purposes for which it is required. Women's shoe heels, ear trumpets for airplane spotting machines, and many other articles can be fashioned from this sawdust material.

Shells of various calibre have been proved, by experimentation,

to have considerable commercial possibilities. The steel of which they are made is in many cases capable of being rendered glass hard, and milling cutters have been produced which are reported to have stood the most exacting tests. After a little manipulation in the lathe, an 18-pound shell minus nose and copper band, makes an excellent shafting coupling, the copper bands selling at a good price for electrical and other purposes. A 6-inch shell of the same way becomes a small flexible coupling, and so on. Shells being already hollowed out, there is a great saving in labour and material by using them instead of solid steel for couplings and other articles, when the dimensions are suitable. A special lathe extension constructed from spare parts on a 16-inch waste 18-pound cartridge cases to be cut into strip brass and containers from shrapnel shells can be used, with a slight alteration, as lamps.

COMMERCIAL USES FOR AIRPLANE ENGINES AND TANKS

The most interesting and important experiments from a commercial point of view are said to be those in connection with the utilization of airplane engines for ordinary commercial purposes. By making an alteration in the carburetor it is possible to run the engines on coal gas, and with couplings made from shells they have been connected to dynamos with very good results. While second-hand airplane engines have a limited market, it is believed that as stationary power units they will prove a useful innovation. The experiments made with them at Imber Court are said to have proved them to be most reliable and economical as motor-car engines, driving pumping apparatus, and for numerous other purposes. On one such machine an air bomb has been fitted as an expansion chamber and silencer; on another, a similar article is in use as a compressed-air chamber. A tank, with the unnecessary part cut away, and a bogey fitted at each end, has been made into a valuable workshop locomotive.

Artificial limbs and other devices also come within the scope of the Munitions Inventions Department. A portable bridge is one of the latest developments. A 50-foot length of this bridging can be carried easily on a Ford van, and, during test, such a length was unloaded, got into position, and crossed by 20 men within the space of 6½ minutes. — *U.S. Commerce Report.*

The forest fire situation in Alberta is the worst in years, according to E. H. Finlayson, forestry supervisor, who recently said that the flames were raging in many districts. Approximately 30,000 to 40,000 feet of valuable timber has already been destroyed, he announced. The most serious conflagration, in the northwest corner of Stony Indian Reserve, menaces the northern outskirts of Banff National park.

**Commission of Conservation
CANADA**

SIR CLIFFORD SITTON, K.C.M.G.
Chairman
JAMES WHITE
Assistant to Chairman and Deputy
Head

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 proper conservation, and the publication of timely articles on land-use planning and public health. The newspaper edition is printed on one side of the paper only, for convenience in clipping for reproduction.

OTTAWA, SEPTEMBER, 1919

**PUBLIC CO-OPERATION
IN TOWN PLANNING**

A city must, first of all, be a place where its inhabitants pursue their gain-getting activities; it is the sphere of their daily labours, whereby they earn the means to live. But, if it is nothing more than this—and some manufacturing towns, unfortunately, are little else—it fails to fulfil the functions of a city; it is nothing but a sort of permanent camp lacking the true qualities of a home. Men desire not only to live, but to live in bodily health, to have wholesome recreation, to improve their minds and characters, to strive upwards after beauty, truth, and goodness. The city must be a place where the best yearnings of the human soul are not warped or tainted, but where they find a nourishing and congenial soil. A city that provides the right environment for the social and spiritual needs of its citizens wins their sentimental attachment, it becomes their "home," of which they are justly proud and for which they conceive a strong municipal patriotism.

City planning is, then, the expression of a complex idea, an expression which cannot be the work of one man nor of the men of one profession, but which must be participated in by all the citizens. The city planner supplies the basis on which the community, all and severally, must rear the superstructure. City planning may improve the facilities for business, but cannot make that business successful; it may install the most up-to-date sanitary systems, but cannot make persons cleanly in their habits; it may provide safeguards against accident, but cannot give people caution; it may lay out beautiful parks and well-equipped playgrounds, but cannot instil an appreciation of the beauties of nature nor teach the art of rational recreation; it may reserve splendid situations for imposing public buildings, but cannot ensure that government will be honest, efficient and wise. City planning deals only with externals; the moving spirit must come from the citizens.

It is true, of course, that organized planning is impossible in a city that has not already reached a certain degree of public virtue, and it is also true that an improve-

ment in environment, once its value is demonstrated, may make more easy the exercise of that virtue. Yet it must not be supposed that city planning is going to work wonders without perseverance and self-control, a conscientious, sustained and general effort to secure improvement; its good results cannot be achieved by simply calling in a board of experts and setting them to work, but require the loyal co-operation of every member of the community.—P. M. B.

**DUPLICATE REGISTER
OF VITAL STATISTICS**

In the report of the Registrar-General of Jamaica for the year 1918 occurs the following interesting item:

"The number of the registers of marriages, births, and deaths in the General Register Office on the 31st December, 1918 (apart from Civil Status Records of marriages prior to 1880 and baptisms and burials prior to 1878) amounted to 1,919,469. These registers are in duplicate, the duplicates being deposited for safe keeping in another building in which are also kept many original Church of England registers of marriages, baptisms and burials dating back to 1664."

Herein lurks a valuable suggestion for Canadian officials. Would it not be well to have duplicate copies of the records of all our Provincial Registrars General filed at Ottawa? These records are yearly becoming more valuable and their destruction by fire would be an immense and irreparable loss.

Similarly, copies should be kept of all church records—no matter of what creed—of marriages, baptisms and burials.—C. A. H.

RENEWING FORESTS

The problem of supplies does not merely concern the amount and character of timber now standing, it concerns, as well, the production, of new crops of timber by growth. I would have little concern about the amount of timber used if we were growing new stands in place of the old. We have enough non-agricultural land to produce for all time lumber in abundance for ourselves and for export. But this would require keeping our forests in a productive state after lumbering. We are not doing that. Our forests are steadily deteriorating under cutting and fire. No effort is made for replacement after cutting. Fire protection is confined to old timber. Young growth and cut-over lands are not being protected. Accidental stands following cutting and fire are generally poor in quality and species and of low prospective yield. We are still drawing for the most part on original sources of supply. Failing to replace these, we are steadily losing ground. We are actually using up our forests, just as we would use up a deposit of coal, when we might have been renewing them.—H. S. Graves, Chief, United States Forest Service.

**PROMISING ONTARIO
LINEN INDUSTRY**

With the installation of modern web-spinning machinery completed, a firm at Guelph, Ontario, is now turning out web-spun linen yarns from flax grown in that province. A flax spinning mill, operating in conjunction with the linen mill, makes this industry a self-contained one, able to turn out linen fabrics, including the finer grades, from raw flax to finished goods. During the war the plant was running on cotton and union goods, because of the difficulty of getting linen yarn, but with a steady supply of Canadian spun-linen yarns now assured, it is turning out a full line of all the finer linen goods, as well as the coarse towellings, butchers' linen, etc.

The development of flax spinning will have a stimulating effect on the growing of flax by Ontario farmers. Ontario flax has in the past been found acceptable by Irish linen manufacturers in the production of the famous Irish linens. A newly invented Canadian machine to harvest the flax, which, for purposes of spinning, must be pulled, not cut, is expected to reduce labour costs greatly.

The elimination of the tithe crop in Russia, which formerly placed Russian flax on the world market almost as cheaply as cotton, gives Canada an added advantage. There seems little reason why flax production and spinning, with the complementary industry of linen weaving, should not become one of Canada's important industries. In view of this, Ontario's leadership in the enterprise of a self-contained linen industry is especially interesting.—U. S. Consular Report.

VALUE OF INCINERATORS

In the army, every camp, no matter how small, had its incinerator. Fatigue parties were told off, and every scrap of litter was collected and burned. All cans also were put in the fire to remove particles of food that would attract flies. Many of these incinerators were of quite inexpensive and improvised construction; others were specially manufactured. The splendid freedom of the army from typhoid fever attests their efficiency. Moreover, in this manner the camps were kept decent and tidy.

Compare this with the disgraceful method employed by many civilian communities of dumping garbage in huge, evil-smelling, unsightly heaps. Worst of all, such dumps are actually used for filling hollows on which houses are to be built.

If mere temporary communities, such as military camps, can efficiently and decently dispose of their garbage, how absurd to say that villages and towns cannot do it.

In this respect, if in no other, let us take a leaf out of the army's book and profit by the lessons learned during the war.

**Children, Beware
of Standing Trains**

Boy Going to Pick Blueberries
Crawled under Cars and met
Horrible Death

"Moncton, August 10.—Han Mains, a twelve-year-old boy, was the victim of a fatality at Springhill Junction Saturday morning. The boy was starting out to pick blueberries and had to cross the tracks. A train blocked the way, and he was crawling beneath the cars when the train started, with the result that he was caught and had both legs cut off close to the body. He died soon afterwards in the hospital."—Daily paper.

Poor lad! One can imagine him thinking, "I can't wait till this train moves; it may be here for an hour. And as for going round it, why, I'll wait there forty cars on it." Besides, his mother wants those blueberries this morning to make that pie she promised us. There's no sign of this train moving. I've crawled under the cars before, so here goes again."

But just then the train did move. How was the engineer to know that if he had waited a moment a boy's life would have been spared?

Boys, that train may start at any moment. Don't take chances.

**Garden Suburbs in
Canadian Capital**

(Continued from page 35)

available, and there is practical assurance that the site of the Parkdale estate will all be allotted within a very short time. The estates contain many beautiful trees which have all been planted, and most of them will be preserved for the adornment of the new settlements. On the Lindenlea property a winding boulevard has been planned to intersect the grounds, which will command many beautiful views. Provision has been made for tennis courts, bowling green, children's playground and wading pool, a community hall and public garage, and the residential streets have been planned to discourage through traffic, so as to ensure additional safety for children and preserve quiet and home-like amenities for the householders. No lot will have less than a thirty-foot frontage, and in these cases semi-detached houses will be encouraged to economize space for garden purposes. The houses will be arranged under Mr. Adams' supervision, with a view to architectural harmony and to agreeable aspect and prospect, and much will be done to encourage a civilized community spirit in the social organization of the estates.

The development of the garden suburb in the capital city will have the obvious advantage that representatives from the cities of the Dominion who have frequent occasions to visit Ottawa will be able to study the movement on the spot, and thus Lindenlea and Parkdale may serve as object lessons that will lead to extension of the garden suburb movement over the whole of Canada.—A. B.

Canada Lags in Road Building

Overseas Men See Great Contrast to Highways in Europe—Experience of England Shows what to Avoid

Returned soldiers, who took part in the "big push" during the autumn of 1918, will recall the frequent signs "Dry weather track." They were very useful, those tracks; not being marked on the map, the Hun did not have them registered, and even if he did discover one, it was easy to abandon it for another. Thus, as the weather was good on the whole, these tracks were quite serviceable. But, if it had been rainy, that would have been another story.

Away from shell-fire, however, as every soldier knows, the French roads were serviceable in all weathers. They stood up admirably against the rough usage of the swarms of motor trucks and other abnormal traffic brought by the war.

What would have happened to our Canadian roads under the same conditions? Alas! they are nearly all only "dry weather tracks." A good road is a road which is good in bad weather. In road construction, we are a century behind France, although we pride ourselves on being a very progressive people.

It is not sound argument to say that this condition is due to the fact that Canada is still a "new" country. The fact is that some of the oldest sections of Canada have the worst roads.

It is largely due to the continuance in force of an antiquated system of providing for public road-building and maintenance. The same system has been tried in England and found wanting, and we refuse to profit by the Old Country's experience, which the *Britannica* describes as follows:

"The almost incredibly bad state of the roads in England towards the latter part of the 17th century appears from the accounts cited by Macaulay. It was due chiefly to the state of the law, which compelled each parish to maintain its own roads by statute labour, but the establishment of turnpike trusts and the maintenance of roads by tolls do not appear to have effected any great improvement."

Let us hope that the *Canada Highways Act*, passed at the late session, spells the end of statute labour and of 'turnpike trusts' in Canada. Toll-gates have been found unsatisfactory elsewhere—let us abolish them here. When governments themselves undertake the construction of roads, we may look for better days.—P.M.B.

One very frequently noticed danger glass on the streets. It is dangerous to rubber-tired vehicles and may cause serious injury to bare-footed children. Milk drivers seem to be responsible for a good deal of it. The matter calls for vigilance and appropriate action on the part of the police.

Conservation of Our Resources Must Assist in Reconstruction

Citizens Should Recognize Collective and Individual Responsibility to Aid in Making Good War Losses—Summary of Programme

More figures convey but little to the mind. Everyone realizes that the war has cost us an enormous sum expressed in money. We should endeavour to visualize what this sum represents in materials and services. For example, millions of tons of metal and vast quantities of cotton and various chemical substances, as well as millions of hours of human labour have been consumed by the munitions industry. In times of peace, the metal would have been put into buildings, machinery or tools, the cotton would have been made into clothes, and the chemicals would have found a wide range of uses, of which not the least important would have been as fertilizer. A great bulk of these wasted substances will never be recovered; in other words, a considerable fraction of the world's capital has been utterly destroyed. Even in normal times, such destruction is inevitably going on through wear and tear, but the war has greatly accelerated the process. There is a further difference in that war uses are never productive in their ultimate purpose, so that, whereas in peace we earn an interest on our capital, in war we consume the principal.

By far the most serious war loss, however, is the labour loss. The more one probes this question, the more far-reaching is it seen to be. Everyone realizes the loss of labour force, due to the enlistment of huge numbers of men in the army. It is not, of course, that the soldiers did not work, but that their work was generally non-productive. Likewise, those engaged in the manufacture of munitions, munition plant, guns and other machinery of warfare, were engaged in wasteful industries. In other words, millions of men were not only transferred from the productive to the non-productive class but actually to the *destructive* class. Again, unprecedented and unusual demands were made on all our transportation facilities, for large bodies of men were sent overseas who would otherwise have remained at home and supplies for their maintenance had to be shipped to them. The abnormal transportation of troops and of war material required an increase of human effort expended in carrying and was also an economic waste. On the other hand, the decreased output of luxuries compensated to some extent for the munition business and the curtailment of holiday travelling partly made up for that undertaken for military reasons.

Included in the labour loss must be the deaths and all casualties which have left men less efficient for their peace-time occupations. Upwards of sixty thousand able-bodied Canadians in the flower of their manhood, have given their lives for our cause. This death-roll

represents a serious diminution of the labour force of the country. Some men have been totally incapacitated and must be maintained henceforth by the labour of others. Many have been so wounded or injured in health that their labour is not as productive as formerly. Also it must not be lost sight of that most of our soldiers have suffered some loss of skill, due to being away from their work so long, but with a little patience this will generally be restored. There are, again, a number of youths whose period of training for their life work was broken into and who must practically begin all over again. The cumulative effect of all these things means that a tremendous blow has been delivered against the productive labour energy of the nation.

The greatest need to-day, therefore, of Canada, as, indeed, of all other countries, is conservation (A) of our material and (B) of our human resources.

Under the first head, we must attempt to (1) increase the fertility of the soil and reclaim areas not now cultivated, (2) protect our forests from fire and reforest denuded areas, (3) guard certain species of fish and wild life against extinction, (4) exploit our mines conservatively, extracting the maximum output of ore, (5) develop our potential resources of hydro-electric power, (6) organize our manufactures to secure greatest efficiency and to recover by-products, (7) eliminate extravagance in consumption and (8) find an economic use for materials now treated as refuse.

Under the second heading, *i.e.*, conservation of our human resources, we should (1) make up our minds individually to do some useful work and to do it thoroughly, (2) promote the better organization of industry from a social standpoint, in other words, a good understanding between capital and labour, (3) organize our systems of transportation, storage and distribution so that products may be conveyed from producer to consumer with the minimum of effort and expense, (4) encourage the work of soldiers' civil re-establishment by practical sympathy with the returned soldier, (5) as voters and citizens insist on efficiency in public hygiene and sanitation, (6) reduce our abnormal infantile mortality, and (7) support all sound schemes of town planning and better housing and never relax our efforts till every family in the country has a decent home to live in.

The aims enumerated above embody a programme of reconstruction. Some of them lie outside the field of the Commission of Conservation, but most of them are within the scope of the work that it exists to promote.—P.M.B.

Education of Fish Culturists

Professor Prince Suggests Technical Training for Fish Hatchery Officers—State of Washington Starts Fisheries College

That fish culturists in the past have been principally "practical" men who, through enthusiasm, perseverance and hard work, have certainly made notable progress, yet who would have done far better if they had had scientific training is the contention of Prof. F. E. Prince, Dominion Commissioner of Fisheries. As an instance of the crude blunders of unscientific men he cites the case of certain fish hatchery officers who were accustomed to blow through a elastic tube into cans containing young fish in order to oxygenate the water. Yet the veriest schoolboy ought to know that the vitiated air from the lungs contains carbonic acid gas rather than oxygen and must be injurious to the young fish.

Fish eggs, as much as the offspring of any other creature, are marvels of Nature, being extremely delicate, living and developing organisms. As such, they should be handled only by experts. A hatchery officer must have enthusiasm for his work, exactness, care and accurate knowledge. It is the last-named qualification which too frequently is lacking.

Prof. Prince suggests that the deficiency should be remedied by short courses of instruction at a Biological Station, spread over perhaps, three or four years. Our agricultural colleges give short courses for those engaged in animal husbandry; knowledge is just as essential for men who raise fish. The curriculum should include embryology, physiology, the physics and chemistry of water, biology and pathology as related to fishes.

An Imperial Fisheries Institute has been in existence in Japan since 1897 and has so conclusively proved its worth that a number of subsidiary schools have since been established. That country gives a systematic training to its hatchery officers, and in France and Scotland some attempt is made along the same lines.

A fisheries college has recently been started in connection with the University of the State of Washington, at Seattle. The college will offer four-year courses, covering the biology, technology, and business management of the fisheries and fish culture. Seattle is a very favourable place for the establishment of such an institution, and it is probable that Canadian from the Pacific coast at least, will take advantage of the facilities offered by the new college.

Do not put too many stacks in the same yard. The more stacks in a yard the bigger your wages that they will not be destroyed by fire.

Insist, when the thresher comes that he has his spark arrester in place and working.